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INTERCULTURAL COMMUNICATION COMPETENCE REVISITED: RECONCILING TRAIT AND RELATIONAL PERSPECTIVES USING SOCIAL NETWORK ANALYSIS

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF COMMUNICATION

BY THE COMMITTEE CONSISTING OF

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DEDICATION

To the person who has become heavier, stronger, braver, and a valiant fighter after this process.

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Abstract

What it takes for communicators to interact competently with intercultural others remains a contested conceptual site. This dissertation addresses the debate between the individual and relational perspectives regarding the origins or location of intercultural communication competence (ICC). The individual approach to ICC equates this concept with a set of individual attributes located within the communicator. The relational perspective conceives of this competence as a social judgment that communicators can make about each other in relationships. The dissertation brings together these two seemingly competing paradigms regarding intercultural communication competence research by combining the individual perspective (based on predictions from the trait perspective) and the relational perspective (based on social network theory). Through a social network analysis design, living-abroad individuals' ego networks and multicultural personality traits were examined in relation to ICC, independently and collectively.

Results revealed that multicultural personality traits were strong predictors of ICC. Specifically, when the traits were evaluated separately from or together with network variables, open-mindedness, cultural empathy, and social initiative positively, and flexibility and emotional stability negatively related to ICC. Ego network characteristics also had relationships with ICC, but they were weaker predictors than personality traits. In particular, when the ego network variables were examined independently, separately from traits, strong intercultural network size negatively, whereas heterophily and diversity positively, related to ICC. When the network variables were examined together with traits, the effect of network diversity disappeared. In addition, the trait of open-mindedness was found to mediate the associations between network diversity and several competence dimensions. These results offer some support for a cross-

paradigmatically theoretical framework explaining what it takes to become interculturally competent, with antecedents at the individual and relational levels. The findings also have theoretical implications for the study of ICC as well as practical implications for living-abroad individuals, intercultural educators, and trainers.

Keywords: living-abroad individuals, intercultural communication competence, social networks, multicultural personality traits.

CHAPTER 1: INTRODUCTION

The world has become more globally interconnected and increasingly culturally diversified (van der Zee et al., 2013). With strong economic, technological, and peace imperatives, communication between individuals across cultural boundaries has become a relatively common practice for many people (Lustig & Koester, 2010). Changes in global economies have further modified the international workforce and education, bringing new opportunities and challenges for living and working together with people from different cultures (Lantz-Deaton & Golubeva, 2020). Meanwhile, the emergence of virtual cultures due to the advancement of communication technology also leads to more people across multiple societies coming into contact (Gregersen-Hermans, 2017). These circumstances all highlight the impacts that diversity has on people and the need to communicate effectively with people across cultural differences. Intercultural communication competence is a concept relevant in this context.

In its literal meaning, *intercultural communication competence* (ICC) refers to the competence to communicate with people from different cultural backgrounds. ICC is important to our contemporary society and has many societal and practical implications. Firstly, all living cultures today are the result of some form of intercultural communication (Deardorff, 2019). Human history was not built on cultural heritages that were stably transmitted from one generation to the next, but rather based on cultural exchanges and transformations within and between societies (Deardorff, 2019). ICC enables social members' access to learn and re-learn the evolving history and cultural landscape that they inhabit (Leeds-Hurwitz, 2013). It encourages people to appreciate universal values deriving from the human history of mutual influences between civilizations (Deardorff, 2019). Hence, ICC magnifies the vitality of humanity.

Secondly, ICC is a transformative tool that can reconcile conflicts and build peace. Living together across differences is uneasy. With closer connections between individuals and communities, conflicts and misunderstandings are also more persistent in the globalized world (Deardorff, 2019). As witnessed in and after the COVID-19 crisis, new trends of political polarization, nationalism, xenophobia, anti-immigrant sentiment, and even hostility toward unspecified outgroups have been on the rise (He et al., 2021; Kim & Han, 2022; Kulich et al., 2021; Pratiwi & Tsauro, 2021). As Kobrin (2017) stated, skepticism about the merits of global integration has been almost as old as globalization itself. ICC is the competence to fight against intolerance, stereotyping, discrimination, hate speech, and violence via dialogues among people with different beliefs, practices, and norms (Leeds-Hurwitz, 2013). ICC helps change people's mindsets toward an open and pluralistic spirit, fosters trust among communities, and creates the possibility to depict outgroup others in fair and meaningful ways (Heleta & Deardorff, 2017; Leeds-Hurwitz, 2013). To this end, a key implication of ICC is helping people learn to get along peacefully during reconciliation processes.

More profoundly, ICC protects human rights. ICC highlights effective and appropriate skills, knowledge, and behaviors to improve human interactions across (perceived) borders created by differences, not just based on culture but of any kind such as race, ethnicity, nationality, religion, political ideology, sex, age, and so on (Deardorff, 2019). This competence develops ethical concerns for people dealing with cultural struggles, oppression, dominance, and other contemporary realities in the globalized world (Nakayama & Martin, 2014). Competent behaviors demonstrate the humanness principle, which is to treat each other by virtue of being human in a manner that reflects the sacredness and sanity of one’s personhood (Haslett, 2014). ICC enables individuals to navigate another person’s experience without demeaning it or simply

duplicating it as one's own (Byram, 2014; Deller et al., 2014; Sorrells, 2014). It can help people recognize the deep need for each other's presence to address a common problem in the world (Byram, 2014; Deller et al., 2014; Sorrells, 2014). For these reasons, ICC serves the larger purpose of promoting human rights against intolerance, discrimination, and hate speech (Donders & Laaksonen, 2014; Leeds-Hurwitz, 2013).

Through the many decades of scholarly efforts, our knowledge of this type of competence has been expanded and deepened given the rich conceptual and theoretical landscape emerging (Kealey, 2015; Spitzberg & Changnon, 2009). However, the term ICC per se remains a contested conceptual site in the field of intercultural research (Spitzberg & Changnon, 2009). What it takes for communicators to interact competently with intercultural others is still understood in highly diverse ways (Schnabel et al., 2015). For instance, recent reviews (e.g., Holt & Seki, 2012; Johnson et al., 2006; Leung et al., 2014; Spitzberg & Changnon, 2009) found there were more than 40 models conceptualizing ICC, in which more than 300 factors (e.g., empathy, communication confidence, cultural sensitivity) were proposed. These models choose different facets and elements of ICC as their foci in the articulation of what counts for and what predicts adequate interactions with intercultural others. The models also largely diverge in their fundamental assumptions about the nature of ICC (Koester & Lustig, 2015; Koester et al., 1993; Leung et al., 2014; Schnabel et al., 2015).

A most contested question that has yet to be resolved pertains to the location of this competence or what it takes to become interculturally competent (Spitzberg & Changnon, 2009). Spitzberg and Changnon (2009) summarized a major program in the ICC literature that sometimes this concept is equated with a set of individual attributes, whereas other times, it is regarded as a subjective impression evaluation by others. Equating ICC with a set of personal

attributes is common in the individual approach research paradigm, whereas depicting it as a subjective impression aligns more with a relational perspective paradigm to understanding competence. The individual approach presumes that people who are competent in one situation must possess something that enables them to be competent in other situations (e.g., Arasaratnam, 2009). The "something" here includes traits (e.g., van der Zee & van Oudenhoven, 2000, 2001, 2013), intelligence (e.g., Ang & Van Dyne, 2008), or a repertoire of affective (e.g., sensitivity to cultural differences), cognitive (e.g., knowledge of communication), and behavioral (e.g., communication skills) attributes located within the individual (e.g., Byram et al., 2001; Chen & Starosta, 1996). The individual communicator is the focus of analysis in this paradigm. The relational approach conceives ICC as a social judgment that communicators make about each other in interactions (e.g., Imahori & Lanigan, 1989; Koester & Lustig, 2015). Cultural differences unfold and are negotiated in the relationship between communicators, and competence is constructed through their subjective perceptions within this relationship (Collier, 2015). Accordingly, from a relational perspective, the locus of explanation for competence is the interaction and relationship between the communication partners. The two approaches diverge significantly in their understanding of the nature of ICC, which will be detailed in Chapter 2.

Most existing ICC frameworks are based on the individual approach, even though recent research has added a stronger emphasis on the relational nature of communication (Spitzberg & Changnon, 2009). The individual approach models have been widely criticized for decontextualizing competence from the situational and relational factors of intercultural communication (Chi & Suthers, 2015; Smith, 2002). Martin (2015), for instance, called on researchers to move beyond these "individual-focused, reductionistic models" (p. 6) to a more relational, holistic view of ICC. However, the relational approach has also been questioned due

to its equating of ICC to interpersonal outcomes, as the cross-cultural generalizability of criteria based on which competence is evaluated is problematic (Kim, 1991). Meanwhile, researchers have also asked if an appropriate conceptual framework should embrace more than one approach instead of a single domain (Trompenaars & Woolliams, 2009). Leeds-Hurwitz (2013) suggested that one disciplinary approach was inadequate to develop a comprehensive understanding of a complicated concept such as ICC. More and more researchers (e.g., Koester & Lustig, 2015; Leeds-Hurwitz, 2013; Leung et al., 2014) have highlighted the need for ongoing scholarly efforts to synthesize and validate different perspectives on this competence.

To contribute to these calls in the literature and embrace these new research directions, this dissertation aims to bring together the individual and relational paradigms for conceptualizing and fostering a cross-paradigmatic perspective. To be specific, I posit that if ICC is an internal concept, there should be some stable traits within the individual that can facilitate competent intercultural behaviors. If ICC is a relational construct, then the social environment constructed by one's immediate relationships should shape individuals' competence. The various theoretical perspectives on traits consider personality traits as the endogenous source of one's behavioral style or competence (e.g., McCrae & Costa, 2008; van der Zee & van Oudenhoven, 2013; Wilson et al., 2013), which aligns with the individual paradigm that assumes ICC as located within a person. Social network theory contends that one's social relationships define a person and shape their competence (e.g., Chi & Martin, 2020; Smith, 1999), which aligns with the relational domain that deems ICC a relational construct. Therefore, this dissertation combines the theoretical underpinnings of social network theory and personality trait perspectives to address the dispute regarding ICC's locus between the two paradigms.

I posit that a possible answer to this debate is that people can differ in their inherent attributes relevant to intercultural contexts (i.e., multicultural personality traits), but that these individual differences also need a social environment (i.e., one's social networks) to be expressed in behaviors. To examine this possibility, I adopt Schnabel's (2015) framework that defines ICC as a behavioral orientation exhibited in intercultural situations. As an effort of cross-paradigmatic inquiry, the dissertation first examines the combined effects of multicultural personality traits and social network characteristics on ICC. In this step, trait and network variables can be understood as factors predicting ICC at different levels: individual, relational, and structural. Then, a second step is taken to evaluate how the trait and network variables might relate to each other and whether one would mediate the impacts of the other on ICC. In the second step, three possible outcomes are proposed.

Firstly, a *personality-to-network model* posits that people who possess intercultural personality traits tend to develop certain characteristics in their social networks that can facilitate their attainment of ICC. According to this model, ICC is primarily an individual construct from personality, and one's relational environment amplifies the influence of personality on ICC. The theoretical perspective of traits tends to support this view.

Next, a *network-to-personality model* posits that having an advantageous social network in intercultural settings can activate or strengthen certain personality traits in the individual to manage the situation effectively. These traits then facilitate one's development of ICC. According to this model, ICC primarily stems from networking with people, and it makes more sense to conceive competence from a relational perspective. Social network theory tends to align with this view.

Thirdly, a *network-and-personality model* suggests that social networks and intercultural personality have independent impacts on ICC. Neither of them overrides the effect of the other on competence when they are in the presence of each other. In this view, competence concurrently comes from or is determined by both internal traits and external relationships.

To achieve these research goals, the dissertation studies living-abroad individuals, that is, people who live in another country that is not their origin country/culture. Such people could be sojourners who move abroad with the intent to stay for a limited period or immigrants who intend to stay in the host country indefinitely (Hofhuis et al., 2019). They could also be expatriate employees, international students, documented and undocumented immigrants and refugees and their accompanying family members, or any person who thinks they are living abroad (Bierwiaczonek & Waldzus, 2016). Living-abroad people's intercultural experiences fit as the group to be examined for the dissertation's research topic because their relocation to a new culture typically involves stripping previous social connections, a sense of displaced personhood, and therefore, the need to recreate a new social life and re-establish stability of their self (Smith, 2013). These transformations make their experiences a fertile ground for studying ICC.

Since the experience of living in another country is the focus of this dissertation, culture is defined for this research based on one's national culture. Culture is an organized system of symbols, beliefs, artifacts, principles, values, rituals, and practices that a social collective shares, resulting from communication (Collier, 2015; Kim & Sasaki, 2017). Hence, nationality is one option to define the organized system of culture. Researchers have also used other categories of culture, such as tribe, ethnicity, race, region of origin, religion, sexual orientation, political alignment, occupation, social class, and other characteristics that define one's membership in a cultural group (Ruben, 2015). For this dissertation, national culture best fits the research topic.

This definition has limitations, nevertheless. Avruch (2012) criticized that the conventional way of using nationality as the definitional root for culture would suggest that culture is singular, relatively static, or homogeneous. However, every culture by itself contains multiple cultures because every group, regardless of how small it is, is not completely homogenous but rather a nested series of smaller groups that differ to some degree or another (Leeds-Hurwitz, 2013). Using nationality to represent culture may risk giving readers the impression that everyone from the same country would behave the same way.

This dissertation by no means implies that misconception but, instead, acknowledges that culture is much more than nationality. Since every culture, regardless of how small it is, always contains smaller groups of people, researchers need to make a decision for their intercultural studies based on the context of the specific topic. I maintain that if a broad conceptualization of culture should consider every group affiliation (e.g., race, sex, class, etc.) that distinguishes individuals, then intercultural communication would be no different from interpersonal communication. Instead, intercultural research should be about improving human interactions across differences or borders (Deardorff, 2019). Thus, what makes up the boundary between people should matter the most. The group affiliation taken as the definitional root for indicating an intercultural (not just interpersonal) interaction should create a significant, relevant divergence in the communicators' orientations to the social world (Spitzberg & Changnon, 2009). After all, culture unfolds through the negotiation of differences between members of different groups in their contacts (Collier, 2015). For this dissertation that studies living-abroad individuals, national culture should be the most relevant group identity influencing their communication patterns. For people who leave their country of origin for another country, country-level differences should make the experience of culture most salient. Therefore,

intercultural communication in this research is operationalized as communication that occurs between people who identify with different national cultures.

This dissertation has the potential to make significant theoretical and practical contributions. First and foremost, it can advance our understanding of the nature of ICC by bringing the individual and relational perspectives together. Debates between the two different conceptual views have been there for decades (Spitzberg & Changnon, 2009). Scholars appealed for more research anchoring the conceptualization and operationalization of ICC from a relational view (e.g., Chi & Suthers, 2015; Martin, 2015). Yet not much has been considered and done empirically to combine and reconcile these two seemingly competing approaches. The current study explores this critical direction. It focuses on intercultural personality traits as individual variables and social network properties as indicators of the relational context, and three competing models about their comparative effects on ICC were tested. It is expected that the dissertation will reveal whether this type of competence is a trait-based or relationally contingent concept, or both. The integration of social network theory and trait research can create novel knowledge about ICC with conjoined benefits from both individualistic and structuralist thinking (Robins & Kashima, 2008).

Methodologically, this study utilizes a novel technique—social network analysis (SNA)—to study ICC. As a cross-paradigmatic method, social network analysis allows researchers to recognize, quantify, and interpret the dynamics and mutual influences of individual action, dyadic interactions, and systematic structure (Kadushin, 2012). It allows for testing mixed-level hypotheses that involve factors spanning from the micro to the macro levels (Emirbayer, 1997). These characteristics make the method a good fit for intercultural research, which also emphasizes the interactional, fluid nature of communication (Smith, 1999). However,

only a very limited number of intercultural studies have recognized and utilized the benefits of this method to contribute new knowledge about human communication across cultures. Even among the limited studies in this direction, most focused on how social networks related to intercultural adaptation (e.g., Farh et al., 2017; Kim, 2001; Smith, 1999), not ICC. To my knowledge, only a couple (e.g., Chi & Suthers, 2015; Smith, 2002) have directly connected networks to ICC using SNA. The potential of SNA seems to be underestimated in the field of intercultural communication. This, perhaps, is largely due to the fact that the analytical tools of social network scholarship have been made widely available only in recent years, given technological advances (Chi & Martin, 2020; Perry et al., 2018). The dissertation expands the ICC literature by using an SNA design to capture relational antecedents of ICC.

Furthermore, the ICC literature often assumes that living-abroad people's competence only comes from interacting with local people. These people typically develop contacts with individuals from their own country (i.e., co-nationals), local people of the host country (i.e., host nationals), and individuals from other countries who are also in the host country (i.e., multi-nationals; Hendrickson et al., 2011). Studies on intercultural experiences tend to use a dichotomous host- and co-national typology to divide living-abroad people's relationships, which has largely ignored their multi-national relations (Chi, 2014). Some researchers even thought that co-national interactions would compete with host-national interactions, and multi-national contacts would not matter that much (e.g., Kim, 2001, 2005). However, Ong and Ward's (2005) research showed that 74.8% of international students' local connections were with multi-nationals. The dissertation challenges this conventional view, proposing that connections with all other nationals (regardless of whether they are host- or multi-nationals) are meaningful, as ICC is the competence to interact adequately across cultures, not just "becoming local." This decision is

likely to offer a better picture of living-abroad individuals' relational environment in the host country than the traditional approach that focuses exclusively on host-national ties.

The dissertation can also yield practical implications and recommendations. The development of ICC is a primary goal for intercultural training programs and international education (Landis & Bhawuk, 2020; Lantz-Deaton & Golubeva, 2020). The investigation of where ICC derives from can shed light on the directions of training or educational methods, giving trainers and educators better ideas about what to cultivate in their students and expatriates. For example, if personality is found to be the primary inner resource for ICC attainment, instructors and administrators should think about how their curriculum and programs can cultivate these critical traits in their students. Likewise, if social networks are found to determine ICC, they should work on appropriate administrative strategies that can help students develop the most advantageous social connections to maximize their learning outcomes. Therefore, adding to the theoretical significance, the dissertation can provide knowledge for practical areas in which ICC is applied.

In what follows, Chapter 2 reviews literature relevant to the topic. In the beginning, the two mainstream approaches to ICC conceptualization will be explained in detail. Then, a series of hypotheses about intercultural traits will be proposed based on trait theory, which represents an individual approach to studying ICC. Next, social network theory and the specific network characteristics relevant to ICC will be reviewed. The last section of the chapter will present a mixed-level framework that integrates the two seemingly competing perspectives, plus three alternative models to test the relationships between intercultural traits, social networks, and ICC. Chapter 3 will describe the study methods. Chapter 4 will present the data analysis results. Finally, chapter 5 will discuss how the findings can shed light on ICC research and practice.

CHAPTER 2: LITERATURE REVIEW

Individual and Relational Perspectives of Intercultural Competence

Although ICC generally refers to the competence to communicate in a culturally diverse context, how this concept is conceptualized and understood remains largely divergent between different research paradigms. One dominant line of scholarship understands the nature of ICC from an individual-based perspective. This view conceives ICC as being located inside a communicator (e.g., Kim, 1991). This competence, in essence, is a set of individual attributes such as traits, abilities, skills, capabilities, and intelligence (Leung et al., 2014; Spitzberg& Changnon, 2009). This scholarship assumes that individuals competent in one intercultural interaction must possess something internal that would also make them successful in other intercultural settings (Arasaratnam, 2009). Thus, this paradigm aims to figure out what makes some, but not other individuals, able to handle difficulties in intercultural communication easily and effectively (Van Dyne et al., 2010). This idea is reflected in Kim's (1991) definition, where ICC refers to the "*overall internal capability* of an individual to manage key challenging features of intercultural communication" (p. 259). In brief, an individual approach to ICC conceptualizes it as deriving from individual differences. Thus, the locus of competence rests within the individual.

Many conceptualizations reflect the individual perspective. For Chen and Starosta (1996), ICC consists of affective, cognitive, and behavioral characteristics that help the individual acknowledge, respect, tolerate, and integrate cultural differences. In Byram and colleagues' (Byram, 1997, 2003, 2009; Byram et al., 2001) framework, ICC refers to a repertoire of appropriate attitudes, cultural knowledge, interpreting and relating skills, critical cultural awareness, and interaction skills that a communicator has. Ang and Van Dyne (2008) equated

ICC with a concept called “cultural intelligence,” referring to one’s orientation to function effectively in culturally diverse settings. Somewhat analogous to cognitive intelligence and emotional intelligence (Mayer & Salovey, 1993), cultural intelligence is believed to be rooted in a person's genetic, dispositional, and personality-related underpinnings (Ang et al., 2020). Thus, cultural intelligence is a representative framework that approaches competence as internal to the individual.

Furthermore, the individual perspective also regards ICC as rooted in personality. Van der Zee and van Oudenhoven (2000, 2001, 2013) used the term “multicultural personality” to illustrate that certain personality traits can orient a person to act in specific ways in culturally diverse settings. They have summarized a five-factor model that includes the traits of cultural empathy, flexibility, open-mindedness, emotional stability, and social initiative to predict an individual's performance in intercultural settings (the model will be detailed in a later section). Common to these frameworks is that the individual communicator is the unit of analysis and the primary variable believed to serve as the foundation for competence.

Another line of scholarship takes a relational entry point to understanding ICC. The relational paradigm considers ICC to develop in interactions and relationships between people rather than within an individual (e.g., Abe & Wiseman, 1983; Hammer, 1987; Spitzberg, 1991). The relational perspective equates competence with evaluative impressions interactants make of each other (Spitzberg & Changnon, 2009). “Competence is an impression, not a behavior; an inference one makes, not an action one takes; an evaluation, not a performance” (Koester & Lustig, 2015, p. 20). This statement verifies the subjective nature of competence. ICC exists only when the conversational partner perceives a person to be competent. This idea is reflected in the definition of ICC as the *impression* that communicative behaviors are appropriate and effective

in a given context (Spitzberg, 1991; Spitzberg & Cupach, 1984). Hence, the relational approach conceives interacting dyads as the focal units of analysis.

Earlier relational models of ICC were adapted from those of general communication competence. In those frameworks (e.g., Imahori & Lanigan, 1989; Spitzberg, 1991; Spitzberg & Hecht, 1984), ICC was considered to equate to interpersonal competence, in the special context of intercultural communication. In general, interpersonal competence is evaluated based on the extent to which an interpersonal relationship is developed through communication (Rubin & Martin, 1994). Thus, Imahori and Lanigan (1989) argued that ICC should also be assessed based on the degree to which the communicators perceive intercultural interactions have achieved relational outcomes (also see Spitzberg, 1991; Spitzberg& Hecht, 1984). Relational outcomes include, for example, relational satisfaction, intimacy, attraction, uncertainty reduction, relational validation, mutual trust, social support, network integration, and so forth (Imahori & Lanigan, 1989; Spitzberg, 1991; Spitzberg & Hecht, 1984). The major difference between ICC and communication competence lies in the obstacles created in achieving these relational outcomes by communicators' cultural identities.

In a similar vein, communication accommodation theory, which explains how and why people accommodate their communicative behaviors to the actions of others in intercultural communication, is related to ICC (Gallois et al., 1995, 1988, 2005). According to the theory, one's adaptive or non-adaptive communication behaviors will be evaluated by their partner. Such evaluations directly relate to communication outcomes. When one evaluates the partner's adaptive behaviors as accurate, well-intended, and appropriate for their cultures, then one will be more engaged in the interaction and willing to communicate more in the future (outcomes). In this case, the partner is judged as interculturally competent. If one does not appreciate the

partner's accommodating behaviors, one will not intend future interactions. In this sense, the partner is perceived as incompetent. Hence, ICC captures one's impression of their partner's behaviors, leading to certain communication outcomes.

Haslett (2014, 2020) used a face model to describe ICC. Face is the positive regard for oneself and others in communication. Maintaining face in intercultural communication is complicated due to cultural differences. Nevertheless, a common face, or universal face, can be maintained by displaying respect to each other with human dignity. ICC is the extent to which both people feel their face is honored in an interaction. Thus, universal face is the communication outcome in this model (Haslett, 2014, 2020). The abovementioned models demonstrate that the relational perspective considers communication outcomes as essential parts of ICC's conceptualization. Relational inquiries into ICC have moved the focal units of analysis for competence from the individual to the dyad.

To summarize, the two perspectives hold essentially divergent opinions regarding the locus of competence. Although the individual perspective assumes a communication partner exists, it treats the individual as an isolated, independent unit to be observed and measured to assess one's competence (Hammer, 2015; Smith, 1996; Spitzberg & Changnon, 2009). The goal of the individual domain is to uncover a generalizable set of personal attributes that help a person overcome difficulties communicating with differences (Arasaratnam, 2009). In stark contrast, relational inquiries into competence emphasize the dialectical, ongoing, and subjective nature of communication for conceptualizing competence (Martin, 2015). Thus, the relational dyad is the focus of analysis. The relational perspective aims to understand what happens between the dyad members during a communication episode that leads to the impression of one's competence.

The two paradigms also diverge regarding how interactional outcomes should be conceptually treated for ICC. From an individual viewpoint, Kim (1991) contended that ICC should be conceptually distinguished from performance or outcomes, in that what one is able to do is fundamentally different from what one finally achieves, depending on the strength of this ability. One may not act out their competence on some occasions, but it does not mean that one is, thereof, incompetent. To illustrate, a competent driver with good driving skills may still have a traffic accident due to uncontrollable external factors (Kim, 1991). The relational perspective, though, is outcome-oriented: whether an interaction is deemed competent depends on how the interactants evaluate the outcomes of their communication. People may have very different ideas about what is appropriate or effective in accordance with their cultural identities and their partners' (Collier, 2015). One's ability to impress a partner in one communication setting does not guarantee that the same would occur in another situation (Smith, 1996). Thus, "individuals can be both communicatively competent and not competent" (Martin, 2015, p. 7). In a nutshell, the relational perspective presumes that ICC is relationally contingent and, thereupon, inevitably links to interpersonal products (Smith, 1996).

To date, the individual approach that defines competence based on personal attributes is still the mainstream paradigm in ICC research (Hammer, 2015). However, it has considerable limitations. Firstly, the interest in finding universal factors that can facilitate competent intercultural communication while minimizing confounding variables (Chi & Suthers, 2015). Given this approach, individual inquiries into ICC often fail to account for the influence of interactive and relational dynamics (Smith, 1996). That is, competence factors under the individual-based frameworks are decontextualized from the social environment in which communication occurs (Chi & Suthers, 2015). Collier (1998) questioned the so-called universal

repertoire of constituents of competence by asking, “Competence and acceptance from whom? Who decides the criteria? Who does not?” (p. 142). Therefore, assuming the communicator as an isolated, independent unit is problematic.

Furthermore, individual-based conceptualizations did not consider interactional outcomes such as relationship development as part of ICC, which may have ignored the incongruity between internal competence and actual performance undertaken (Ruben, 2015). People with good intentions may not always exhibit the same goodness in their behaviors toward their interactions partner (Ruben, 2015). Hence, the relational perspective argues that communication competence is an *interpersonal* rather than *intrapersonal* construct; the evaluation of competence should take what is expressed between people into consideration (Smith, 1996).

Due to these shortcomings, researchers often call for more studies that move beyond the individual focus toward a relational perspective on ICC (e.g., Chen, 2014; Deardorff, 2009). A relational perspective allows for more sophisticated modeling of competence, as located in an interaction per se (Spitzberg & Changnon, 2009). Nevertheless, current relational conceptualizations of ICC have problems as well. A major concern is with the operationalization of ICC, which, in this perspective, is subjectively judged by the communication partners. This means that perceived competence can be inconsistent across different people, situations, relationships, and encounters (Kim, 1991). Consequently, it is difficult, if not impossible, to establish generalizable evaluation standards and tools for relational ICC that can be applied universally. Due to this dilemma, individual-focused explanations remain the most intuitive theoretical and measurement approach in the ICC literature, despite decades of attempts to incorporate more interactional, relational, and contextual dynamics into the research (Spitzberg & Changnon, 2009).

With these many disagreements, can researchers reconcile ideas of the two perspectives for a more integrated, comprehensive understanding of the concept? Since both domains have their pros and cons, how can researchers embrace the strengths of each? This dissertation aims to bring together the individual and relational traditions of ICC research by examining its locus. If ICC is an internal concept, there should be some stable traits inside the individual that can facilitate their competent performance in intercultural settings. If ICC is a relational construct, the social environment constructed by one's immediate relationships should influence one's competence. With technological advancements in recent years, computer programs for social network analysis have been invented, which makes it possible to operationalize and study relational ICC (Chi & Martin, 2020). Accordingly, this dissertation will use the social network analysis method to examine these ideas, under the theoretical underpinnings of social networks and personality traits. Later sections of this dissertation will detail these theoretical frameworks further and propose research questions and hypotheses for the dissertation study, anchored in these considerations.

Intercultural Competence as Behavioral Orientation

The concept of ICC should be defined further for the purposes of this dissertation, beyond the definition provided in the introductory section. Kealey's (2015) argued that defining ICC in terms of interaction behaviors was the most promising way to predict successful intercultural communication. I agree with Kealey's statement in that the core of communication competence should be the art of communicating, namely, the communication behavior (Smith, 1996). ICC should be behaviorally visible and meaningful to all parties involved in a communication episode (Blair, 2017). Accordingly, I adopt Schnabel's (2015) definitional

framework, called the onion model, that refers to ICC as an overall behavioral orientation to interact adequately and effectively with people from different cultures.

Defining ICC as a global behavioral tendency in intercultural settings implies that traits and relationships are understood as potential influencers of ICC, but not ICC constitutes per se. This idea corresponds to the onion model of ICC (Schnabel, 2015; Schnabel et al., 2015), in which personality traits, knowledge, and attitudes were considered the background determinants of ICC as an outside layer (see Figure1), instead of competence in and of themselves. I also disagree with Chi and Suthers's (2015) operationalization, in which ICC was directly equated to one's intercultural relations. Any form of competence does not come from a vacuum (Wiemann & Kelly, 1981). If ICC is identical to one's existing relationships, then where is this competence coming from? Most of the time, it is the experience of interacting with others that exposes people to cultural differences, through which they learn, grow, and form some behavioral orientations while responding to those differences. Hence, I maintain that one's intercultural relationships are also facilitators of competence rather than competence by itself.

The onion model (Schnabel, 2015; Schnabel et al., 2015), as an operational framework for the concept of ICC in this study, also proposes what constitutes ICC. Figure 1 and Table 1 present a summary of these components. In this framework, ICC consists of five behavioral-based constructs at the core that orient people to master intercultural situations. Firstly, the behavioral orientation toward *communication* probes into how people react to their intercultural interactions. This dimension contains four facets: *sensitivity* (being sensitive to nonverbal and verbal components of communication), *clarity* (effective articulation of messages), *flexibility* (being adaptive to the co-actor in accordance with the situation), and *perspective-taking* (observing circumstances from another person's point of view) in

communication. The second construct is *learning* orientation, or the motivation to expand one's knowledge to perform better through learning in intercultural situations. Learning includes a *willingness to use a foreign language*, a *willingness to learn* new things and gain new insights with time investment, and purposefully *seeking information* about another culture.

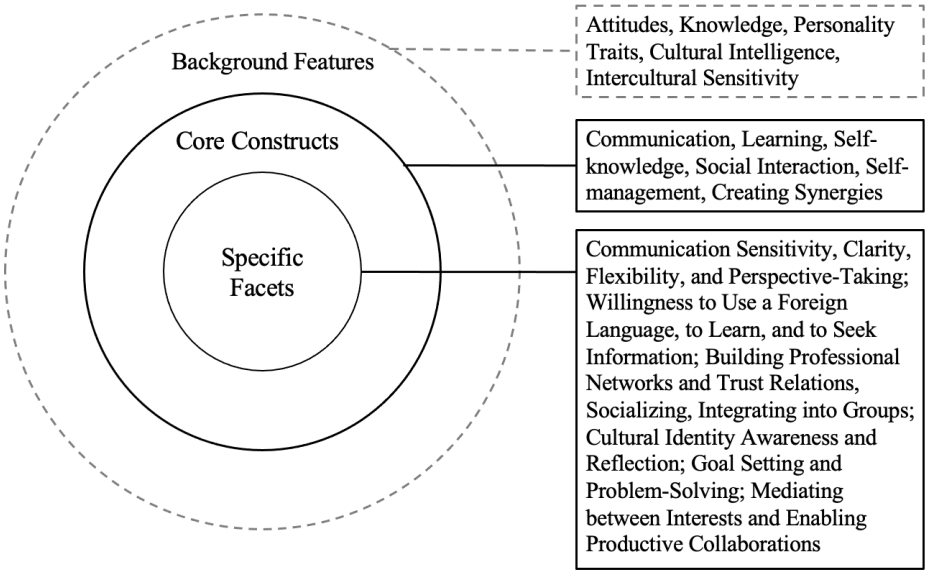
The next dimension, *social interaction,* is the tendency to build interpersonal relationships in a foreign country, including building *professional networks and trust relationships*, *integrating into a new group* easily, and *socializing* with new contacts. Fourthly, ICC requires *self-knowledge* regarding the *awareness of one's own identity* and a constant *reflection of this identity*. The fifth dimension is *self-management*, or the tendency to manage one's behaviors in intercultural communication, which involves *goal setting* (i.e., having clear aims and implementing them consistently in intercultural settings) and *problem solving* (i.e., strategically solving problems in an intercultural context). Lastly, the sixth dimension is *creating synergies* (i.e., approaching communication with collaboration and joint aims) with the other interactant. This dimension contains two components: *mediating between different interests* to achieve the greatest possible benefit from different approaches, and *enabling productive collaboration* in teamwork if misunderstanding or conflicting interests exist.

Schnabel et al. (2015) created a short version of the ICC measure corresponding to this onion model. In this measure, the specific facets are simplified, with each core construct represented by one facet for a better operationalization of the concept. Precisely, the *communication* dimension was represented by the facet of *sensitivity in communication*, with the *learning* dimension indicated by *information seeking*, *social interaction* indicated by the construct of *socializing*, *self-knowledge* represented by *identity reflection*, *self-*

management denoted by *strategic problem solving*, and *creating synergies* described by *mediating differences*.

Figure 1

Onion Model of Intercultural Competence



Source: Adapted from Schnabel (2015).

The conceptual framework of the onion model fits the goal of bridging insights of both perspectives into one study. First off, it emphasizes the communicative and interactive nature of ICC, reflecting the core spirit of the relational paradigm. Many core constructs such as communication, social interaction, self-management, and creating synergies in the model intrinsically pertain to intercultural interactions per se. Smith (1996) argued that the art of communicating should be conceptualized as the core of ICC. These constructs meet this need. As such, the onion model avoids the problem of detaching internal attributes from the interactional context present frequently in the individual paradigm (e.g., Arasaratnam et al., 2010; van der Zee & van Oudenhoven, 2000).

Secondly, the onion model incorporates facets of cultural differences, such as cultural identity awareness, identity reflection, and learning a foreign language, making the

conceptualization of ICC significantly different from interpersonal communication competence. Some models in the relational paradigm (e.g., Imahori & Lanigan, 1989; Spitzberg, 1991; Spitzberg & Hecht, 1984) have been criticized for equating ICC with interpersonal competence (Kim, 1991). The onion model overcomes this pitfall and aligns itself with Deardorff's (2019) notion that ICC should be about improving human interactions across differences or borders. Furthermore, defining ICC as an overall behavioral tendency makes measuring the concept operationalizable. The relational perspective of competence, though it is often seen as an improvement over the individual perspective (Spitzberg & Changnon, 2009), has the problem of generalizability. As Kim (1991) commented, defining ICC based on communicators' impressions of the interaction outcomes makes evaluation too dependent on the specific relationship and context. A behavioral orientation in intercultural settings is a visible performance to one's communication partner but also simultaneously measurable with standard Likert-type items (or other scales). For these reasons, the onion model (Schnabel, 2015; Schnabel et al., 2015) is believed to minimize shortcomings of existing models aligned with only one or the other paradigm. Therefore, the onion model is selected in the current study to examine whether ICC derives from individual, relational sources, or both.

Table 1

Descriptions of Components in the Onion Model of ICC

Underlying Constructs	Descriptions	Key Facets	Definitions
Communication	"In an international context, it is particularly important to be responsive to the person one is talking to and to be able to direct the conversation actively. In intercultural communication, verbal as well as non-verbal aspects play an important role" (Schnabel, 2015, p. 194).	Communication sensitivity	Put oneself in the position of another, being sensitive to nonverbal and paraverbal cues in intercultural communication
		Clarity in communication	Effectively articulate messages
		Flexibility in communication	Adapt to the communication situation and the other's behaviors
		Perspective-taking in communication	Understand another person's thinking and observe circumstances from their point of view
Learning	"During cooperation with people from other cultures or during a stay abroad, individuals are often faced with unknown situations. This requires the motivation of a person to extend their own knowledge and to perform intercultural important behavioral patterns. Persons are seen as being capable of learning if they recognize that they have gaps in their knowledge and, as a consequence, invest time in improving their knowledge" (Schnabel, 2015, p. 194).	Willingness to use a foreign language	Use a foreign language independent of how well it is spoken
		Willingness to learn	Gain new insights and invest time in learning new things
		Information seeking	Purposeful collect information about other cultures to accumulate valuable practical knowledge

Social interaction	"The building of interpersonal relationships is of great importance, particularly during a stay abroad. Relationships with other people positively influence our own well-being and can reduce or prevent stress and avoid culture shock. Furthermore, a well-functioning network can offer support when it comes to achieving aims and satisfying needs" (Schnabel, 2015, p. 194).	Building professional networks	Establish trustable relationships with people from different cultures quickly
		Socializing	Make new contacts with people from other cultures quickly and maintain these contacts
		Integration in groups	Easily integrate oneself into an existing group and operate successfully in different systems
		Building trusting relationships	Consciously create networks consisting of supporting people to meet one's life goals
Self-knowledge	"Actively reflecting and, thus, understanding of one's own cultural identity increases self-knowledge and positively influences the awareness of and also the successful interaction with other cultures" (Schnabel, 2015, p. 194).	Identity awareness	Be aware of one's own cultural identity and norms
		Identity reflection	Intensively and constantly think about one's own cultural character
Self-management	"A stay abroad or cooperation with people from other cultures involves some challenges, which must be dealt with. Problems can arise, which have to be solved. Circumstances for the achievement of aims are more demanding and the new working and living environment can cause stress. The existence of strategies, which make dealing with these challenges easier is, therefore, of great importance" (Schnabel, 2015, p. 194).	Goal setting	Set up clear goals and implement them consistently
		Problem solving	Recognize various solutions to problems one encounters in an international context

Creating synergies	"Different ways of working as well as diverse interests and approaches come together during intercultural cooperation. When a joint aim is to be achieved, it is of great importance to have the ability to resolve potential misunderstandings and lead a group towards common solutions" (Schnabel, 2015, p. 194).	Mediating differences	Mediating between different parties that have different interests to achieve the greatest possible benefit for the whole
		Enabling productive collaborations	Solve misunderstandings between people and deal with different approaches in teamwork

Source: Adapted from Schnabel (2015) and Schnabel et al. (2015).

A Trait Approach to Intercultural Competence

The Trait Perspective

The individual paradigm equates ICC with attributes that an individual possesses, such as abilities, skills, capabilities, and intelligence (Leung et al., 2014; Spitzberg & Changnon, 2009). ICC has also been considered a set of personality traits in the literature, such as a multicultural personality (e.g., Hofhuis et al., 2020; Horverak et al., 2013; Leong, 2007; van der Zee & van Oudenhoven, 2000, 2001, 2013). The trait perspective is one of the major theoretical approaches to studying individual differences (Novikova, 2013). Thus, the tradition of conceiving ICC as deriving from traits is selected in the current study to represent the view that competence has its locus within the individual.

Traits are "dimensions of individual differences in tendencies to show consistent patterns of thoughts, feelings, and actions" (McCrae & Costa, 1990, p. 23). Costa and McCrae (2003) defined *personality traits* as enduring personal characteristics that determine (but do not equal) habitual behaviors. As a general theoretical perspective of personality (Epstein, 1994), the trait perspective contains many versions or so-called "sub-theories" (McCrae & Costa, 2008, p. 165), such as McCrae and Costa's (2003, 2008) five-factor model of personality (also known as the "Big 5" or "Five-factor model") or Cattell's (1973, 1990) sixteen personality factor model. However, different versions of the trait understanding of personality share the same tenets. Specifically, a trait perspective on personality assumes that humans differ from each other in psychologically significant ways; the locus of causation of human behavior is in the individual (McCrae & Costa, 2008). Tenets of the trait perspective include that: (1) traits explain much of what defines a person; (2) traits have some degree of overtime and cross-situational consistency; (3) personality traits have a biological basis and, thus, cross-cultural generality; and (4) traits can

be observed and quantitively assessed based on the levels of some major dispositions that people exhibit (Matthews et al., 2009; McCrae & John, 1992). Humans manifest an abundance of dispositions, but only a small number of traits are considered central to personality (Guy et al., 2011). Different trait models attempt to identify these primary traits and use them to describe varied degrees of expression in individuals that influence behavior (Guy et al., 2011; Novikova, 2013).

For example, the five-factor trait model, or the Big Five (e.g., Costa & McCrae, 2006; DeYoung et al., 2013; Goldberg, 1992; McCrae & Costa, 2008) has been accepted by most researchers as a reasonable representation of personality dimensions (Schmitt, 2014). The five traits are labeled *neuroticism*, *extraversion*, *openness*, *agreeableness*, and *conscientiousness* (McCrae & Costa, 2008). Each trait is defined by a rich body of more specific traits (Jayawickreme et al., 2019). *Agreeableness* means being kind, generous, forgiving, unassuming, ingenuous, or tender-minded (Costa & McCrae, 1998). A *conscientious* person is careful, thorough, diligent, responsible, organized, achievement-oriented, self-disciplined, and deliberate (Jayawickreme et al., 2019). *Extraversion* represents a person being energetic, sociable, talkative, assertive, and emotionally expressive (Goldberg, 1990). An individual who is *open to experiences* is imaginative and insightful and has broad interests (Goldberg, 1990). *Neuroticism* is opposite to emotional stability, meaning nervousness, moodiness, and a temperamental nature (Huang et al., 2005). The model contends that almost every aspect of individual differences can relate to one or more of the five traits (Costa & McCrae, 1998). One's personality can be described by a combination of levels of these traits (Fleeson & Jayawickreme, 2015). The five traits were found to predict a wide range of behaviors such as job performance (for a review, see Judge et al., 2002), academic performance (as reviewed by Poropat, 2009), alcohol involvement

(see Malouff et al., 2007 for a review) and organizational citizenship behaviors (e.g., Chiaburu et al.'s review, 2011).

Though behaviors are considered to be influenced by traits, the trait perspective of personality does not equate traits with behaviors (McCrae & Costa, 2008). Behaviors are about how a person acts in a situation, whereas traits are human qualities that set an individual apart from others (Costa & McCrae, 1998; McCrae & Costa, 2008). Traits can manifest themselves in observable behaviors but cannot be directly inferred from behaviors, in that a mature individual's action is determined not only by their intrinsic attributes but also by the environment (Lloyd, 2022). That is, "dispositions + context = practices" (Lahire, 2012, p. 24). Traits, the situation, and the interaction between the two altogether determine how an individual thinks, feels, and behaves (Steyer et al., 1999). As Costa and McCrae (1998) noted, "Traits describe recurrent patterns of thought and behavior, but they say nothing about the moment-to-moment flow of behavior" (p. 1114). Instead, traits broadly explain individuals' psychological functioning, allowing people to conclude that individuals with similar traits are *likely* to act in a particular way (Costa & McCrae, 1998; McCrae & Costa, 2008).

Personality traits have cross-situational consistency, meaning they are not specific to a certain task or situation (Ramirez, 2016), which raises the question of how much consistency is needed for something to become a trait. A trait is often distinguished from the concept of state—the transient evocation of action or mood (Eysenck, 1994). Eysenck (1994) proposed that traits could be thought of as the summation of states. More specifically, individuals can be imagined as having distributions of states; dense distributions of states indicate a trait. To illustrate, arguing with others one or two times (the state) does not mean a person is argumentative by trait. But if a person frequently engages in arguments, or is often in an argumentative state, then the person

can be said to have a high level of the argumentativeness trait (Infante et al., 1996). Hence, personality traits are features that aggregate across many instances, average out other traits, and emerge as patterns of behavior (Costa & McCrae, 1998).

Where do personality traits derive from? There is wide agreement among psychologists that personality has a biological origin (Matthews, 2017). Personality traits are rooted in genetically determined neurobiological structures in the brain, and they develop in a socio-culturally conditioned way (Eysenck, 1990). As Henry Murray put it, "no brain, no personality" (as cited in Costa & McCrae, 1998, p. 108). But, at the same time, the biologically prime determinants of personality must coordinate with life experiences (Janis et al., 1969), which is somewhat analogous to the case of language learning. Humans are born with an innate capacity to speak languages, but they must also learn a language through socialization in order to speak it (Costa & McCrae, 1998). In short, personality is both genetically and experientially regulated.

In a nutshell, the trait perspective maintains that humans possess an inherent composite of personality; genes and early childhood experience shape much of one's personality (e.g., Jayawickreme & Fleeson, 2017; Matthews, 2017; McCrae & Costa, 2008). Personality traits have natured as well as nurtured bases. Personality determines behaviors in that it determines the overall style of behavior, but it does not predict the exact action that the individual will take in a specific context; external forces outside the individual will co-dictate how one thinks and what one does.

Intercultural Personality Traits for Intercultural Competence

The trait perspective implies that people with similar personality traits tend to have similar behavioral styles in intercultural settings. Specifically, the trait perspective argues that individuals who possess key personality traits that fit a given environment will be more effective

and will become more successful in such an environment, compared to those who do not have such personality traits (Wilson et al., 2013). Communicating in an intercultural setting tends to be challenging and even threatening due to the exoticism, novelty, adventure, inconvenience, strangeness, uncertainty, loss of control, and identity threats associated with this communication setting (van der Zee & van Oudenhoven, 2013). In the same vein, possessing key traits that fit these environmental characteristics should help individuals manage the challenges of intercultural communication better. For example, Ang et al. (2006) found that openness to experience (one of the Big Five dimensions) positively related to all aspects of cultural intelligence. Wilson et al.'s (2013) meta-analysis summarized that the Big Five dimensions of agreeableness, conscientiousness, openness, and extraversion had positive whereas neuroticism had negative (small to medium) effects on cultural competence, as measured by the sociocultural adaptation scale. Nguyen and Benet-Martínez's (2007) study revealed that less neuroticism and more openness enhanced participants' biculturalism. Therefore, this body of literature implies that certain personality traits can orient individuals to react to cultural diversity competently.

The Big Five model is a reasonable but broad summary of personality; it does not attune the trait content to a specific type of context (Matthews, 2017; Schmitt, 2014). For example, Bergner et al. (2010) discovered that narrower traits added incremental validity over and beyond the Big Five to the prediction of managerial performance. Schmitt (2014) suggested that scientists should thoughtfully choose the personality facets pertinent to the criteria of a situation, so as to achieve the highest criterion-related validity. Hence, narrower traits that are attuned to intercultural contexts should be more suitable for predicting intercultural outcomes than general traits such as the Big Five (van der Zee & van Oudenhoven, 2013).

In this regard, intercultural traits (van der Zee & van Oudenhoven, 2000, 2001, 2013; van der Zee et al., 2013) are those tailor-made personality aspects specifically pertinent to intercultural contexts. Personality traits refer to enduring individual attributes that govern a stable pattern of cross-situational behaviors (Costa & McCrae, 1992). In accordance, intercultural traits are those enduring personality traits governing an individual's typical behaviors in intercultural communication (Leung et al., 2014).

The Multicultural Personality Questionnaire (MPQ; van der Zee & van Oudenhoven, 2000, 2001; van der Zee et al., 2013), as a measure of intercultural personality, extracted five primary traits for achieving intercultural effectiveness. The first trait is *emotional stability*, defined as the tendency to stay calm in novel and stressful conditions. The second trait is *flexibility*, defined as the disposition to interpret uncertain situations as positive challenges and switch easily from one behavioral strategy to another accordingly. Thirdly, *open-mindedness* refers to an open and unprejudiced attitude toward cultural differences. *Social initiative* involves the courage to take action and make things happen, for example, approaching social situations and initiating a conversation instead of waiting or watching things happen. Lastly, *cultural empathy* is the propensity to empathize with the feelings, thoughts, and behaviors of others from culturally diverse backgrounds (van der Zee & van Oudenhoven, 2000, 2001; van der Zee et al., 2013). Van der Zee and van Oudenhoven (2013) noted that the MPQ traits, except for flexibility, are conceptually close to and significantly overlap with the Big Five, but they are attuned to reflect domain-specific intercultural constructs.

The MPQ traits are sorted into two subsets (van der Zee & van Oudenhoven, 2013). Firstly, emotional stability and flexibility are *stress-buffering traits* that function to reduce the sense of threat individuals experience when confronted with novel cultural situations. Second,

cultural empathy, open-mindedness, and social initiative are *social-perceptual traits* that increase the tendency to perceive intercultural interactions as a positive challenge (instead of a threat) and subsequently drive to adapt accordingly. Both stress-buffering and social-perceptual traits are expected to facilitate positive affective responses and competent communicative behaviors in intercultural settings, but for slightly different reasons (van der Zee & van Oudenhoven. 2013).

Stress-buffering traits predispose the individual to manage negative affects effectively and be less sensitive to threats (van der Zee & van Oudenhoven, 2013). The novelty, inconvenience, strangeness, and uncertainty of intercultural communication can create feelings of stress, frustration, and anxiety (Logan et al., 2014; Neuliep, 2012; Samochowiec & Florack, 2010). However, the tendency to stay calm and relaxed rather than panicked or irritated can help communicators avoid being emotionally overwhelmed (van der Zee & van Oudenhoven, 2000, 2013). That is, the trait of emotional stability can assist them in dealing with psychological stress and staying functioning under challenging circumstances. The trait of flexibility is also critical in that it enables individuals to learn from new experiences, mature based on those mistakes, and adjust their behaviors as required to correspond with unexpected situations in intercultural communication (van der Zee & van Oudenhoven, 2000). Being flexible can also demonstrate one's respect for and willingness to accommodate the communication partner (Ortiz, 2005; Zaidman, 2001). Thus, the two stress-buffering traits should positively relate to ICC.

Social-perceptual traits (i.e., cultural empathy, open-mindedness, and social initiative) can reinforce positive feelings toward other cultures, orienting the individual to actively cope with the challenges of intercultural situations (van der Zee, van Oudenhoven, et al., 2004; van der Zee & van der Gang, 2007). With the trait of social initiative, or the inclination toward actions and results, individuals tend to adopt constructive strategies in social interactions, such as

initiating communication, establishing new relationships with outgroup people, and solving difficulties in their abroad life through actively seeking help from their social connections (van Oudenhoven & van der Zee, 2002). People with the trait of open-mindedness tend to be intellectually curious and willing to try new things; thus, they are not afraid of but feel attracted to new and unknown conditions (Luijters et al., 2006; Ramirez, 2016). On the contrary, close-minded individuals prefer plain, straightforward, and obvious communication, without much tolerance for complex, ambiguous, and subtle situations (Costa & McCrae, 1992). Thus, the trait of open-mindedness should aid individuals abroad in managing the challenges of intercultural life. The other trait—cultural empathy, directly relates to ICC because it has been conceptualized as part of intercultural sensitivity, an affective aspect of ICC (Bennett, 1986; Chen & Starosta, 2000; Hammer et al., 2003). The orientations to project an interest in the intercultural communication partner, to assess the partner's thoughts and feelings accurately, and to reflect reasonably on the partner's experiences are elements for achieving intercultural effectiveness (Ruben, 1976). Correspondingly, the three social-perceptual traits should also be positively associated with ICC.

In short, van der Zee and van Oudenhoven (2013) summarized that stress-buffering traits protect an individual against culture shock, whereas social-perceptual traits can facilitate the ability to bridge cultural differences. Thus, the MPQ traits can be postulated to foster living-abroad individuals' ICC, specifically:

> *H1: Emotional stability is positively associated with ICC, that is, with communication sensitivity (H1a), mediating differences (H1b), information seeking (H1c), identity reflection (H1d), problem solving (H1e), and socializing (H1f).*

H2: Flexibility is positively associated with ICC, that is, with communication sensitivity (H2a), mediating differences (H2b), information seeking (H2c), identity reflection (H2d), problem solving (H2e), and socializing (H2f).

H3: Open-mindedness is positively associated with ICC, that is, with communication sensitivity (H3a), mediating differences (H3b), information seeking (H3c), identity reflection (H3d), problem solving (H3e), and socializing (H3f).

H4: Social initiative is positively associated with ICC, that is, with communication sensitivity (H4a), mediating differences (H4b), information seeking (H4c), identity reflection (H4d), problem solving (H4e), and socializing (H4f).

H5: Cultural empathy is positively associated with ICC, that is, with communication sensitivity (H5a), mediating differences (H5b), information seeking (H5c), identity reflection (H5d), problem solving (H5e), and socializing (H5f).

A Network Approach to Intercultural Competence

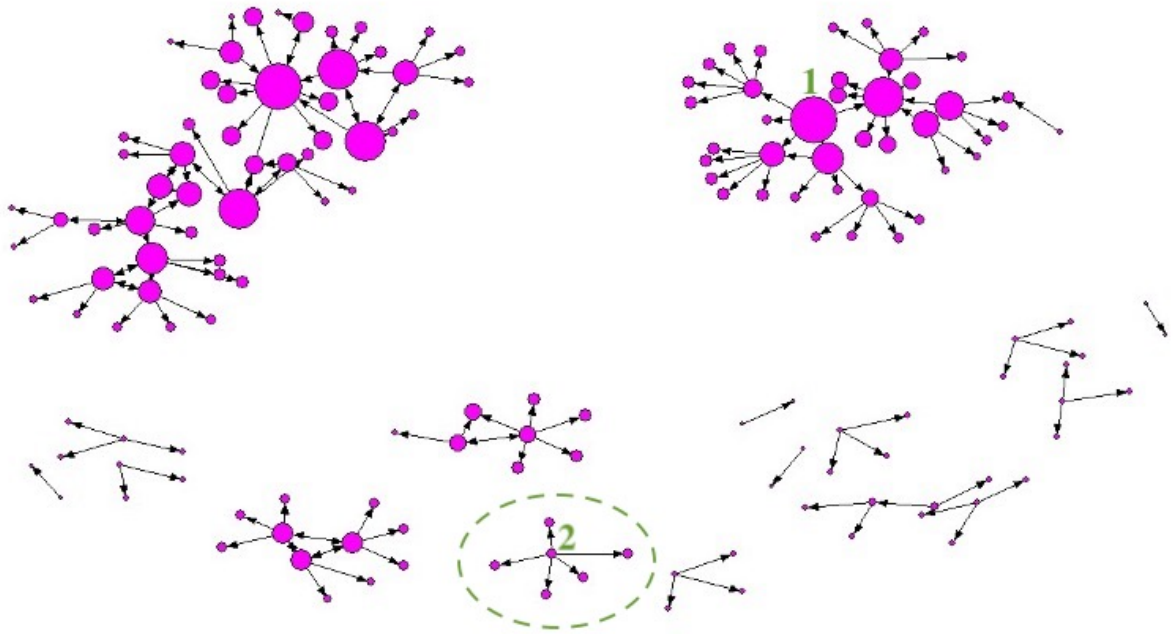
The relational perspective conceptualizes ICC as a relationally contingent concept as "impressions of intercultural competence are always contextually contingent and situated in macro structures" (Collier, 2015, p. 10). If ICC is a relational construct, then the communicator's social relationships in an intercultural environment matter. That is to say, if ICC is derived from interpersonal relationships, then a communicator's social networks should reveal useful information, such as, whom the communicator is friends with, what cultures the communicator is exposed to through these contacts, and how the diversity of the communicator's social networks impacts their ICC. Accordingly, current knowledge from research on social network theory and network analysis should further our understanding of ICC as a relational outcome.

Social Network Theory

A social network is defined as a set of socially relevant nodes (e.g., persons, objects, events, organizations, or other entities) linked by one or more ties of certain types (e.g., friendship, kinship, communication, or advice seeking; Chi, 2014; Marin & Wellman, 2011). Social network analysis (SNA) involves detecting and interpreting patterns of social ties among a set of entities (de Nooy et al., 2005). Wang et al.'s (2021) study on the diffusion of a new household waste management policy in Shanghai city is an example of using SNA to detect and interpret the patterns and influences of network relations. Specifically, the network shown in Figure 2 was generated by asking participants to indicate whom they talked to about this policy in person.

Figure 2

Communication Network for Waste Separation in Wang et al.'s (2021) Study



Note: Larger nodes indicate people who talk more about waste separation to others (indicated by two-step eigenvector centrality, a central tendency index).

Nodes (i.e., the pink dots) in this figure indicate *actors* (i.e., participants in the study). Characteristics of the nodes (e.g., age, gender, or personality) are referred to as *node attributes*

(Borgatti et al., 2018). *Ties* linking these nodes (also called *edges*) have some inherent properties: tie strength, relationship type, direction, and so forth. For example, *tie strength* describes how strong or how weak a relation is in the network (Granovetter, 1973, 1983). Network research often differentiates the roles of strong ties versus weak ties, with the former referring to repeated or intensive relations, such as close friends, and the latter implying occasional or superficial interactions, such as acquaintances (Everton, 2012). Based on a study's interest, the researchers may choose a particular *type of relations* on which to focus. In Wang et al.'s (2021) example, the network was generated by a "who-talks-to-whom" relation. Meanwhile, network ties may or may not have *directionality,* representing a logical sense of direction in the relationship (Everton, 2012). For example, information can flow from one person to another, or someone may advise another person in the network (Borgatti et al., 2018). The arrows in Figure 2 represent the direction of who initiated the conversation about the new waste management policy.

Social scientists have investigated two kinds of networks: whole networks (also called global networks, socio-centric networks, complete networks, or full networks) and ego-centric networks (also called ego networks or personal networks). *A whole network* includes all nodes and links among them in a given set of entities (Borgatti et al., 2018). For instance, Figure 2 represents a full network of the investigated community. *An egocentric network* includes only direct connections to a focal node (Kadushin, 2012). For example, someone's friendship network that includes the person's friends only is an ego network. The focal person is called the *ego*, and their connected friends are *alters* (Borgatti et al., 2018). If the circled part of Figure 2 is extracted from the whole network, then it can be seen as an ego network where Node 2 is the ego and the other five nodes directly tied to it are its alters.

Some scholars argue that SNA was a collection of methods (e.g., Granovetter, 1979), but others hold that these methods rest on a common set of assumptions (to be discussed later) and have formed a shared theoretical perspective to understand social phenomena in a systematical manner (e.g., Everton, 2012). As Littlejohn et al. (2021) remarked, network theory comprises a set of ideas that different researchers have contributed to examining social structure by looking at patterns of interaction among individuals and groups. Thus, Littlejohn et al. (2021) referred to it as "network theory" in their book on theories of human communication, and the same opinion was held in Kadushin's (2012) book. Similarly, Perry et al. (2018) articulated that "our shared position is that network science is a perspective or framework that can be tailored to generate theories applicable to specific phenomena" (p. 7). Chi and Martin (2020) also noted that the theoretical perspective of network research has revolutionized thinking in natural and social sciences. Thereupon, social network in this dissertation is taken as a theoretical as well as methodological approach.

Network theory rests on a socio-structural assumption that human activity can be explained by analyzing relationships among and between actors (Smith, 1996, 1999). Precisely, the theory assumes that an individual's behavior emanates and is conducted within a context (Harre et al., 1985). This context is the product of social processes that can be modeled via networks (Smith, 1999). Networks, or the social context in which a person is embedded, place structural constraints on and/or offer opportunities to actors of the system (Kadushin, 2012). Individual action or performance is influenced or even shaped by the social environment in which the person is nested. For instance, when you run out of salt while preparing a meal, whether you can borrow salt from your neighbors depends on whether your neighbors have salt and whether they are willing to do you this trivial favor (i.e., your relationship with them). Thus,

actors and their actions are interdependent with other actors in a local community (Everton, 2012).

Interconnectedness is a basic premise of networks, meaning that people who interact with one another are connected in groups that are, in turn, tied together into a network system (Littlejohn & Foss, 2011). SNA sees the attitudes and behaviors of individuals as embedded in the relatedness of their environment (Chi & Suthers, 2015). "Humans come to believe in a world full of continuous, neatly bounded, self-propelling individuals whose intentions interact with accidents and natural limits to produce all of social life" (McAdam et al., 2001, p. 131). In network theory, connections come into existence when actors communicate with one another, and it is such connections among individuals and groups that create social structures (e.g., Monge, 1987; Stohl, 1995). Namely, the social world is a system composed of networks, as opposed to aggregated individuals (Wellman, 1988). Accordingly, network analysis is a way of thinking about a social system by focusing on the relations among individuals (or other entities) that constitute the system, rather than the individuals themselves (Borgatti et al., 2018). In other words, the relations per se are the focus of analysis. A person's cosmology is revealed in the networks that mark the social individual (Smith, 2013). Thereupon, in SNA, the term *social structure* denotes the structure of existing relations or the patterns of links between actors (Everton, 2012; Smith, 1999).

According to network theory, relations are more influential for human behavior than individual characteristics, and the structure of networks is even more momentous than any given relations (Freeman, 2000). The structural properties of networks exert influences on the performance of actors and even the efficiency of the whole network (Blau, 1993; Everton, 2012). More specifically, a person's position within a social structure (i.e., structural location in the

network) is highly impactful for their attitudes, beliefs, cognition, intentions, identities, and observed behaviors (Everton, 2012). For instance, Wang et al.'s (2021) study found that participants' knowledge of household waste separation was related to their centrality in the information network. Meanwhile, social norms and institutions often emerge from the social space formed by relations (Kadushin, 2012; Wellman, 1988). All in all, social network theory contends that the structure of social relations determines what people do, how they think, and even who they are.

How does network structure come to determine the potential of the individual or even the society? Network theory contends that relationships and their structure place constraints and opportunities on individuals connected to this network (Marsden, 1990). One's likelihood of developing certain social relations depends on the contact opportunities offered by their community, organization, or other type of networking space (Blau, 1993). Linkages between individuals are conduits for material and non-material substances such as information, resources, norms, opinions, affects, and even diseases to flow, transfer, or diffuse (Everton, 2012). Networks function to control information flow, allow for resource exchanges, provide social support, enhance social influence, transmit norms and ideas, and bring people with commonalities together (Monge & Contractor, 2003; Shumate & Contractor, 2014). Through these functions, a network limits or defines the possibilities afforded to individuals and to communities.

What does SNA entail, specifically, in research? The general goal of SNA is to understand, account for, and even predict occurring patterns of interactions or relationships between network units (Kadushin, 2012). In a typical SNA study, researchers seek to understand the determinants of relational patterns and the outcomes of these social relationship structures

(Chi & Suthers, 2015; Degenne & Forsé, 1999). Network research often aims to answer questions about (1) what leads to specific relational patterns or structures of networks, and (2) what impacts networks have on their individuals or group members (Borgatti & Halgin, 2011). In investigations, network factors can be hypothesized as explanatory variables, outcome variables, or both (Borgatti et al., 2018).

SNA is deemed as a cross-level research paradigm (Bernard & Killworth, 1997). More specifically, there are three levels of analysis that characterize network research: node, dyad, and group (i.e., network; Borgatti et al., 2018). The analysis at the node level can relate attributes or characteristics of nodes to their structural positions in networks. An example question is "Are employees who are more central in an organizational trust network more likely to be promoted?" (Borgatti et al., 2018); or, vice versa: "Are leaders of an organization more central in an organizational trust network?". The dyadic level focuses on pairwise relations between nodes (Borgatti et al., 2018). A research question at this level may use one type of relation to predict another network relationship. For example, "Are professors who coauthored before more likely to develop a friendship?". A network-level investigation uses networks as the analytic units to study the sources and effects of networks. An example question would be, "Does the density of a team's friendship network influence team performance?". In this way, SNA brings in the consideration for social structure at different levels of analysis. It enables researchers to switch between "zooming in" and "zooming out" views to look at individual action in the emergence of social processes (Ibarra et al., 2005). Thus, SNA offers researchers the opportunity to answer multi-level or mixed-level questions in one study (Borgatti et al., 2018; Monge & Contractor, 2003). Accordingly, SNA allows for a better capture of phenomena and constructs that span micro and macro structures than the conventional individual-based approach (Emirbayer, 1997).

Briefly speaking, a social network perspective places the relations connecting individuals (not the individuals themselves) at the center of scientific research (Vicsek et al., 2016). Central to network theory is the idea that network structures place constraints on or offer opportunities to (or both) actors in the system (Smith, 1999). The goal of SNA is to describe, quantify, analyze, and interpret systematically the complex interconnectedness of social milieus (Marsella & Snyder,1981).

Intercultural Networks for Intercultural Competence

Social network theory fits the relational perspective on ICC. A relational understanding contends that ICC is constructed through interactional and relational processes (Collier, 2015). Cultural differences unfold and are negotiated when individuals of different cultures are positioned vis-a-vis others in interactions (Collier, 2015). Coincidently, a network perspective on human actions maintains that the relations and interactions connecting individuals are the center of scientific research (Vicsek et al., 2016). SNA offers the tools to quantify, analyze, and interpret these interconnections between social entities and their influences on individuals' behavior systematically (Marsella & Snyder,1981). Thus, the network way of thinking is truly a relational perspective, but, at the same time, it can also recognize the importance of individuals in a social system (Smith, 1999). Thereupon, social network theory is a good theoretical lens to deepen our understanding of ICC from a relational standpoint. Meanwhile, SNA can provide an operational entry point to observe what relational characteristics are antecedents of ICC.

To explore the implications of network research on ICC, the current study focuses on what and how characteristics of personal networks (also called ego networks) can relate to ICC for living-abroad individuals. Ego network analysis has several advantages for the research context of this dissertation. First, living-abroad people's ego networks represent the firsthand,

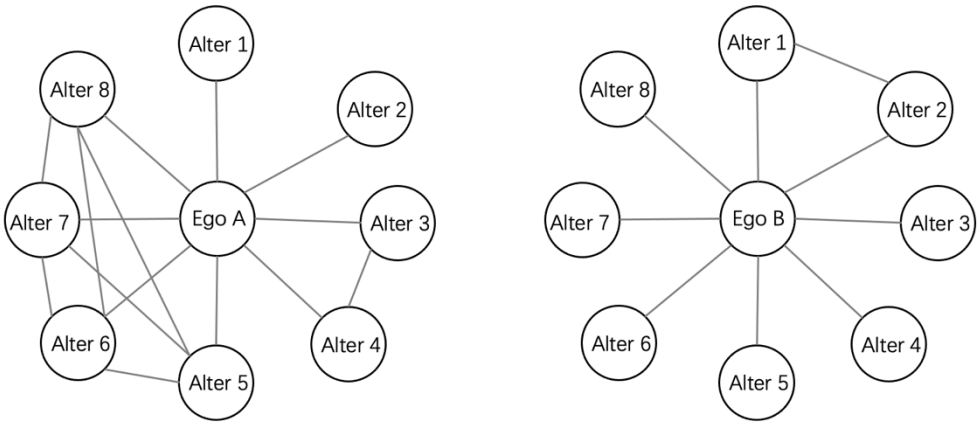
most immediate social milieu of their life in the host country (Perry et al., 2018). Thus, the unique characteristics of this relational environment should reflect their unique experiences and communication patterns in the host country (Perry et al., 2018; Rogers & Kincaid, 1981). Accordingly, one's ego network characteristic should be able to explain partially their intercultural behavioral tendencies. Second, from a methodological standpoint, participants' networks are typically generated by asking them to report their social connections in a survey. In an ego network study, this report can be anonymous. That is, participants can nominate their alters without revealing the alters' identifiable information or their own. Therefore, survey questions about networks can be readily added to a regular questionnaire, and no additional ethical concerns about identifiable information will be created by the research method per se (Borgatti et al., 2018). More importantly, when ego networks are constructed based on participants' reports, the networks reflect their subjective perception of their direct social environment. As such, researchers use certain network property measures such as size, density, and heterogeneity (concepts that will be detailed later) to characterize the network structure, which is a process beyond participants' knowledge. Hence, an ego-network design can help researchers obtain perceived reality reports from individuals, yet simultaneously recognize the objective relational structure around them (Taylor & Bogdan, 1984; Smith, 2002). For these reasons, living-broad individuals' ego networks fit the goals of this dissertation better than a full network analysis. In what follows, the specific ego-network properties that are likely to relate to ICC will be discussed.

Network size. Network size is the number of direct ties of a given type that an ego has (Borgatti et al., 2018), or the number of alters of a given type nominated by the participant in an investigation (Perry et al., 2018). For instance, both Ego A and Ego B in Figure 3 are directly

connected to seven alters; thus, their network size is eight. Network size gives a basic description of network features and is often associated with positive outcomes such as having more social resources (e.g., Katona et al., 2011; Semrau & Werner, 2014). However, network size is defined and computed based on the specific type of network. In network tradition, strong and weak networks are posited to have different impacts on individual life (e.g., Burt, 1995; Granovetter, 1973). In the tradition of intercultural research, relations with intercultural others (i.e., intercultural networks) are often deemed as signals of cultural diversity, whereas connections with members of the same cultural group (i.e., co-cultural networks) are not (e.g., Kim, 2001, 2005). Hence, network size in this research will be considered based on four types of networks: strong intercultural network, weak intercultural network, strong co-cultural network, and weak co-cultural network.

Figure 3

Ego Networks of Varying Density



Intercultural ties are often associated with positive intercultural outcomes. For example, Kim's (2001, 2005) theory of cross-cultural adaptation, which aims to explain what predicts individuals' adaptation once they move from one culture to another, posits that sojourners' connections with host nationals will have a positive (Theorem 1), whereas their connections with co-nationals will have a negative (Theorem 1) effect on their communication competence in the

new culture. Host-cultural and co-cultural ties are regarded as opposite: when sojourners socialize more with one group, they will do so less with the other (Kim, 2001, 2005). Meanwhile, sojourners' relationships with other nationals in the host country are perceived as less relevant to their cross-cultural adaptation. The theory predicts that, when sojourners adapt more to and become more competent in the host culture, they will develop more and stronger ties with host nationals, and remove, weaken, and marginalize their initial co-national ties (Kim, 2001, 2005).

Many studies have supported that intercultural ties positively impact people's intercultural experience (e.g., Clément et al., 2003; Mak & Buckingham, 2007). For example, international students who had more host-national interactions tended to fit in better (Kagan & Cohen, 1990), function more comfortably (Trice, 2004), and have fewer social difficulties in the host culture (Chi & Suthers, 2015; Ward & Kennedy, 1993). More connections with host nationals were associated with a higher level of life satisfaction, higher feelings of social connectedness, less homesickness, and less loneliness abroad (Church, 1982; Hendrickson et al., 2011). This evidence illustrates that host-national ties can be significant sources of social capital—the resources embedded in social networks for living-abroad people's intercultural adaptation (e.g., Bhattacharya, 2011; Wang, 2020). As intercultural adaptation is positively associated with ICC (Liao et al., 2021; Kim, 2001), it can be inferred that intercultural ties should also positively relate to ICC. Given that this research focuses on ICC instead of communication competence with local/host people, intercultural ties here include ties not just with host nationals but also with other nationals in the host country that individuals have developed.

Intercultural networks, in general, can positively impact intercultural experience. However, strong and weak intercultural networks may function in different fashions depending on the tie strength. In social network research, strong ties tend to offer more substantively emotional and material support to immigrants and sojourners, integrating them into a local community (Herz, 2015; Kim, 2001). Strong intercultural networks appeared to reduce international students' stress and facilitate their adaptation (Olaniran, 1993). Weak networks, thought to provide less substantive support, can bring more novel resources and nonredundant information to individuals living abroad (Hendrickson et al., 2011). For example, intercultural acquaintances can expose them to different social norms, behaviors, ideas, perspectives, and other culturally relevant experiences (Hendrickson et al., 2011). Weak ties can also serve as bridges between different cultural groups by giving an individual access to outgroups (Granovetter, 1983; Hendrickson et al., 2011). As a result, the perspectives and resources that originally exclusively belonged to the outgroup can now be shared with living-abroad individuals (Lee & Katz, 2015).

In the traditional view of intercultural research, both strong and weak intercultural networks should function positively to predict intercultural outcomes. For example, Kim (2001) emphasized that neither strong nor weak ties should be ignored in facilitating intercultural adaptation. In addition, most intercultural relationships tend to be weak (Yum, 1988). It is difficult, if not impossible, to recreate the same level of intimacy in intercultural friendship as in co-cultural friendship (e.g., Fontaine, 1986; Smith, 2013). Thus, strong intercultural network size and weak intercultural network size should have positive relations with ICC. However, the ICC definitional framework adopted in the current study contains the dimension of information seeking, for which the tradition of social network analysis may have different verbiage.

Granovetter's (1973, 1983) classic works on network tie strength found that people acquired job-related information more through their weak connections than through their strong ties, demonstrating that weak ties played more important roles in mobilizing and leveraging informational resources among different groups. Hence, Granovetter (1973, 1983) posited that weak network size was more likely to relate to information-seeking behavior positively. Because information is already shared among people in one's strong network, one is less likely to seek information from their strong networks (Granovetter, 1973, 1983), implying a negative association between strong network size and information seeking. Nevertheless, considering that seeking intercultural information in Schnabel's (2015) framework is an ICC component, this dissertation hypothesizes the same direction for the association between weak network and information seeking as for the other ICC dimensions, as follows:

H6: Strong intercultural network size is positively associated with ICC, that is, with communication sensitivity (H6a), mediating differences (H6b), information seeking (H6c), identity reflection (H6d), problem solving (H6e), and socializing (H6f).

H7: Weak intercultural network size is positively associated with ICC, that is, with communication sensitivity (H7a), mediating differences (H7b), information seeking (H7c), identity reflection (H7d), problem solving (H7e), and socializing (H7f).

How do co-cultural ties relate to ICC, then? Kim (2001, 2005) argued that developing intracultural ties would compete with socializing with host nationals. However, this statement is not agreed upon by intercultural researchers, and evidence is somewhat mixed. For example, Lee's (2014) study of Korean immigrants in the U.S. found that their central positions in a co-cultural network was positively associated with a monocultural orientation and had no significant relationship with intercultural orientation. A monocultural orientation reflects lower levels of

intercultural competence, whereas an intercultural orientation reflects higher stages of intercultural competence development (Bennett, 1986, 2004; Hammer, 2008, 2011). Lee et al.'s (2018) intercultural network research had a similar result: Muslim immigrants in the U.S. who were highly connected with other Muslims (vs. non-Muslims) had more defensive and less adaptive attitudes toward other cultures. Contrary to these results, Wilson et al.'s (2013) meta-analysis on cultural competence (assessed as adaptation) showed the opposite conclusion. This study found that both co-national and host-national contacts positively impact competence. Likewise, Chi and Suthers (2015) found that it was the total number of ties, regardless of co-national or host-national, that mattered positively for intercultural adaptation. These findings illustrate that co-culture interactions in abroad life are not always good or bad for ICC.

Co-cultural friends, with appropriate cultural knowledge, can assist living-abroad individuals' cultural learning by providing insights into a new culture from an observer and learner perspective (Ong & Ward, 2005; Ward & Rana-Deuba, 2000). In this way, co-cultural ties can function as cultural informants for sojourners and immigrants. However, problems can also arise from maintaining "too many" co-cultural contacts because it can limit the chance to mingle with host nationals or other internationals, delaying abroad individuals' language and communicative competence acquisition in the new environment (Chi & Suthers, 2015; Mok et al., 2007; Searle & Ward, 1990). Thus, there is no conclusive answer to whether co-cultural ties have a positive or negative role in ICC development. Accordingly, the following research question is proposed:

RQ1: How do strong co-cultural network size and weak co-cultural network size relate to ICC?

Heterophily and Diversity. The level of cultural diversity in one's relationships should directly relate to their ICC. For example, Yum's (2001) research found that having multi-national friends directly linked to international students' increased cognitive complexity. In Hendrickson et al.'s (2011) study, international students with more multicultural friends were more satisfied, content, and socially connected than those only socializing with co-cultural friends in the host country. Also, when an instructor made international students from different cultures work together in a team, they learned and developed multiple perspectives to resolve their working problems through such culturally diverse interactions (Rienties et al., 2013). Kimmel and Volet (2012) found that students working in culturally homogenous teams developed more negative attitudes toward cross-cultural learning over time. Likewise, Lee (2014) collected network data from a religious organization, discovering that Korean immigrants' network diversity had a positive influence on their intercultural sensitivity. Thus, socializing with culturally and linguistically dissimilar others should expose people to different knowledge and perspectives and help them develop ICC.

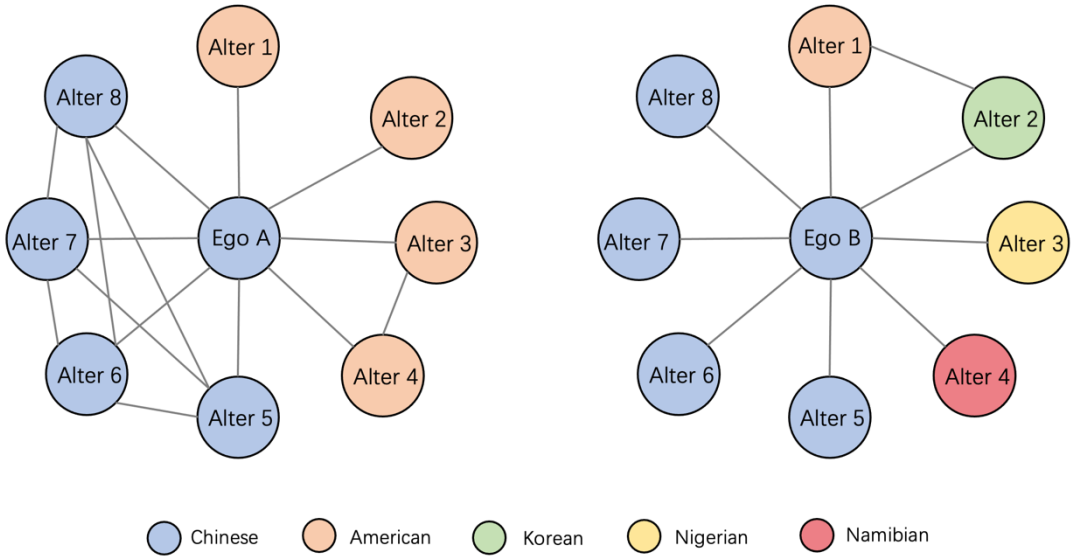
In network research, heterophily and diversity are two measures that indicate the degree to which one's network contains dissimilar people. Heterophily derives from the term "homophily", which refers to people's natural tendency to socialize with others who are similar to them in socially significant attributes such as race, ethnicity, religion, culture, education, and socioeconomic status (Lazarsfeld & Merton, 1978 [1955]; McCrea, 2009; Perry et al., 2018; Smith et al., 2014). Heterophily is the opposite trend—the preference to socialize with dissimilar others (Lozares et al., 2014). As the dissertation researches competence in communicating with culturally different people, the socially significant attribute that matters for this study in one's network is culture, that is, one's country of origin based on the definition of culture adopted.

Hence, when a living-abroad individual's ego network consists of mostly co-cultural ties, homophily is their primary predisposition. Conversely, if intercultural ties mostly form the person's ego network, heterophily is the dominant tendency in their interpersonal relationships. In sum, heterophily is about the cultural differences between egos and their alters (Perry et al., 2018).

In network terms, diversity is a different concept from heterophily. Diversity is about the cultural differences among the alters (not between the ego and alters). Diversity refers to the extent to which ties within a network span across different categories, that is, the range of difference or the degree of heterogeneity (Burt, 1983). For example, in Figure 4, the two egos have the same level of heterophily because both have four co-cultural and four intercultural ties. However, ego B has a higher degree of heterogeneity or diversity because its four intercultural ties come from four different cultures, whereas ego A's ties are from the same culture.

Figure 4

Ego Networks of Varying Composition



Heterophily and diversity, as two measures of cultural difference in an ego network, should positively relate to living-abroad individuals' ICC. From a network perspective, a highly similar network is usually associated with the problem of information redundancy. More specifically, people from similar social backgrounds tend to share more similar knowledge and perspectives. The lack of differences in one's network often puts the person at a disadvantage in obtaining novel information or resources (i.e., information/resource redundancy; Burt, 1992; Ertug et al., 2022). Information redundancy could have many side effects. For example, it can foster a feeling of comfort in communicating with ingroup people, strengthen a sense of belonging to the ingroup, and reinforce ingroup norms and values (Perry et al., 2018). This identity affirmation can further elicit ingroup favoritism and outgroup bias, possibly isolating the individual from the ideas and influences of outgroups (Currarini et al., 2016; Currarini & Mengel, 2016). Obviously, these are not beneficial outcomes for ICC development. Living-abroad individuals should maximize their heterogeneous networks to gain adequate support and learning outcomes in a host country (Nadeem et al., 2018; Smith, 1997). Thus, the heterophily and diversity of living-abroad individuals' network should positively impact their ICC.

H8: The heterophily of one' ego network is positively associated with ICC, that is, with communication sensitivity (H8a), mediating differences (H8b), information seeking (H8c), identity reflection (H8d), problem solving (H8e), and socializing (H8f).

H9: The diversity of one's ego network is positively associated with ICC, that is, with communication sensitivity (H9a), mediating differences (H9b), information seeking (H9c), identity reflection (H9d), problem solving (H9e), and socializing (H9f).

Density and Effective Size of Strong Network. Besides network composition and difference reviewed in the last two sections, structural shape is another vital facet of network influences. Density and effective size are two commonly used metrics that provide information about the shape or cohesiveness of a network (Perry et al., 2018). *Density* is defined as the number of ties between alters divided by the total number of ties possible without the ego (Borgatti et al., 2018). It is calculated by counting ties between alters without the ego and ego-to-alter ties (see Figure 5; Perry et al., 2018). For instance, in Figure 5, ego A has a denser network than ego B. Density can reveal how loose or tight an ego network is, but it does not reveal how ties between alters are distributed across the network (Borgatti et al., 2018; Perry et al., 2018). For example, the two egos in Figure 6 have the same network size and density, but ego C's network contains a highly dense area (the left side). In contrast, ego D's network ties are almost evenly distributed across different areas. Thus, two ego networks with the same density value may have very different tie distributions.

Figure 5

Ego Networks Without Ego

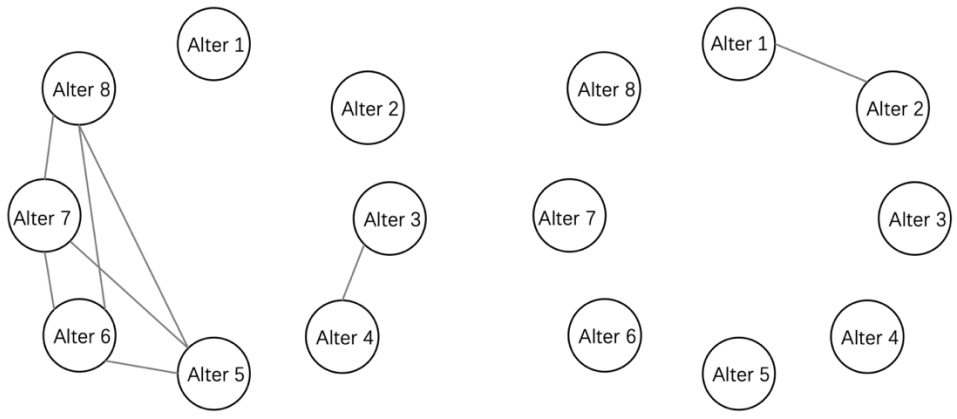
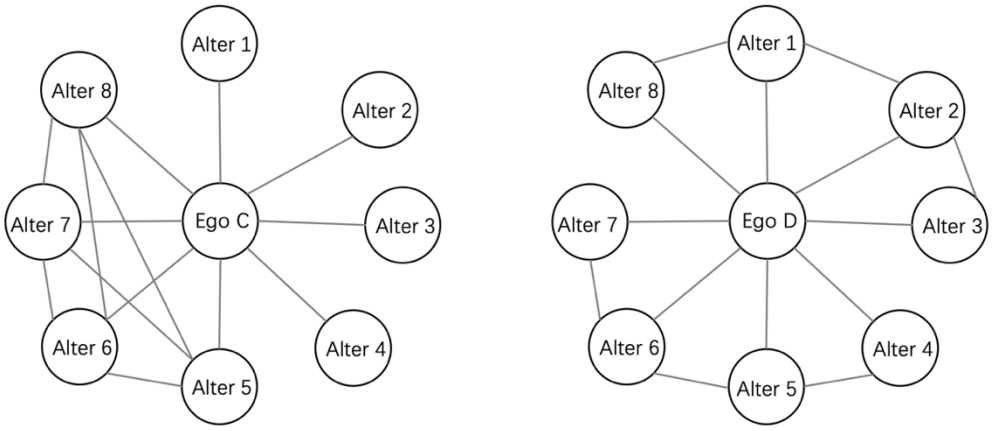


Figure 6

Ego Networks with the Same Density and Size



Effective size offers another way to examine network structural shape by considering the redundancy of alters (Crossley et al., 2015). Social network theory assumes that linked (directly or indirectly) alters tend to share similar views, information, and materials (Perry et al., 2018). Disconnected alters are considered more likely to give new things to the ego without substantial overlaps (Perry et al., 2018). Burt (1992, 1995) maintained that, when a group of alters is densely connected, only one of them is considered nonredundant in terms of resource benefits, because this alter can still deliver whatever the rest can do to the ego. According to this idea, for example, ego C's four interconnected alters (Figure 6) work like a single alter for this ego. Thus, Burt (1992) used the term effective size to indicate the benefits individuals can gain from their networks with large network sizes but simultaneously rare interactions between the alters. *Effective size* is defined as the network size minus the average number of ties each alter has (Burt, 1992).

From a network theory perspective, an ego network's density and effective size should both influence ICC. Density is about how loosely or tightly the alters connect with one another, whereas effective size gives extra consideration to network size, adding to it. On the one hand,

these two measures directly link the resource redundancy of an ego network. When two alters do not know each other, they have no connection except through their exchanges with the ego (Kadushin, 2012). If the alters are tightly tied to each other, they are free to trade information without the ego, meaning that novel resources do not have to flow through the ego (Crossley et al., 2015). Hence, the larger one's network is, and the fewer interactions between the alters, the more nonredundant resources such as information, perspectives, ideas, and social norms can flow to the ego (Perry et al., 2018).

On the other hand, when the alters are closely bound together, the ego may have less autonomy in the network (Rodan, 2010). Alters can exchange their opinions, cultural identities, norms, behaviors, and values with each other (Crossley et al., 2015), and then pressure the ego to conform to them through their interactions with the ego (Goel et al., 2010; Kohler et al., 2001). That is to say, highly connected alters tend to share similar worldviews and have the power to constrain the ego from making free choices of cultural identity (Crossley et al., 2015). Both cases would create a disadvantageous situation for the ego to handle the challenges of a multicultural living environment competently. Correspondingly, a high density or a low effective size of personal networks should not be suitable for ICC development.

Network density and effective size matter more for strong ties than weak ties. First, strong ties tend to know one another, whereas weak ties are less likely to (Granovetter, 1973, 1983). In other words, more than weak ones, strong ties are likely to be tightly tied together and exert constraint effects on an ego. Second, close relationships usually influence the formation, maintenance, and modification of an individual's communication pattern and intercultural behavior more substantially than weak ones (Kim, 2001). Thus, if one's alters interrelate, the interrelation of close relationships is likely to have stronger negative influences than weak ties

would. Therefore, this dissertation explores the two structural shape indices only regarding strong ties, that is, the density and effective size of one's strong ties. Based on the reasoning above, the following hypotheses are proposed:

H10: Density of one's strong network is negatively associated with ICC, that is, with communication sensitivity (H10a), mediating differences (H10b), information seeking (H10c), identity reflection (H10d), strategic problem solving (H10e), and socializing (H10f).

H11: Effective size of one's strong network is positively associated with ICC, that is, with communication sensitivity (H11a), mediating differences (H11b), information seeking (H11c), identity reflection (H11d), strategic problem solving (H11e), and socializing (H11f).

What Matters More: Personality Traits or Social Networks?

This dissertation aims to forge a cross-paradigmatic inquiry between the individual and relational paradigms into ICC. The individual perspective sees the communicator as the fundamental locus of explanation for competence. In this tradition, ICC can be conceived as deriving from multicultural personality traits (e.g., Hofhuis et al., 2020; Horverak et al., 2013; Leong, 2007; van der Zee & van Oudenhoven, 2000, 2001, 2013). The theoretical perspective of traits considers personality traits as the endogenous source of one's potential (e.g., McCrae & Costa, 2003, 2008; Zuckerman, 1998). Traits are considered genetically and biologically based and developed through the process of human intrinsic maturation (McCrae & Costa, 2008). Traits can set individuals apart from others in their overall behavioral styles (Costa & McCrae, 1998). However, this scholarship also notes that traits only provide the individual level of explanation for human behaviors; contextual, situational, or environmental factors are external

forces that will interact with traits to influence one's decisions (Steyer et al., 1999). Trait research assumes situational influences are more or less self-evident (McCrae & Costa, 2008), but has no interest in detailing them. In this regard, a social network perspective can offer complementary explanations to the trait perspective given that these external forces are the exact interests of network research.

Social network theory, as a truly relational perspective (Smith, 1999), posits that the social environment is more influential than individual attributes in determining one's potential (Freeman, 2000). An individual's behavior emanates within a relational context (Harre et al., 1985). One's social connections are conduits through which resources, opportunities, and constraints reach the individual (Everton, 2012). Thus, individuals' social networks limit or define the possibilities of their behaviors. However, network theory does not deny the autonomy of human agency (Everton, 2012). Individual characteristics such as personality traits are taken as node attributes in SNA. Data from node, dyad, and network levels can be linked and analyzed together to answer cross-level or mixed-level questions in SNA (Borgatti et al., 2018; Monge & Contractor, 2003). Therefore, though the network perspective considers human actions to be shaped by the social environment, it still allows some space for trait explanations.

Figure 7

Levels of Analysis from the Trait Perspective

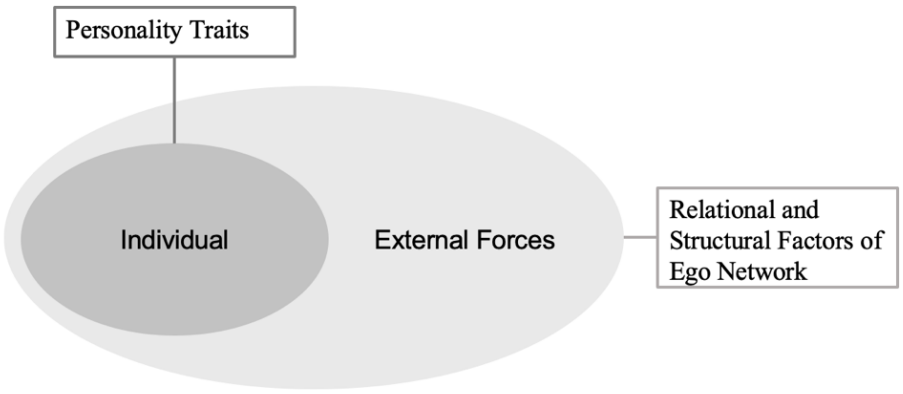
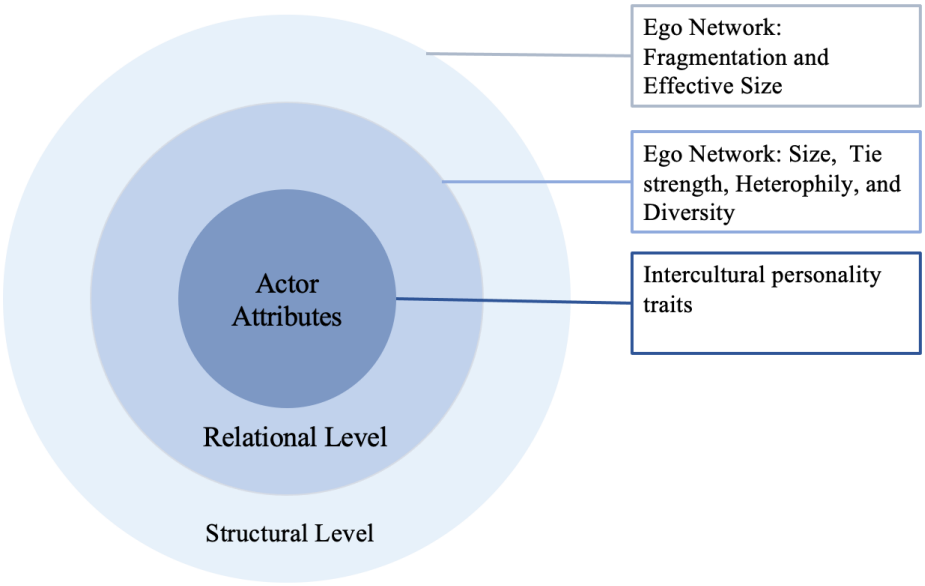


Figure 8

Levels of Analysis from the Social Network Perspective



Based on the preceding statements, the trait (individual) and social network (relational) traditions could be brought together to foster a more comprehensive, integrated, and cross-paradigmatic understanding of ICC. To do so, the effects of personality traits and social network characteristics should be examined simultaneously. More specifically, trait and network variables can be understood as factors predicting ICC at different levels. Figure 7, Figure 8, and Table 2 presents a multi-level framework unifying these variables. From a trait perspective (see Figure

7), MPQ traits—emotional stability, flexibility, open-mindedness, social initiative, and cultural empathy—are the endogenous (internal) sources of one's competence to manage intercultural settings, that is, factors at the *individual level*. At the same time, one's network relationships are external factors that can activate certain traits to be expressed in specific behaviors. That is, network variables are sources of competence at the *situational level*.

From a social network perspective (see Figure 8), the MPQ traits are essentially node attributes or variables at the *node level*. Degree centrality, heterophily, and diversity are network properties at the *relational level* (or *dyadic level*). Degree centrality is a measure pertaining to the distribution of ego-to-alter ties (Borgatti et al., 2018; Crossley et al., 2015; Perry et al., 2018). Heterophily analyzes the dissimilarities between the ego and alters, whereas diversity captures the dissimilarities between alters (Borgatti et al., 2018; Crossley et al., 2015; Perry et al., 2018). In SNA, they all belong to analyses at the relational level, which examines the patterns of ties (Clifton & Webster, 2017). Density and effective size are measures indicating the structural shape of an ego network (Borgatti et al., 2018; Crossley et al., 2015); thus, they are factors at the *structural level* (or *network level*). The node level of analysis (in the network perspective) matches the individual level (in the trait perspective), and the relational and structural levels of explanation (in the network perspective) correspond to the situation level from the trait perspective. Hence, this multi-level framework acknowledges the rationale of both paradigms.

What happens when the effects of trait and network variables are examined together to determine their relationships, if any, with ICC? Perhaps one may override the other, or they may function in an additive way to predict one's overall behavioral tendency in intercultural communication. Thus, to bring together the two separate traditions of ICC, this research asks: Once ego network properties are considered, do personality traits still contribute to predicting

ICC? The question can be asked in the opposite way, too: When personality traits are added to explain ICC, will they override the effects of ego network properties? Accordingly, the research question below is proposed:

> *RQ2: To what extent do personality variables (i.e., emotional stability, flexibility, open-mindedness, social initiative, and cultural empathy) and network variables (i.e., network sizes, heterophily, diversity, density, and effective size) predict ICC in the presence of each other?*

Table 2

A Summary of Multi-Level Variables Predicting Intercultural Competence

Variables	Category	Level of Analysis	Nature	Data needed	Measure
Emotional stability, flexibility, open-mindedness, social initiative, cultural empathy	Personality traits	Individual	Node attributes	Ego attributes	Van der Zee et al.'s (2013) MPQ
Network size	Network properties	Relational	Size of different types of networks	Ego-alter ties, alter attributes (culture)	The number of ties of a particular type (strong vs. weak; intercultural vs. co-cultural)
Heterophily	Network properties	Relational	Ego-alter dissimilarity	Ego-alter ties, ego attributes, alter attributes (culture)	Krackhardt & Stern's (1988) E-I index
Diversity	Network properties	Relational	Alter-alter dissimilarity	Ego-alter ties, alter attributes (culture)	Blau's (1977) heterogeneity index
Density	Network properties	Structural	How loose or tight a network is	Ego-alter ties, alter-alter ties	The number of alter-alter ties divided by the number of

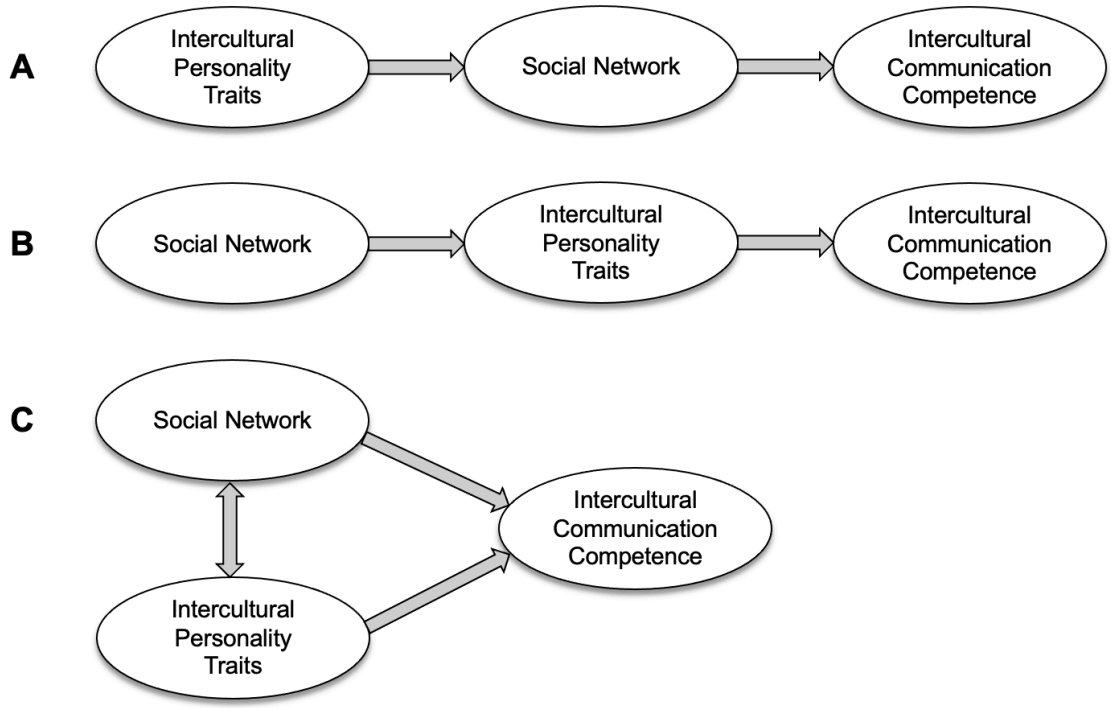
					possible alter-alter ties
Effective size	Network properties	Structural	Redundancy of alters	Ego-alter ties, alter-alter ties	Burt's (1992) measure of effective size

After examining the joint effects of traits and networks, this dissertation takes a step further to explore the relationships between ICC predictors. As Leung et al. (2014) noted, whether some ICC-related constructs are the antecedents of others is also a critical question to examine for a deeper understanding of this competence. Studies have found that personality is related to network positions. For instance, Fang et al.'s (2015) meta-analysis found that the traits of self-monitoring, openness to experience, and conscientiousness were related to employees' centrality and brokerage positions in organizational networks. Venkatanathan et al.'s (2012) study on Facebook network structure discovered that less agreeable users had more bridging social capital—created by relations across different groups, whereas introverts had more bonding social capital—offered by people of a closed group. Kalish and Robins (2006) found that people with higher neuroticism had strong ties that were less interconnected. These results demonstrate that one's ego network characteristics may be associated with intercultural personality traits as well. However, how they may relate, specifically, is not clear yet, given the lack of adequate literature on the relations between MPQ traits and networks. Therefore, the following research question is proposed:

RQ3: How do intercultural personality traits (i.e., emotional stability, flexibility, open-mindedness, social initiative, and cultural empathy) relate to personal network properties (i.e., network sizes, heterophily, diversity, density, and effective size)?

Figure 9

Three Alternative Models for Combined Effects



Notes: Model A: personality-to-network model; Model B: network-to-personality model; Model C: network-and-personality model.

The connections between traits and networks can be explored even further through mediation analyses, namely, whether one would mediate the impacts of the other on ICC. There is an ongoing debate at the intersection of personality psychology and social network research: whether one's network relationships precede their personality or vice versa. The trait perspective tends to support a *personality-to-network* relationship (Figure 9, Model A), meaning that one's personality precedes the existence of their network, and their network properties mediate the impacts of personality on ICC. According to this model, intercultural personality traits propel one to form beneficial networks in abroad life; one acquires ICC through the advantages given by these networks. In this sense, ICC is primarily derived from individual constructs, so it makes more sense to conceptualize it as located within the individual.

The trait perspective argues that personality is the endogenous source of one's behavioral style (McCrae & Costa, 2008). Traits are expressed in one's social experiences, including relationships, and one's life unfolds under the enduring influence of traits (McCrae & Costa, 2003). Personality determines how one perceives an intercultural situation, for example, positively as a challenge to be overcome or negatively as an insurmountable threat, as well as whether one can constructively react to these perceptions (Connor-Smith & Flachsbart, 2007; van der Zee & van Oudenhoven, 2013). When the environment poses challenges to the individual, some traits emerge as more beneficial than others in guiding the person's intended behaviors and attaining goals (Buss, 1991; Caligiuri, 2006). One's relationships developed in a particular environment are concrete manifestations of their adaption characteristics to the environment, guided by personality (McCrae & Costa, 2003, 2008; McCrae et al., 2000). To be more specific, MPQ traits can drive one to seek interaction opportunities actively and form beneficial connections that will help them navigate intercultural situations competently (van der Zee & van Oudenhoven, 2013). Zhu et al.'s (2013) study showed that the traits of extraversion, agreeableness, and openness influenced one's perceived well-being and social support through the mediation of ego size and proportion of new contacts, namely, supporting the *personality-to-network* order. Therefore, a trait inquiry views intercultural traits as the original, internal resources of competence (e.g., Ward et al., 2004), preceding and shaping the existence of environmental factors such as one's network size, composition, and structure (Brashears et al., 2020; Kalish & Robins, 2006; McCrae & Costa, 2008).

On the contrary, social network theory tends to favor a *network-to-personality* relationship (Figure 9, Model B), meaning that networks precede the existence of personality, and personality mediates the impacts of networks on ICC. According to this order, it is one's

relational environment that fosters or strengthens some traits but not others in the individual, through which one masters intercultural settings. In this case, competence is primarily located in social relations, and it makes more sense to conceive it as a relational construct.

In network research, personality is often seen as an outcome rather than the cause of relational patterns (Balkundi et al., 2011). Socially relevant traits are considered to be constructed through frequent interactions with people who help one develop these traits (Balkundi et al., 2011). Regardless of what one's original personality was, the relational environment created by networks will hard press a person to socialize using what is allowed or accessible within the environment (Smith, 1999). For example, Bhargava et al.'s study (2023) found that friends influenced each other in traits; namely, traits could be transmitted through friendship networks. Immigrants and sojourners' social contacts in a host country give them the opportunities, resources, and even limitations to reshape their sense of personhood (Chi & Martin, 2020; Smith, 2013). Balkundi et al.'s (2011) studies on leadership competence consistently showed that formal leaders who were central in team networks were perceived as competent by the subordinates, and this perceived leadership competence facilitates high team performance, namely, evidence for the *network-to-personality* order. Thus, the network perspective maintains that competence is initially generated in interactions and relationships (Koester & Lustig, 2015).

Furthermore, in addition to personality-to-network and network-to-personality models, a third possible outcome could be a *network-and-personality* relationship (Figure 9, Model C). Particularly, if one does not mediate the impacts of the other on ICC, networks and personality may have independent influences on this outcome concept. Per this model, network features might correlate with personality traits, but they would both be coexistent elements of ICC at

different levels. To summarize the above-discussed thoughts for further exploration, the following research question is proposed:

> *RQ4: (a) Do network variables mediate the effects of personality variables on ICC, (b) do personality variables mediate the effects of network variables on ICC, or (c) do they have independent effects on ICC?*

CHAPTER 3: METHOD

Pre-Screen Study

A pilot study was conducted to pre-screen participants and select only qualified ones for the main study. To examine relational and individual perspectives of ICC together, this dissertation aimed to study living-abroad individuals' intercultural experiences. There were no pre-set pre-screeners in Prolific that could help select participants matching this living-abroad criterion. Therefore, as suggested by Prolific, a short screening survey was used as a pilot study to select eligible participants for the main study.

To participate in the pre-screen, Prolific workers had to meet the following criteria. Firstly, they had to have completed at least 50 Prolific studies and have a 99% approval rate or more for their previously submitted work. Second, there was a Prolific pre-screener question that made participant selection more efficient: "Were you born in the country you are currently living in?". Only those who answered "No, I moved to the country I am now living in" were recruited. Thirdly, another Prolific pre-screen question regarding their language fluency was enabled. Eligible participants had to have chosen "English" as one of their fluent languages. Lastly, the Prolific feature of a balanced sample was used to distribute the study evenly to male and female participants.

Eligible participants based on the criteria described above were able to see the pilot study on Prolific. The recruitment message posted on Prolific informed participants that this was a quick demographic survey that would be used to determine their eligibility for future research studies. Interested participants signed up for completing the study, then followed the study's URL to Qualtrics where the pilot study was hosted. The first page presented them with consent information. The consent informed participants about the study's goal, duration, risks and

benefits, compensation, confidentiality of their responses, and their right to withdraw at any time without penalty. Upon consenting, participants were asked questions about their backgrounds and international traveling experiences (see Appendix A for the list of all questions). Specifically, to confirm their status of living abroad, the survey first asked, "Which of the following best describes your current life status?" Answer choices were: "I am currently living in my country of origin," "I am in my country of origin but will leave the country soon," "I am currently living abroad," "I recently returned to my country of origin after living abroad," and "None of these options." If the option "I am currently living abroad" was selected, participants were then directed to several other subsequent questions. If another option was selected, participants were redirected to the end of the survey, without any compensation penalty (i.e., they were paid the advertised amount, per Prolific policies).

To obtain more information about participants' living-abroad situations, the survey asked those who indicated they were living abroad to select the country in which they were currently living, their country of origin, the purpose of coming to the host country, if they had obtained permanent residency in the host country, the time spent in the host country, and how long they planned to continue staying in this host country. This information was saved and used in the main study dataset for subsequent analyses if the Prolific worker was qualified and participated in the main study. As a reminder, participants could be matched across data sets based on their Prolific ID. It took participants an average of 2.14 minutes (median = 1.67 minutes) to complete the pre-screen pilot study survey. The pilot study was approved by the Institutional Review Board before data collection began.

Results of the pre-screen pilot study revealed that 1,501 workers consented and 1,475 of them completed the survey. Among them, 940 indicated that they were living abroad at the time

of filling out the survey. These individuals were eligible to participate in the main study. Of the remaining participants, 310 selected "I am currently living in my country of origin," 28 indicated that "I am in my country of origin but will leave the country soon," 43 chose "I recently returned to my country of origin after living abroad," and 154 selected that none of the other options applied to them.

Main Study

To examine the relationships between personality traits, ego network properties, and ICC, the main study adopted a cross-sectional design and collected data about participants' ego networks. As a reminder, the study focused on living-abroad individuals' personal network environment in relation to their personality and ICC. Thus, an ego network analysis design was adopted for the main study, meaning that participants provided data about their direct connections and interrelations between their connections. A cross-sectional survey design is the most commonly used method for social network research; its effectiveness in capturing the complex interplay between factors at node, relational, and structural levels have been previously expounded (Borgatti et al., 2018).

Participants

Participants in the main study were 627 individuals who had completed the survey from the eligible 940 participants in the pre-screen. Of these, 621 participants passed the study's attention verification questions, and their data were included in the analyses for the main study, whereas responses from the other six participants were eliminated. These participants originated from 92 different countries (e.g., 11.11% from Nigeria, 7.57% from the U.K., 7.25% from China, 5.80% from the U.S., 5.31% from Zimbabwe) and resided in 32 host countries (e.g., 31.08% in the U.K., 12.56% in Canada, 7.73% in the U.S., 7.73% in South Africa, 7.57% in Australia,

5.70% in Germany). More details about their host and home countries are included in Appendix C. Other demographic information is included below, in Table 3 (please refer to the measures of demographics in a later section for how the information was collected).

Table 3

Demographics of Main Study Participants

	N	Percent	*M*	*SD*	Min	Max
Age (in years)			36.5	11.6	18	80
Length in host country (in months)			102.5	111.8	2	482
Children			0.8	1.1	0	5
Political orientation[1]			4.7	1.5	1	7
English proficiency[2]			9.2	1.0	5	10
Prior intercultural interaction (frequency)[1]			4.0	2.1	1	7
Prior short stay abroad (frequency)[1]			2.6	1.2	1	7
Prior long stay abroad						
Accumulated years			4.2	7.7	0	42
Number of countries			1.1	1.6	0	16
Biological sex						
Male	316	50.89				
Female	300	48.31				
Missing	5	0.81				
Marital status						
Single	151	24.32				
Dating someone, not committed	27	4.35				
In a committed relationship	144	23.19				
Married	279	44.93				
Widowed	3	0.48				
Divorced	17	2.74				
Education						
Some high school or less	4	0.64				
High school diploma	47	7.57				
Some college, but no degree	64	10.31				
Associates or technical degree	33	5.31				
Bachelor's degree	262	42.19				
Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS, etc.)	211	33.98				
Religion						
None (atheist or agnostic)	289	46.54				
Christian (Protestant)	124	19.97				
Christian (Roman Catholic)	101	16.26				
Muslim	53	8.53				
Jewish	8	1.29				

	N	Percent	*M*	*SD*	Min	Max
Buddhist	10	1.61				
Mormon	2	0.32				
Hindu	12	1.93				
Other	4	0.64				
Prefer not to answer	18	2.90				
Income						
Prefer not to answer	21	3.38				
Unemployed/no income.	65	10.47				
Less than $10,000	59	9.50				
$10,000 to 25,000	112	18.04				
$25,000 to $50,000	154	24.80				
$50,000 to $100,000	154	24.80				
More than $100,000	56	9.02				
Abroad purpose						
I came to this country as an international student	185	29.79				
I was sent by my company on assignment to this country	6	0.97				
I was hired by an organization in this country.	81	13.04				
I am an immigrant or refugee in this country	149	23.99				
I accompanied a family member or significant other to this country	141	22.71				
Other	59	9.50				
Permanent residency						
Not obtained	201	32.37				
Obtained	420	67.63				

Notes:
[1]Rated on a 1-7 scale
[2]Rated on a 1-10 scale.

Procedures

A recruitment message for the main study was posted on Prolific. Access to the main study was given only to eligible workers (see above descriptions for the eligibility criteria) by pre-setting their Prolific IDs so that only they could see the main study recruitment information. Interested workers accessed the online survey hosted on Qualtrics by following a link from the recruitment message. The recruitment message posted on Prolific informed participants that this was a research project about their living-abroad experience. The first page of the survey was a consent form that included additional information about the study, such as procedures, estimated

time of completion, risks and benefits, compensation, confidentiality and right to withdraw from the study at any time. If they agreed to participate, participants proceeded to the next page (study measures and instruments); if they did not agree to participate, they were redirected to the end of the survey and not compensated.

After providing consent, participants began with the network generator questions that asked about their social networks in the host country. The network generator contained three parts, in the following order: (1) an alter generator, which generated ties between the ego and alters by identifying key relationships the participants had, (2) an alter interpreter, which delved into the nature of participants' relationships by asking questions about alter attributes, and (3) a relator, which explored inter-alter connections to provide a holistic view of the social fabric surrounding each participant, by inquiring whether alters knew one another (i.e., alter-alter ties). This sequential approach was chosen to minimize respondent fatigue and question-order bias, ensuring a more accurate and comprehensive collection of network data. Specifically, the network generator was presented in the first place rather than in a randomized order because (1) network questions are typically time and energy-consuming (Perry et al., 2018), and (2) questions preceding a name generator can influence participants' interpretation or prime them to remember given alters (Bailey & Marsden, 1999; Pustejovsky & Spillane, 2009). Hence, network generators are ideally administrated at the beginning of a survey to obtain a higher accuracy of network information (Pustejovsky & Spillane, 2009). Meanwhile, the alter generator was administered prior to the alter interpreter to minimize respondent fatigue caused by the rapidly increasing number of interpreter questions along with the increasing number of alters elicited (Pustejovsky & Spillane, 2009).

Next, participants completed the measures for the MPQ personality traits and ICC, which

were presented in a randomized order. Lastly, they provided demographic information. The instruments are presented in Appendix B. The survey took participants an average of 25 minutes (median time = 20 minutes) to complete. Each completed questionnaire that also passed all but two attention verification questions (per Prolific policy) was compensated $3. Two participants out of the completed 627 questionnaires were not compensated due to failing more than two attention verification questions. The main study was also approved by the Institutional Review Board before the data collection began.

Network Generator

Alter Generator. Given the dissertation's goal to understand the impacts of the relational environment for living-abroad individuals, participants' ego network was elicited from their general relationships rather than of a specific type (e.g., friends, family members, coworkers). They were asked about their close network first and then weak ties in the host country.

Respondents were asked to list up the initials of to 12 close relationships to generate their strong ties. Namely, they were told they could fill in less but no more than 12 names. Participants were also instructed to add a number after the initials to differentiate any two alters that may have the same initials. An example was provided to clarify these instructions. The instructions also noted that "you won't be paid more if you enter more names or less if you enter fewer names," and "we would like your honest answers that truly reflect your connections," so that participants did not feel they had to list more names in order to receive full compensation.

In the alter generator, strong ties were defined as "people who you feel close to" (affect-based), "and/or people with whom you interact regularly on a weekly basis" (interaction-based). This name generator combines affect-based and interaction-based strategies to set up close-tie

boundaries for three reasons. (1) Most generators of a single type elicit only a few names; more alters are preferable to observe network effects (Perry et al., 2018). (2) A combination of multiple generating strategies often performs better than a single type in terms of yielding accurate estimates of network size, density, and composition (Martin & Hampton, 2007). Finally, (3) there is a certain level of ambiguity in how participants may interpret "feeling close to," but the resulting network should nevertheless capture the emotional closeness of network ties. Frequency of interaction sets a specific boundary but does not necessarily represent the subjective feelings of intimacy for network ties. Research has demonstrated that multiple name generator approaches can mitigate this interpretation ambiguity (e.g., Bearman & Parigi, 2004). Interaction-based primers also tend to elicit alters with a higher range (i.e., the extent to which alters span heterogeneous backgrounds, sparsely connected, and in a large size) because individuals interact with different people in their daily lives (Perry et al., 2018). Therefore, a close tie is defined in this way to seek a balance in the trade-off between boundary specificity, network size, and alter range.

There were also reasons to limit the number of names to a maximum of 12. To compute accurate estimates of network structure, researchers need to collect a substantial number of alters for their studies; however, as the number of names goes up, respondent fatigue also rises quickly (McCarty et al., 2007). To be practical, adequate connections of relevance to the study context should be nominated but limiting the size of the ego network is also necessary for reducing respondent burden (Perry et al., 2018). Research has indicated that around 15 alters are sufficient to generate reliable and valid measures of ego networks (Hogan et al., 2007; McCarty et al., 1997). Perry et al. (2018) suggested the ideal number of alters in ego network studies to be 10. Thus, 12 was considered a good choice that could balance respondent cost and information

adequacy. Participants reported an average of 5.94 (*SD* = 3.18, range = 0 - 12) names in the close network generator.

Next, weak network ties were elicited by asking respondents to estimate the number of weak co-national (i.e., co-cultural) and other-national (i.e., intercultural) ties. Firstly, they were asked to think about their acquaintances in the current country of residence. Acquaintances were defined as "you know these people and interact with them sometimes, but you do not feel as close or interact as often with them as your close connections." Then, for weak co-cultural ties, they were instructed to think about "how many of your acquaintances are from your heritage country." They were also reminded not to count the close connections they had been mentioned before for the previous question. Participants reported an average of 5.05 (*SD* = 7.25, range = 0 - 101) weak co-cultural ties.

For weak intercultural ties, participants were prompted with the following: "Now think about the rest of your acquaintances (i.e., not from your heritage country) in your current country of residence. Tell us where these other acquaintances are from; then also enter the number of acquaintances from this country," followed by an example provided. Participants reported having an average of 8.09 (*SD* = 11.49, range = 0 - 106) weak intercultural ties.

Alter Interpreter. For each close alter nominated, respondents were asked to indicate their relationship with the alter (i.e., friend, family member, coworker, or other), the alter's sex, country of origin, and age. The Qualtrics feature of piped text was utilized to administer this section: once a name was entered in the alter generator, it was piped into the text of the alter interpreter questions. In the meantime, the loop & merge feature also enabled the same set of interpreter questions to be repeated dynamically for each alter filled in by a respondent.

Alter-Alter Ties. To compute network structural measures, ties between alters were collected as well. For each alter nominated, participants were asked if this alter knew any of the other alters, with the question "Who does {name} know?". Qualtrics piped text and loop and merge functions were similarly applied to pipe names into the question text and repeatedly present this question to participants for every alter.

Measures

Network size. Network size was measured based on four types of ties: strong versus weak ties, and intercultural versus co-cultural ties. Strong intercultural network size was generated by counting the number of close connections from a country different than the participant's own country (i.e., other nationals). Strong co-cultural network size was measured by the number of names in the close alter generator from the same country as the participant's own country (i.e., co-nationals). Similarly, weak intercultural network size was the number of other-national acquaintances, whereas weak co-cultural network size was the participants' reported estimation of their co-national acquaintances. Table 4 presents the means, standard deviations, ranges, and Cronbach alpha reliability scores for these variables (and all other study variables).

Before data analysis, the variables normal distribution was evaluated. George and Mallery (2010) suggested that, for a normal univariate distribution, acceptable values for skewness and kurtosis are between -2 and +2. According to this standard, strong co-cultural network size had a high value of kurtosis (skewness = 1.41, *SE* = 0.10; kurtosis = 2.05, *SE* = 0.20). To reduce the kurtosis, a 90% winsorization was used (Reifman & Keyton, 2010). Specifically, the top 5% values were replaced by the value of the data at the 95th percentile, and the values of the bottom 5% were replaced by the value at the 5th percentile. This transformation

moderated the extreme skewness and kurtosis, making the data more amenable to statistical analysis, and ensuring that the findings would be more robust. After winsorization, strong co-cultural network size met the normal distribution criterion, skewness = 0.93, *SE* = 0.10; kurtosis = -0.03, *SE* = 0.20. Similarly, weak intercultural network size was high in both skewness and kurtosis (skewness = 4.75, *SE* = 0.10; kurtosis = 30.72, *SE* = 0.20). This measure was also transformed by a 90% winsorization (skewness = 1.20, *SE* = 0.10; kurtosis = 0.69, *SE* = 0.20 after winsorization). In the same vein, weak co-cultural network size (skewness = 5.31, *SE* = 0.10; kurtosis = 50.37, *SE* = 0.20 before) was winsorized (skewness = 1.63, *SE* = 0.10; kurtosis = 2.11, *SE* = 0.20 after). Though the kurtosis was slightly higher than the standard value of 2, the risks and costs of applying a non-linear transformation to further normalize the variable were not deemed to be beneficial. Therefore, degree of weak co-cultural ties was not further transformed.

Table 4

Means, Standard Deviations, Range, and Cronbach's Alpha for Study Measures

	M (SD)	Range	*α*
Network			
Strong intercultural network size	3.5 (2.8)	[0, 12]	
Strong co-cultural network size	2.4 (2.6)[a]	[0, 12][a]	
	2.3 (2.3)[b]	[0-8][b]	
Weak intercultural network size	8.1 (11.5)[a]	[0, 106][a]	
	6.9 (6.3)[b]	[0, 23][b]	
Weak co-cultural network size	5.1 (7.3)[a]	[0, 101][a]	
	4.6 (5.2)[b]	[0, 20][b]	
Heterophily	0.2 (0.6)	[-1, 1]	
Diversity	0.5 (0.2)	[0, 0.91]	
Density (strong)	0.6 (0.3)	[0, 1]	
Effective size (strong)	3.1 (2.2)	[0, 10.83]	
Personality			
Cultural empathy	5.5 (0.9)	[1.37, 7.00]	.89
Flexibility	3.1 (1.0)	[1.00, 6.63]	.90
Social Initiative[1]	4.2 (1.2)	[1.00, 7.00]	.88
Emotional Stability[1]	4.2 (1.3)	[1.00, 7.00]	.89
Open-mindedness	5.0 (0.9)	[1.63, 7.00]	.83
ICC			

Sensitivity in communication	5.5 (1.0)	[1.50, 7.00]	.92
Mediation of different interests	4.9 (1.2)	[1.00, 7.00]	.91
Information seeking	5.8 (1.0)[a]	[1.00, 7.00][a]	.84
	5.9 (0.9)[b]	[3.70, 7.00][b]	
Identity reflection	5.1 (1.2)	[1.00, 7.00]	.88
Problem solving	5.7 (0.8)	[2.00, 7.00]	.84
Socializing	3.9 (1.5)	[1.00, 7.00]	.89

Notes:
[a]Values before winsorization.
[b]Values after winsorization.
[1] One item was deleted from this scale to improve reliability.

Heterophily. Heterophily was measured with Krackhardt and Stern's (1988) E-I index, based on the formula:

$$EI = \frac{E-I}{E+I} \quad (1)$$

where external ties, *E,* represent the ego's ties with alters of other cultures (i.e., intercultural ties) and internal ties, *I,* denote the ego's ties with alters from the ego's culture (i.e., co-cultural ties). The overall EI index is thus defined as the number of intercultural ties minus co-cultural ties, divided by the total number of alters. The EI index ranges from -1 to 1. A score of -1 means that the ego only has co-cultural alters, whereas a score of 1 means the ego only has intercultural alters. A larger EI value indicates greater heterophily.

Diversity. Diversity was measured with Blau's (1977) heterogeneity index, defined as follows:

$$H = 1 - \sum_{i=1}^{n}(p_i)^2 \quad (2)$$

$$H_{network} = (H_s + H_w)/2 \quad (3)$$

where *n* refers to the number of categories (i.e., cultures in this study), and *p* is the proportion of alters falling into category *i*. The *H* value is 0 when all alters of a network belong to the same category (e.g., Chinese culture), representing a complete absence of heterogeneity (i.e., cultural diversity); or when an ego does not have any alter. The maximum *H* value occurs when all alters are equally distributed across different categories. The index is positively related to the number

of categories: the more categories (cultures) that one's alters have, the larger the *H* value is. A large *H* value represents a higher level of cultural diversity amongst the alters. The *H* value of an ego network ($H_{network}$) was computed by calculating the mean of strong ties *H* (H_s) and weak ties *H* (H_w).

Density of Strong Network. Strong network density was calculated by the number of ties between alters divided by the number of possible (Borgatti et al., 2018), shown as follows:

$$Density = \frac{2T}{N(N-1)} \quad (4)$$

where *T* is the number of ties present, and *N* is the number of alters. For the "who knows whom" network, the number of possible ties between alters is *N*(*N*-1)/2. Density value ranged between 0 and 1, where 0 occurs when there is no tie between alters or when the ego does not have any alters and 1 occurs when all alters are connected to one another. The larger the density value is, the more the network looks like a close-knit; the smaller the density value is, the more the network looks like a radical shape. There were 24 participants who reported only one close tie. Their strong network density score was recorded as a missing value because the denominator for the density formula was 0. To not lose these individuals' information in data analyses, their strong network density score was reassigned the most disadvantageous value, that of 1. After this missing value treatment, density remained in the range of 0 to 1 (*M* = 0.62, *SD* = 0.30).

Effective Size of Strong Network. Burt's (1992) measure of effective size was utilized to calculate the effective size of strong network, per Equation (6). In the formula, *N* refers to strong network size; $\overline{d}$ is the average degree (i.e., number of ties) of alters without ego-alter ties. A larger value indicates a greater effective size. When all alters are separate from each other, $\overline{d}$ is 0 and the effective size is maximum (equal to network size *N*). If the alters are all interconnected, or when an ego does not have any alter, the effective size would be the minimal value, 0.

$$\text{Effective size} = N - \overline{d} \quad (5)$$

Intercultural Personality Traits. These traits were measured with van der Zee et al.'s (2013) MPQ that contains eight items for each trait—cultural empathy (e.g., "I pay attention to the emotions of others"), flexibility (e.g., "I work according to strict rules," reverse-scored), social initiative (e.g., "I take the lead"), emotional stability (e.g., "I get upset easily," reverse-scored), and open-mindedness (e.g., "I am looking for new ways to attain my goal"). Participants rated the extent to which these items described them on a 7-point Likert scale (1 = *entirely not applicable*; 7 = *entirely applicable*).

Intercultural Communication Competence. Wang and Cionea's (unpublished manuscript) validated English version of the Test to Measure Intercultural Competence (TMIC; Schnabel, 2015; Schnabel et al., 2015) was used. TMIC was originally created in German. This measure contains six dimensions. The first dimension, communication sensitivity (belonging to the competence in communication), had six items, e.g., "I recognize right away when a conflict is brewing." Second, the dimension of mediating differences (i.e., competence in creating synergies) had five items, e.g., "I am good at finding compromises." The third was information seeking (competence in learning), three items, e.g., "Before I travel to another country, I read a lot about it." Fourth, the identity reflection dimension (competence in self-knowledge) had five items, e.g., "I think about what makes up my culture." The fifth component, problem solving (competence in self-management), had four items, e.g., "I consider various alternative solutions in order to solve a problem." Lastly, the socializing dimension (competence in social interaction) consisted of four items, e.g., "I am eager to meet new people." Participants rated the extent to which they agreed with these items on a 7-point Likert scale (1 = *completely disagree*; 7 = *completely agree*). Information seeking had a slightly higher kurtosis value than the acceptable

standard (skewness = -1.20, *SE* = 0.10; kurtosis = 2.06, *SE* = 0.20 before). Hence, a 90% winsorization was used to transform the variable (skewness = -0.68, *SE* = 0.10; kurtosis = -0.21, *SE* = 0.20 after). Bivariate correlations between variables of interest can be seen below (Table 5).

Table 5

Bivariate Correlations between Variables of Interest

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 Communication sensitivity	.49**	.36**	.34**	.48**	.29**	.65**	-.15**	.40**	.11**	.44**	.00	-.01	.04	.00	-.03	.02	.02	-.03
2 Mediating differences		.28**	.38**	.44**	.47**	.52**	-.08*	.63**	.30**	.59**	.12**	.06	.07	.06	-.01	.14**	.18**	-.13**
3 Information seeking			.27**	.46**	.23**	.29**	-.17**	.21**	.11**	.35**	-.01	.05	.11**	.03	.02	.08	.09*	-.05
4 Identity reflection				.35**	.36**	.40**	-.11**	.28**	-.07	.43**	.01	-.01	.10*	.08	-.07	.11**	.11**	-.08*
5 Problem solving					.22**	.43**	-.21**	.31**	.17**	.48**	-.03	.05	.10*	.07	-.05	.02	.08	-.05
6 Socializing						.49**	-.04	.63**	.29**	.61**	.10**	.05	.19**	.15**	-.12**	.24**	.27**	-.21**
7 Cultural empathy							-.17**	.47**	.15**	.56**	.05	.03	.13**	.09*	-.07	.11**	.12**	-.06
8 Flexibility								.00	.08*	-.05	.04	.08	-.11**	-.05	.11**	-.03	-.01	-.06
9 Social initiative									.45**	.65**	.12**	.09*	.11**	.11**	-.05	.14**	.22**	-.14**
10 Emotional stability										.29**	.04	.09*	.10*	.03	-.01	.01	.13**	-.05
11 Open-mindedness											.06	.01	.11**	.08*	-.06	.17**	.17**	-.13*
12 Strong intercultural network size												.30**	-.31**	-.06	.54**	.14**	.56**	-.24**
13 Weak intercultural network size													.00	.24**	.40**	-.08	.19**	-.04
14 Strong co-cultural network size														.36**	-.59**	.21**	.31**	-.05
15 Weak co-cultural network size															-.52**	.35**	.14**	-.03
16 Heterophily																-.32**	.04	-.02
17 Diversity																	.28**	-.21**
18 Effective size																		-.68**
19 Density																		

Note: ** $p < .01$ level (2-tailed), * $p < .05$ level (2-tailed).

Demographics. At the end of the survey, respondents were asked to answer a series of demographic information questions (see Appendix B). These demographics were measured both to describe the sample rigorously and to account for possible covariates during the analyses. Participants indicated their age, biological sex, education, marital status, religion, income, whether they had obtained permanent residency in the host country, and their number of children by answering multiple-choice questions. In addition, political orientation was measured with a single item, "To what extent do you identify as liberal versus conservative, in general?" (measured on a 1-7 Likert-type scale, with 1 = *very conservative*, 7 = *very liberal*). They were also asked to rate their English proficiency on a 0 to 10 scale (0 = *poor*, 10 = *excellent)*.

Their intercultural experiences before arrival in the host country were also examined. First, participants indicated their prior short stay abroad by rating their frequency of interacting with people from a different country before coming to the host country on a 1–7 scale (1 = *never*, 7 = *almost every day*). Second, they indicated their experience of prior short stay abroad by using a 1-7 scale (1 = *never*, 7 = *almost every month*) to answer the question "Prior to your living in the current country, how often did you go abroad for a short-term stay (less than a month)?". Next, they indicated their experience of prior long stay abroad by answering the question "Have you lived abroad for more than a month before living in the current country? If yes, indicate the total number of years and number of countries. If no, fill in '0' for both." See Table 3 for descriptive statistics for these demographics.

CHAPTER 4: RESULTS

Covariate Analysis

Prior to testing the hypotheses and research questions, several analyses were performed to examine whether demographics needed to be controlled for during the study's analyses. First, for continuous demographic items (see Table 6), a bivariate correlation analysis was conducted to check whether they had any significant relationships with the dependent variables, the ICC dimensions. As shown in Table 6, political orientation had no association with ICC variables. As such, it was not used as a covariate in subsequent data analyses. However, participants' age, length of residing in the host country, number of children, frequency of prior short stay abroad, prior long stay abroad (accumulated years and number of countries), frequency of prior intercultural interaction, and English proficiency were significantly correlated with at least one of the six ICC dimensions. Thus, these variables were controlled for in all analyses.

Next, a multivariate analysis of variance (MANOVA) was conducted to evaluate if there were any significant differences in the dependent variables based on the nominal demographic variables. Before performing the MANOVA, several of the demographic items were recoded to form fewer but more meaningful categories based on the distribution of responses for each variable. For marital status, "dating someone but not committed" and "in a committed relationship" were combined into "romantically involved"; "married," "widowed," and "divorced" were combined into "married (before)" (see Table 7). Education was recoded into "below bachelor's degree" by combining "some high school or less," "high school diploma," "some college but no degree," and "associates or technical degree"; "bachelor's degree" remained the same, and "above bachelor's degree" for those with "graduate or professional

Table 6

Bivariate Correlations for Continuous Demographic Variables and ICC Dimensions

	Communication sensitivity	Mediating differences	Information seeking	Identity reflection	Problem solving	Socializing
Age	-.02	-.07	.03	-.11**	.05	-.07
Length in host country	-.06	-.06	.03	-.12**	-.05	-.20**
Political orientation	.02	-.01	-.01	.08	-.01	-.05
Children	.02	.07	.05	-.01	.07	.09*
Prior short stay abroad	-.01	.10*	.09*	.06	.01	.12**
Prior long stay abroad						
Accumulated years	.03	.05	.03	.04	.03	.09*
Number of countries	.02	.07	.01	.04	-.01	.11**
Prior intercultural interaction	.03	.16**	.06	.03	.04	.12**
English proficiency	.15**	.14**	.14**	-.01	.15**	.05

Note: $^{*}p < .05$; $^{**}p < .001$.

Degree." For religion, Protestant and Roman Catholic were combined into "Christian," "None (atheist or agnostic)" remained the same ("no religion"), and the rest of the categories were all recoded into "other religions." The variable capturing the reasons why participants came to their host country, "I came to this country as an international student" was recoded into "studying," whereas "I was sent by my company on assignment to this country" and "I was hired by an organization in this country" were recoded into "employment;" the remaining categories were grouped together under "other reasons."

Table 7

MANOVA for Nominal Demographic Variables and ICC Dimensions

	Wilk's lambda	*F (df1, df2)*	*p*	η_p^2
Biological sex	.95	5.91 (6, 609)	<.001	.06
Marital status	.95	2.35 (12, 1226)	.005	.02
Education	.93	3.80 (12, 1226)	<.001	.04
Religion	.91	4.76 (12, 1226)	<.001	.04
Income	.94	1.08 (36, 2677.07)	.35	.01
Abroad purpose	.93	3.74 (12, 1226)	<.001	.04
Permanent residency	.97	2.72 (6, 614)	.013	.03

Table 8

Univariate Tests for Significant Nominal Demographics on ICC Dimensions

		Communication sensitivity		Mediating differences		Information seeking		Identity reflection		Problem solving		Socializing	
	N	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Biological sex													
Male	316	5.43	1.02	5.05[a]	1.21	5.05[a]	0.95	5.01	1.22	5.66	0.84	4.06[a]	1.46
Female	300	5.55	0.89	4.79[a]	1.14	4.79[a]	0.88	5.13	1.17	5.70	0.83	3.75[a]	1.44
Missing	5												
F		2.67		7.69**		5.99*		1.66		0.42		7.10**	
df1, df2		1, 614		1, 614		1, 614		1, 614		1, 614		1, 614	
η_p^2		< .01		.01		.01		< .01		< .01		.01	
Marital status													
Single	151	5.36	0.95	4.75[a]	1.20	5.82	0.93	5.06	1.21	5.67	0.82	3.80	1.48
Romantically involved	171	5.54	0.96	5.16[ab]	.99	5.84	0.91	5.12	1.16	5.59	0.83	3.93	1.37
Married (before)	299	5.50	0.99	4.87[b]	1.26	5.87	0.92	5.04	1.21	5.74	0.83	3.95	1.49
F		1.48		5.34**		0.17		0.25		1.93		0.59	
df1, df2		2, 618		2, 618		2, 618		2, 618		2, 618		2, 618	
η_p^2		< .01		.02		< .01		< .01		.01		< .01	
Education													
Below bachelor	148	5.53	0.94	4.61[ab]	1.32	5.74[a]	0.92	4.96	1.31	5.60	0.94	3.53[ab]	1.41
Bachelor's degree	262	5.49	0.98	4.98[a]	1.14	6.00[ab]	0.91	5.09	1.18	5.72	0.83	3.97[a]	1.48
Above bachelor	211	5.42	0.99	5.08[b]	1.11	5.75[b]	0.90	5.11	1.12	5.69	0.75	4.10[b]	1.42
F		0.65		7.27***		5.94**		0.78		0.97		7.20***	
df1, df2		2, 618		2, 618		2, 618		2, 618		2, 618		2, 618	
η_p^2		< .01		.02		.02		< .01		< .01		.02	
Religion													
No religion	289	5.39[a]	0.97	4.75[a]	1.17	5.78[a]	0.91	4.91[a]	1.22	5.59[a]	0.79	3.53[ab]	1.38
Christian	225	5.62[a]	0.95	5.19[ab]	1.18	5.98[a]	0.91	5.16	1.24	5.81[a]	0.84	4.32[a]	1.47
Other religions	107	5.39	1.00	4.84[b]	1.17	5.79	0.91	5.32[a]	0.95	5.65	0.89	4.05[b]	1.38

		Communication sensitivity		Mediating differences		Information seeking		Identity reflection		Problem solving		Socializing	
	N	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
F		4.12*		9.37***		3.24*		5.83**		4.77**		20.70***	
df1, df2		2, 618		2, 618		2, 618		2, 618		2, 618		2, 618	
η_p^2		.01		.03		.01		.02		.02		.06	
Abroad Purpose													
Studying	185	5.44	0.94	5.04[a]	1.08	5.79	0.90	5.26[a]	1.07	5.67	0.79	4.14[a]	1.43
Employment	87	5.40	1.05	5.26[b]	1.17	5.91	0.91	5.04	1.26	5.80	0.77	4.24[b]	1.44
Other reasons	349	5.51	0.98	4.78[ab]	1.22	5.87	0.93	4.98[a]	1.23	5.66	0.86	3.70[ab]	1.44
F		0.69		7.00***		0.67		3.36*		1.00		8.45***	
df1, df2		2, 618		2, 618		2, 618		2, 618		2, 618		2, 618	
η_p^2		< .01		.02		< .01		.01		< .01		.03	
Permanent residency													
Not obtained	201	5.61[a]	0.90	5.10[a]	1.11	5.88	0.86	5.25[a]	1.14	5.77	0.80	4.19[a]	1.46
Obtained	420	5.41[a]	1.00	4.84[a]	1.21	5.84	0.94	4.98[a]	1.21	5.64	0.84	3.77[a]	1.44
F		5.38*		6.60**		0.21		7.11**		3.53		11.14***	
df1, df2		1, 619		1, 619		1, 619		1, 619		1, 619		1, 619	
η_p^2		.01		.01		< .01		.01		.01		.02	

Notes: *p <.05; **p < .01; ***p < .001.

Means with the same subscript in the same variable were significantly different; Bonferroni test, p < .05.

The MANOVA results (see Table 7) revealed that income did not yield any significant differences in the dependent variables. Biological sex, marital status, education, religion, abroad purpose, and permanent residency in the host country, however, yielded significant differences. In the follow-up univariate analyses (see Table 8), sex and education yielded significant differences on the sub-dimensions of mediating differences, information seeking, and socializing. Marital status was significant for mediating differences (see Table 8). Religion revealed significant differences on all six ICC dimensions. Abroad purpose yielded differences for the sub-dimensions of mediating differences, identity reflection, and socializing. Lastly, permanent residency had significant effects on four dependent variables: sensitivity in communication, mediating differences, identity reflection, and socializing. Based on these results, biological sex, marital status, education, religion, abroad purpose, and permanent residency were used as covariates in subsequent analyses.

Effects of Personality Traits on Intercultural Competence

To examine the hypotheses regarding the effects of personality traits on ICC (H1-H5), a series of hierarchical linear regressions were conducted in SPSS 26.0. The covariates—age, length in the host country, children, prior short stay abroad, prior long stay abroad (accumulated years and number of countries), prior intercultural interaction, English proficiency, biological sex, marital status, education, religion, abroad purpose, and permanent residency were entered in the first block as control variables in each regression analysis, with categorical variables dummy-coded (see Table 8 notes for reference groups). The five MPQ traits were entered as independent variables in the second block of the regressions. Each of the ICC dimensions was entered as the dependent variable, one at a time. Tests to see if the data presented multicollinearity problems

indicated that this was not a concern (VIF values ranged from 1.07 to 2.19), based on Hair et al.'s (1995) standard (VIF < 10).

Table 9

Regression Analyses of Personality Traits with Covariates on ICC Dimensions

	Communication sensitivity		Mediating differences		Information seeking		Identity reflection		Problem solving		Socializing	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Covariates												
English proficiency	.17***	.06	.10*	.02	.12**	.07	.00	-.06	.16***	.09*	.03	-.05
Biological sex[1]	.06	.02	-.10*	-.08*	.10*	.11**	.06	.02	.04	.04	-.09*	-.07*
Permanent residency[1]	-.12**	-.06	-.07	-.03	-.06	-.03	-.07	-.03	-.09*	-.05	-.05	-.01
Age	-.02	.04	-.13**	-.09*	.00	.02	-.10	-.04	.06	.09*	-.08	-.03
Length in host country	-.06	.00	.04	.10**	.03	.07	-.03	.01	-.07	-.01	-.11**	-.06
Children	-.01	-.06	.11*	.05	.03	.00	.03	.00	.01	-.03	.09*	.03
Education[1]												
Bachelor's degree	-.03	-.06	.11*	.06	.13*	.10*	.03	.01	.04	.00	.09	.04
Above bachelor	-.07	-.10*	.13*	.06	-.02	-.05	.02	-.01	.00	-.05	.08	.01
Religion[1]												
Christian	.09*	-.03	.17***	.01	.09	.00	.10*	.02	.09	-.03	.25***	.10**
Other religions	.02	-.05	.05	-.02	.03	-.01	.13**	.07	.04	-.02	.14***	.06
Abroad Purpose[1]												
Studying	-.05	-.05	.03	.00	-.03	-.04	.05	.05	.01	.00	.07	.04
Employment	-.05	-.04	.05	.03	.00	.00	.00	.01	.04	.04	.04	.03
Marital status[1]												
Romantically involved	.10*	.02	.16***	.10**	.00	-.02	.03	-.01	-.03	-.07	.06	-.01
Married (before)	.10	.03	.04	-.03	-.01	-.06	.03	.00	.03	-.04	.05	-.01
Prior short stay abroad	-.01	.00	.05	.02	.10*	.07	.07	.05	-.01	-.04	.08	.05
Prior long stay abroad												
Accumulated years	.04	.00	.04	-.01	.02	-.01	.06	.03	.03	-.01	.07	.02
No. of countries	.00	.01	.00	.00	-.02	.00	.01	.01	-.04	-.02	.04	.05
Prior intercultural interaction	-.01	-.05	.09*	.03	.01	-.01	.01	-.02	.00	-.03	.04	-.02
Personality												
Cultural empathy		.53***		.21***		.09		.23***		.18***		.19***
Flexibility		-.05		-.05		-.15***		-.03		-.17***		.01
Social Initiative		.14**		.34***		-.05		.05		-.04		.35***

	Communication sensitivity		Mediating differences		Information seeking		Identity reflection		Problem solving		Socializing	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Emotional Stability		-.04		.04		.05		-.20***		.06		.00
Open-mindedness		.09		.22***		.33***		.32***		.39***		.22***
F	2.36**	22.29***	5.31***	27.95***	2.37***	6.92***	2.05**	10.31***	2.06**	12.18***	6.55***	27.78***
df1, df2	18, 602	23, 597	18, 602	23, 597	18, 602	23, 597	18, 602	23, 597	18, 602	23, 597	18, 602	23, 597
Adjusted R^2	.04	.44	.11	.50	.04	.18	.03	.26	.03	.29	.14	.50
ΔF	2.36***	87.90***	5.31***	94.60***	2.37***	21.82***	2.05**	37.85***	2.06**	45.86***	6.55***	87.27***
df1, df2	18, 602	5, 597	18, 602	5, 597	18, 602	5, 597	18, 602	5, 597	18, 602	5, 597	18, 602	5, 597
ΔR^2	.07	.40	.14	.38	.07	.14	.06	.23	.06	.26	.16	.35

Notes: Entries are standardized regression coefficients; *$p < .05$; **$p < .01$; ***$p < .001$.

[1]Dummy coded with the reference group as follows: male for biological sex; not obtained for permanent residency; below bachelor's degree for education; no religion for religion; other purposes for abroad purpose; and single for marital status.

The first hypothesis proposed that the trait of emotional stability would positively predict ICC—that is, communication sensitivity (H1a), mediating differences (H1b), information seeking (H1c), identity reflection (H1d), problem solving (H1e), and socializing (H1f). Table 9 demonstrate the results of the hierarchical linear regression analyses including all path coefficients, significance levels, *F*-test values, and percentage of explained variance. After controlling for the effects of demographic variables, emotional stability negatively predicted identity reflection but was not significantly related to any of the other five dimensions. Although this association was significant, emotional stability was a negative instead of a positive predictor (as hypothesized) for identity reflection. Thus, H1d, albeit significant, was not supported as initially formulated; H1a, H1b, H1c, H1e, and H1f were not supported.

The second hypothesis predicted positive associations between flexibility and ICC—that is, communication sensitivity (H2a), mediating differences (H2b), information seeking (H2c), identity reflection (H2d), problem solving (H2e), and socializing (H2f). The regression results showed that, after controlling for the effects of covariates, flexibility had a negative relationship with information seeking and problem solving but had no significant relationships with other dimensions. As the path coefficients were opposite than predicted, H2c and H2e were not supported as originally posited (see Table 9 for coefficients, significance levels, *F*-test results, and percentage of explained variance and). H2a, H2b, H2d, and H2f were not supported.

Next, open-mindedness was hypothesized to be positively associated with ICC—that is, communication sensitivity (H3a), mediating differences (H3b), information seeking (H3c), identity reflection (H3d), problem solving (H3e), and socializing (H3f). As demonstrated in Table 9, when the effects of demographic variables were controlled, open-mindedness did not predict communication sensitivity but had significant, positive associations with the other five

dimensions. Hence, H3a was not supported, but H2b, H3c, H3d, H3e, and H3f were supported.

The fourth hypothesis predicted positive associations between social initiative and ICC—that is, communication sensitivity (H4a), mediating differences (H4b), information seeking (H4c), identity reflection (H4d), problem solving (H4e), and socializing (H4f). The results (see Table 9) showed that, with the effects of the covariates controlled, social initiative significantly predicted sensitivity in communication, mediating differences, and socializing, but not the other three ICC dimensions. Therefore, H4a, H4b, and H4f were supported, but H4c, H4d, and H4e were not.

The fifth hypothesis posited that cultural empathy would be positively associated with ICC, that is, communication sensitivity (H5a), mediating differences (H5b), information seeking (H5c), identity reflection (H5d), problem solving (H5e), and socializing (H5f). As seen from Table 8, after controlling for the effects of demographic variables, cultural empathy did not have a significant relationship with information seeking but positively predicted the other five ICC dimensions. Thereupon, H5a, H5b, H5d, H5e, and H5f were supported, but H5e was not.

Effects of Social Networks on Intercultural Competence

To examine the hypotheses and research questions regarding the effects of social network characteristics on ICC (i.e., H6-H11 and RQ1), another series of hierarchical linear regressions was conducted. The same set of demographic variables as in the analyses of personality effects was entered in the first block of the regressions as control variables. The network variables were entered together as independent variables in the second block of the regressions. The six ICC dimensions were entered as the dependent variable in each regression analysis. Table 10 presents the results of these regression analyses. Multicollinearity was not a concern, as VIF values ranged from 1.07 to 6.02.

The sixth and seventh hypotheses and the first research question pertained to the effects of degree centrality of different network ties in ICC dimensions. Specifically, H6 proposed that strong intercultural network size would positively relate to communication sensitivity (H6a), mediating differences (H6b), information seeking (H6c), identity reflection (H6d), problem solving (H6e), and socializing (H6f). H7 posited that weak intercultural network size would also positively predict the same ICC dimensions, communication sensitivity(H7a), mediating differences (H7b), information seeking (H7c), identity reflection (H7d), problem solving (H7e), and socializing (H7f). RQ1 asked how strong co-cultural network size and b) weak co-cultural network size would relate to ICC.

The results (see Table 10) demonstrated that, after controlling for the effects of covariates, strong intercultural network size was negatively associated with information seeking, which was contrary to the prediction advanced. This network variable had no significant relationship with the other ICC dimensions. Weak intercultural network size, strong intercultural network size, and strong co-cultural network size did not predict any ICC dimensions. Thus, H6c, albeit significant, was not supported in its initial formulation; H6a, H6b, H6d, and H6f were not supported. H7 was not supported. To answer RQ1, neither strong co-cultural network size nor the degree of weak co-cultural ties was related to ICC.

Table 10

Regression Analyses of Network Variables with Covariates on ICC Dimensions

	Communication sensitivity		Mediating differences		Information seeking		Identity reflection		Problem solving		Socializing	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Covariates												
English proficiency	.17***	.18***	.10*	.11**	.12**	.12**	.00	.01	.16***	.17***	.03	.04
Biological sex[1]	.06	.06	-.10*	-.09*	.10*	.11**	.06	.08	.04	.06	-.09*	-.07
Permanent residency[1]	-.12**	-.12**	-.07	-.07	-.06	-.03	-.07	-.05	-.09*	-.08	-.05	-.05
Age	-.02	-.02	-.13**	-.13**	.00	.00	-.10	-.11*	.06	.06	-.08	-.07
Length in host country	-.06	-.05	.04	.03	.03	.04	-.03	-.02	-.07	-.06	-.11**	-.12**
Children	-.01	-.02	.11*	.10*	.03	.04	.03	.03	.01	.01	.09*	.06
Education[1]												
Bachelor's degree	-.03	-.04	.11*	.09	.13*	.11*	.03	.01	.04	.02	.09	.05
Above bachelor	-.07	-.09	.13*	.10	-.02	-.05	.02	-.01	.00	-.03	.08	.03
Religion[1]												
Christian	.09*	.08	.17***	.15***	.09	.06	.10*	.08	.09	.07	.25***	.20***
Other religions	.02	.01	.05	.03	.03	.01	.13**	.11*	.04	.03	.14***	.10*
Abroad Purpose[1]												
Studying	-.05	-.06	.03	.02	-.03	-.02	.05	.06	.01	.03	.07	.06
Employment	-.05	-.06	.05	.04	.00	-.01	.00	.00	.04	.04	.04	.04
Marital status[1]												
Romantically involved	.10*	.11*	.16***	.16***	.00	.01	.03	.04	-.03	-.03	.06	.06
Married (before)	.10	.12*	.04	.06	-.01	.00	.03	.05	.03	.03	.05	.10
Prior short stay abroad	-.01	.00	.05	.05	.10*	.09	.07	.06	-.01	-.02	.08	.07
Prior long stay abroad												
Accumulated years	.04	.05	.04	.04	.02	.02	.06	.07	.03	.04	.07	.08
No. of countries	.00	.00	.00	-.01	-.02	-.01	.01	.00	-.04	-.03	.04	.03
Prior intercultural interaction	-.01	.00	.09*	.08	.01	.01	.01	.01	.00	.00	.04	.03
Network												
Strong intercultural network size		.08		.05		-.22*		-.07		-.12		-.07
Weak intercultural		.02		.01		-.04		-.03		.03		.05

	Communication sensitivity		Mediating differences		Information seeking		Identity reflection		Problem solving		Socializing	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
network size												
Strong co-cultural network size		.01		.00		.08		.01		.01		.06
Weak co-cultural network size		-.03		.01		.09		.05		.07		.01
Heterophily		-.12		-.04		.22**		.05		.03		-.06
Diversity		.02		.07		.11*		.05		.00		.11**
Density		-.09		-.03		.00		-.02		.01		-.11
Effective size		-.11		.02		.13		.11		.11		.03
F	2.36***	1.86**	5.31***	4.02***	2.37***	2.52***	2.05**	1.76*	2.06**	1.80**	6.55***	6.51***
df1, df2	18, 602	26, 594	18, 602	26, 594	18, 602	26, 594	18, 602	26, 594	18, 602	26, 594	18, 602	26, 594
Adjusted R^2	.04	.03	.11	.11	.04	.06	.03	.03	.03	.03	.14	.19
ΔF	2.36***	0.75	5.31***	1.10	2.37***	2.74**	2.05**	1.12	2.06**	1.20	6.55***	5.54***
df1, df2	18, 602	8, 594	18, 602	8, 594	18, 602	8, 594	18, 602	8, 594	18, 602	8, 594	18, 602	8, 594
ΔR^2	.07	.01	.14	.01	.07	.03	.06	.01	.06	.03	.16	.06

Notes: Entries are standardized regression coefficients; *$p < .05$; **$p < .01$; ***$p < .001$.

[1]Dummy coded with the reference group as follows: male for biological sex; not obtained for permanent residency; below bachelor's degree for education; no religion for religion; other purposes for abroad purpose; and single for marital status.

The eighth hypothesis proposed that the heterophily of one's ego network would be positively associated with the ICC dimensions, that is, communication sensitivity (H8a), mediating differences (H8b), information seeking (H8c), identity reflection (H8d), problem solving (H8e), and socializing (H8f). The next hypothesis (H9) predicted that the diversity of one's ego network would be a positive predictor for these ICC dimensions, communication sensitivity (H9a), mediating differences (H9b), information seeking (H9c), identity reflection (H9d), strategic problem solving (H9e), and socializing (H9f). The results (see Table 10) showed that the heterophily measure, as predicted, positively related to information seeking but had no relation with the other ICC variables. The diversity of ego network also positively predicted information seeking and socializing but did not predict the other four competence dimensions. Accordingly, H8c was supported, but H8a, H8b, H8d, H8e, H8f were not. H9c and H9f were supported, but H9a, H9b, H9d, H9e were not.

The last two hypotheses pertained to the structural properties of strong network ties. H10 posited that the density of one's strong ties would be negatively associated with the ICC dimensions—communication sensitivity (H10a), mediating differences (H10b), information seeking (H10c), identity reflection (H10d), problem solving (H10e), and socializing (H10f). In addition, H11 proposed that the effective size of strong network ties would be positively associated with ICC dimensions—communication sensitivity (H11a), mediating differences (H11b), information seeking (H11c), identity reflection (H11d), problem solving (H11e), and socializing (H11f). The results (see Table 10) illustrated that these two strong tie properties did not significantly relate to any of the ICC dimensions. Hence, both H10 and H11 were not supported.

Combined Effects of Personality Traits and Social Networks

After examining the effects of MPQ traits and social network properties independently, another series of analyses was conducted to evaluate their joint effects on ICC with the goal of bringing together the individual and relational approaches to competence. First, a set of hierarchical linear regressions was conducted to examine to what extent (if any) the MPQ traits and network variables (i.e., strong intercultural network size, weak intercultural network size, strong co-cultural network size, weak co-cultural size, heterophily, diversity, density, and effective size) predicted ICC in the presence of each other (RQ2). Similar to previous analyses, the demographic covariates were entered as controls in the first block of the regressions. The MPQ traits and network variables were entered together as independent variables in the second block of the regressions. The six ICC dimensions were entered as the dependent variable, one at a time, in each regression analysis. Tests to examine collinearity indicated that multicollinearity was not a concern, as VIF values ranged from 1.07 to 6.08.

As seen from Table 11, the results of these regression analyses revealed that, when networks and personality were simultaneously examined, with the effects of the demographic variables accounted for, the predictions of MPQ traits on ICC did not change substantially compared to results from the regression analyses conducted without the network properties as the independent variables. Namely, flexibility negatively predicted information seeking and problem solving; emotional stability had a negative association with identity reflection; social initiative positively related to sensitivity in communication, mediating differences, and socializing; cultural empathy had positive associations with all ICC dimensions except information seeking; and open-mindedness positively predicted all ICC dimensions other than sensitivity in communication. Thus, pattern of relationships between personality traits and ICC did not change when network variables were present compared to when they were absent.

Table 11

Regression Analyses of Network and Personality Variables with Covariates on ICC Dimensions

	Communication sensitivity	Mediating differences	Information seeking	Identity reflection	Problem solving	Socializing
Covariates						
English proficiency	.06	.01	.07	-.06	.09*	-.05
Biological sex[1]	.01	-.08*	.11**	.03	.05	-.06
Permanent residency[1]	-.07*	-.03	-.01	-.01	-.04	-.01
Age	.03	-.09*	.02	-.05	.10*	-.04
Length in host country	.01	.10**	.08	.01	.00	-.06
Children	-.06	.05	.01	.01	-.02	.02
Education[1]						
Bachelor's degree	-.06	.06	.10*	.01	.00	.02
Above bachelor	-.09*	.05	-.07	-.02	-.06	-.02
Religion[1]						
Christian	-.02	.02	-.01	.01	-.03	.08*
Other religions	-.04	-.02	-.01	.06	-.01	.04
Abroad Purpose[1]						
Studying	-.06	-.01	-.03	.06	.02	.03
Employment	-.04	.03	-.01	.01	.04	.02
Marital status[1]						
Romantically involved	.03	.10*	-.02	-.01	-.07	.00
Married (before)	.03	-.03	-.05	.00	-.05	.02
Prior short stay abroad	.01	.02	.06	.04	-.04	.04
Prior long stay abroad						
Accumulated years	.00	-.01	-.01	.03	.00	.02
No. of countries	.02	.00	.00	.01	-.02	.04
Prior intercultural interaction	-.04	.03	-.01	-.02	-.03	-.02
Network						
Strong intercultural network size	.03	.01	-.21**	-.10	-.12	-.03
Weak intercultural network size	.01	-.01	-.03	-.02	.04	.02
Strong co-cultural network size	-.03	-.02	.06	.00	-.01	.05
Weak co-cultural network size	-.05	.00	.08	.03	.06	.00
Heterophily	-.08	.02	.23**	.07	.04	-.01

	Communication sensitivity	Mediating differences	Information seeking	Identity reflection	Problem solving	Socializing
Diversity	-.03	.02	.08	.00	-.05	.07*
Density	-.06	-.02	-.01	.02	.01	-.08
Effective size	-.11	-.02	.09	.12	.07	.01
Personality						
Cultural empathy	.54***	.22***	.08	.23***	.18***	.18***
Flexibility	-.05	-.05	-.15***	-.03	-.17***	.01
Social Initiative	.15***	.35***	-.05	.05	-.04	.34***
Emotional Stability	-.03	.04	.05	-.20***	.05	.00
Open-mindedness	.08	.21***	.32***	.32***	.40***	.22***
F (31, 589)	16.98***	20.60***	5.83***	7.76***	9.37***	21.95***
Adjusted R^2	.44	.49	.19	.25	.30	.51
ΔF (13, 589)	34.85***	36.19***	9.98***	14.83***	18.43***	34.36***
ΔR^2	.41	.38	.17	.23	.27	.37

Notes: Entries are standardized regression coefficients; *$p < .05$; **$p < .01$; ***$p < .001$.

[1]Dummy coded with the reference group as follows: male for biological sex; not obtained for permanent residency; below bachelor's degree for education; no religion for religion; other purposes for abroad purpose; and single for marital status.

ΔR^2 and ΔF are changes compared with Model 1s in Table 8 and Table 9 that included control variables only.

However, the effects of the network variables had some changes when they were examined together with MPQ traits (see Table 11). The strong intercultural network size was still negatively, and heterophily remained positively, associated with information seeking. But the effect of diversity on information seeking disappeared. Therefore, to answer RQ2, when MPQ traits and network variables were examined together as predictors of ICC (compared to when they were examined separately), personality traits had the similar associations with ICC dimensions; but the effect of network diversity on the competence dimension of information seeking was cancelled.

The third research question asked how the MPQ traits related to network properties, if at all. To answer this question, the same set of demographic variables were entered in the first block of the hierarchical linear regression analyses as covariates. The network properties (i.e., strong intercultural network size, weak intercultural network size, strong co-cultural network size, weak co-cultural network size, heterophily, diversity, density, and effective size) were entered together in the second block of the analyses as independent variables. The five MPQ traits (i.e., emotional stability, flexibility, open-mindedness, social initiative, and cultural empathy) were entered as the dependent variable, one at a time, in each regression analysis. Table 12 presents the results, indicating that, after controlling for the effects of demographics, only network diversity had a weak (β = .09, p = .037) positive association with open-mindedness. Other network properties did not relate to any ICC dimensions.

Table 12

Regression Analyses of Network Variables with Covariates on Personality Traits

	Cultural empathy		Flexibility		Social initiative		Emotional stability		Open-mindedness	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Covariates										
English proficiency	.16***	.18***	.00	-.02	.09*	.09*	.08	.07	.09*	.11*
Biological sex[1]	.09*	.10**	-.02	-.02	-.08*	-.06	-.20***	-.20***	-.04	-.02
Permanent residency[1]	-.10*	-.09*	-.01	-.03	-.01	-.01	-.01	.00	-.07	-.07
Age	-.07	-.05	.12*	.11*	-.07	-.06	.13*	.14**	-.04	-.03
Length in host country	-.07	-.07	.03	.02	-.06	-.06	-.08	-.08	-.10*	-.09*
Children	.04	.02	-.07	-.08	.12*	.10*	.05	.05	.06	.05
Education[1]										
Bachelor's degree	.04	.01	.01	.01	.07	.04	.10*	.09	.07	.04
Above bachelor	.01	-.03	.03	.02	.12	.09	.06	.06	.12*	.09
Religion[1]										
Christian	.16***	.12**	-.05	-.02	.20***	.17***	.14***	.13**	.21***	.18***
Other religions	.07	.05	-.02	.00	.11*	.08*	-.03	-.03	.11**	.09*
Abroad purpose[1]										
Studying	-.02	-.02	.01	.00	.07	.07	.06	.07	.04	.04
Employment	-.04	-.05	.00	.01	.06	.06	.06	.06	.02	.02
Marital status[1]										
Romantically involved	.13*	.13**	.00	.00	.09	.08	.02	.01	.04	.05
Married (before)	.11*	.13*	-.09	-.08	.07	.09	.10	.09	.08	.10
Prior short stay abroad	-.04	-.05	.03	.02	.05	.04	.04	.03	.10*	.10*
Prior long stay abroad										
Accumulated years	.04	.04	-.01	-.01	.07	.08	.04	.04	.09*	.09*
No. of countries	-.02	-.03	.02	.02	.01	.01	-.04	-.04	-.01	-.02
Prior intercultural interaction	.05	.05	.10*	.09*	.06	.06	.06	.05	.10*	.09*
Network										
Strong intercultural network size		.07		.06		.07		-.04		.01
Weak intercultural network size		.02		.08		.07		.08		-.01
Strong-co-cultural network size		.08		-.02		.00		.02		.00

	Cultural empathy		Flexibility		Social initiative		Emotional stability		Open-mindedness	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Weak co-cultural network size		.03		-.03		.00		-.03		.02
Heterophily		-.06		-.01		-.10		-.05		-.03
Diversity		.07		-.01		.03		-.02		.09*
Density		-.05		-.12		-.02		.08		-.04
Effective size		-.03		-.15		.06		.11		.03
F	3.71***	3.23***	1.32	1.33	5.48***	4.58***	6.35***	4.75***	6.15***	4.79***
df1, df2	18, 602	26, 594	18, 602	26, 594	18, 602	26, 594	18, 602	26, 594	18, 602	26, 594
Adjusted R^2	.07	.09	.01	.01	.11	.13	.13	.14	.13	.14
ΔF	3.71***	2.03	1.32	1.34	5.48***	2.34*	6.35***	1.11	6.15***	1.62
df1, df2	18, 602	8, 594	18, 602	8, 594	18, 602	8, 594	18, 602	8, 594	18, 602	8, 594
ΔR^2	.10	.02	.04	.02	.14	.03	.16	.01	.16	.02

Notes: Entries are standardized regression coefficients; *$p < .05$; **$p < .01$; ***$p < .001$.

[1]Dummy coded with the reference group as follows: male for biological sex; not obtained for permanent residency; below bachelor's degree for education; no religion for religion; other purposes for abroad purpose; and single for marital status.

Table 13

Regression Analyses of Personality Traits with Covariates on Network Variables (Part 1)

	Strong intercultural network size		Strong intercultural network size		Strong intercultural network size		Strong intercultural network size	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Covariates								
English proficiency	.12**	.12**	-.10*	-.12**	.12**	.11*	-.19***	-.20***
Biological sex[1]	-.05	-.05	-.06	-.05	-.02	-.01	-.02	-.03
Permanent residency[1]	.07	.07	-.15***	-.14***	.05	.05	.02	.02
Age	.00	.01	-.15**	-.14**	-.07	-.08	-.12*	-.10*
Length in host country	.18***	.18***	-.05	-.04	.10*	.10*	-.01	-.01
Children	.12*	.11*	.05	.04	.08	.07	.06	.04
Education[1]								
Bachelor's degree	.07	.07	.09	.08	.02	.02	.06	.05
Above bachelor	.00	-.01	.09	.09	.04	.04	.17**	.16**
Religion[1]								
Christian	.04	.03	.20***	.18***	-.05	-.06	.15***	.13**
Other religions	.03	.02	.10*	.09*	-.06	-.06	.11**	.10*
Abroad purpose[1]								
Studying	.05	.05	-.14**	-.14**	.00	-.01	-.05	-.05
Employment	-.07	-.07	.00	.00	-.02	-.02	.01	.01
Marital status[1]								
Romantically involved	.16***	.15**	-.04	-.05	.08	.07	-.02	-.03
Married (before)	-.05	-.05	.04	.02	.01	.01	.02	.01
Prior short stay abroad	.07	.07	.05	.06	.13**	.13**	.05	.05
Prior long stay abroad								
Accumulated years	.05	.04	-.01	-.02	.01	.01	-.03	-.04
No. of countries	.06	.06	-.01	-.01	-.01	-.01	-.02	-.02
Prior intercultural interaction	.08	.08	-.03	-.03	.04	.03	-.07	-.07
Personality								
Cultural empathy		.00		.09		.04		.08
Flexibility		.02		-.07		.06		-.01
Social initiative		.13		.01		.08		.07

	Strong intercultural network size		Strong intercultural network size		Strong intercultural network size		Strong intercultural network size	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Emotional stability		-.05		.08		.05		.00
Open-mindedness		-.03		-.03		-.09		-.03
F	5.33***	4.47***	4.53***	2.36***	2.52***	4.12***	3.48***	3.09***
df1, df2	18, 602	23, 597	18, 602	23, 597	18, 602	23, 597	18, 602	23, 597
Adjusted R^2	.11	.11	.09	.10	.04	.05	.07	.07
ΔF	5.33***	1.33	4.53***	2.48*	2.52***	1.75	3.48***	1.65
df1, df2	18, 602	5, 597	18, 602	5, 597	18, 602	5, 597	18, 602	5, 597
ΔR^2	.14	.01	.12	.02	.07	.01	.09	.01

Notes: Entries are standardized regression coefficients; *$p < .05$; **$p < .01$; ***$p < .001$.

[1]Dummy coded with the reference group as follows: male for biological sex; not obtained for permanent residency; below bachelor's degree for education; no religion for religion; other purposes for abroad purpose; and single for marital status.

Table 14

Regression Analyses of Personality Traits with Covariates on Network Variables (Part 2)

	Heterophily		Diversity		Density		Effective size	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Covariates								
English proficiency	.25***	.26***	-.10*	-.12**	-.03	-.02	.05	.03
Biological sex[1]	.02	.02	-.02	-.03	.15***	.15***	-.14***	-.13***
Permanent residency[1]	.04	.03	.02	.03	.07	.06	-.10*	-.09*
Age	.08	.07	-.03	-.02	-.11*	-.12*	.04	.06
Length in host country	.13**	.12**	-.01	.00	.03	.03	.04	.05
Children	.01	.01	.00	-.01	-.07	-.07	.06	.04
Education[1]								
Bachelor's degree	-.05	-.05	.12*	.12*	-.10*	-.10*	.12*	.11*
Above bachelor	-.10*	-.10*	.18***	.16**	-.21***	-.20***	.14*	.12*
Religion[1]								
Christian	-.17***	-.15***	.14***	.12**	-.06	-.04	.18***	.15***
Other religions	-.11**	-.10*	.15***	.13**	-.02	-.01	.09*	.08
Abroad purpose[1]								
Studying	.01	.01	.08	.08	.02	.03	-.02	-.03
Employment	-.07	-.07	.06	.06	.03	.03	-.04	-.04
Marital status[1]								
Romantically involved	.13**	.14**	-.04	-.06	.05	.06	.06	.05
Married (before)	.00	.02	-.13*	-.14*	.24***	.24***	-.09	-.11
Prior short stay abroad	.06	.06	.02	.01	-.01	.00	.06	.06
Prior long stay abroad								
Accumulated years	.06	.07	-.02	-.03	.04	.05	-.01	-.02
No. of countries	.00	.00	.04	.04	-.01	-.01	.03	.03
Prior intercultural interaction	.09*	.09*	.02	.01	-.06	-.05	.08	.07
Personality								
Cultural empathy		-.06		.06		-.02		.03
Flexibility		.06		-.01		-.04		-.03
Social initiative		.00		.04		-.09		.14*
Emotional stability		-.01		-.05		.07		.00

	Heterophily		Diversity		Density		Effective size	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Open-mindedness		-.02		.09		-.04		-.02
F	8.44***	6.92***	3.58***	3.40***	4.10***	3.60***	4.10***	3.83***
df1, df2	18, 602	23, 597	18, 602	23, 597	18, 602	23, 597	18, 602	23, 597
Adjusted R^2	.18	.18	.07	.08	.08	.09	.08	.10
ΔF	8.44***	1.37	3.58***	2.62*	4.10***	1.70	4.10***	2.68*
df1, df2	18, 602	5, 597	18, 602	5, 597	18, 602	5, 597	18, 602	5, 597
ΔR^2	.20	.01	.10	.02	.11	.01	.11	.02

Notes: Entries are standardized regression coefficients; *$p < .05$; **$p < .01$; ***$p < .001$.

[1]Dummy coded with the reference group as follows: male for biological sex; not obtained for permanent residency; below bachelor's degree for education; no religion for religion; other purposes for abroad purpose; and single for marital status.

Next, in another series of hierarchical regressions, network properties were entered as the dependent variable, one at a time in each regression, with the same covariates entered in the first block, and the MPQ traits entered in the second block as the independent variables. Table 13 and Table 14 show the outcomes of how personality traits predicted (or not) network properties. Specifically, only the trait of social initiative had a positive association effective size. Other traits did not relate to any network variables. Hence, in response to RQ3, network diversity had a positive relationship with open-mindedness, and social initiative positively predicted effective size of strong network.

The fourth research question asked whether network variables mediated the effects of personality variables on ICC, whether personality variables mediated the effects of network variables on ICC, or whether they had independent effects. To answer RQ4, three alternative models for possible relationships among network, personality, and ICC were tested. (1) The *personality-to-network* model suggested that network variables mediated the effects of personality traits on ICC. (2) The *network-to-personality* relationship proposed that personality traits mediated the effects of network properties on ICC. Finally, (3) the *network-and-personality* model considered them to have independent effects on competence.

To test these models and answer RQ4, mediation analyses were conducted. According to Hayes (2018), mediation is considered to occur when (1) the independent variable (*X*) significantly predicts the mediator (*M*), path *a*; (2) the mediator (M) significantly predicts the outcome variable (*Y*), path *b*; and (3) the indirect effect of X on Y through M is statistically significant, path *ab*. An indirect effect is considered significant when the 95% bias-corrected and accelerated confidence interval (95% BCa CI) does not include zero (Hayes, 2018). According to the first two standards, previous regression results (see Table 11, Table 12, Table 13, and Table

14) indicated that only some relationships between possible independent variables and outcome variables had significant relationships (see Table 15 where the variables are specified). Therefore, only these relationships were further tested in mediation analyses.

Table 15

Mediating Relationships between Network, Personality, and ICC Dimensions

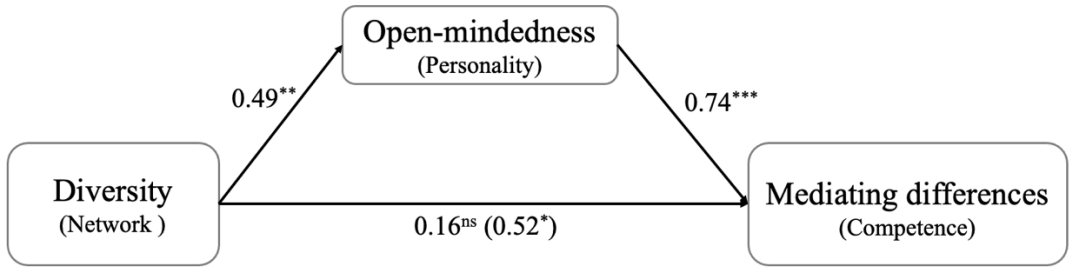
No.	*X*	*M*	*Y*	*ab*	*SE*	*CI*	Sobel test	
							Statistic	*p*
Network-to-personality model								
1	Diversity	Open-mindedness	Mediating differences	0.36	0.15	[0.08; 0.66]	3.00	.003
2	Diversity	Open-mindedness	Information seeking	0.18	0.08	[0.04; 0.34]	2.91	.004
3	Diversity	Open-mindedness	Identity reflection	0.28	0.12	[0.06; 0.54]	2.96	.003
4	Diversity	Open-mindedness	Problem solving	0.23	0.09	[0.05; 0.42]	2.96	.003
5	Diversity	Open-mindedness	Socializing	0.43	0.17	[0.10; .76]	3.00	.003

Note: [ab] Unstandardized indirect effects after controlling for demographic covariates.

To test the statistical significance of the indirect effects (path *ab*) in these relationships (from Table 15) mediation analyses were conducted in PROCESS version 3.5.3 (Hayes, 2020), with pre-set Model 4, bias-corrected, with 5,000 bootstraps, and 95% accelerated confidence intervals. In each analysis, *X*, *M*, and *Y* variables of each row in Table 15 were entered as an independent variable, mediator, and dependent variable, respectively, with the demographic variables (specified in Table 9) entered as the covariates. The meditation analysis results (Table 15) showed that the trait of open-mindedness mediated the relationships between network diversity and five of the ICC dimensions. Specifically, the indirect effects of diversity on mediating differences, information seeking, identity reflection, problem solving, and socializing through open-mindedness were significant, as the confidence intervals of their *ab* paths did not contain zero (see unstandardized path coefficients for these mediations in Figures 10-14). However, the confidence interval of the indirect effect of social initiative on socializing through network size included zero; thus, this indirect effect was not significant.

Figure 10

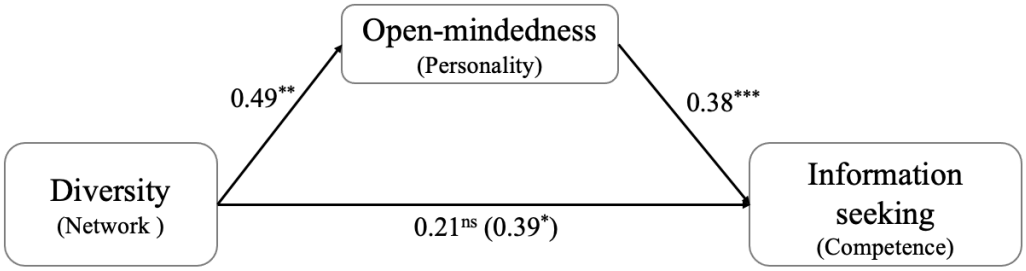
Mediation Model for Diversity and Mediating Differences through Open-Mindedness



Notes: All coefficients in the figure are unstandardized; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.
The direct effect of *X* on *Y* (in the presence of *M* and the covariates) is listed on the path, whereas its total effect (only *X* and the covariates) is listed on the same path in parentheses.

Figure 11

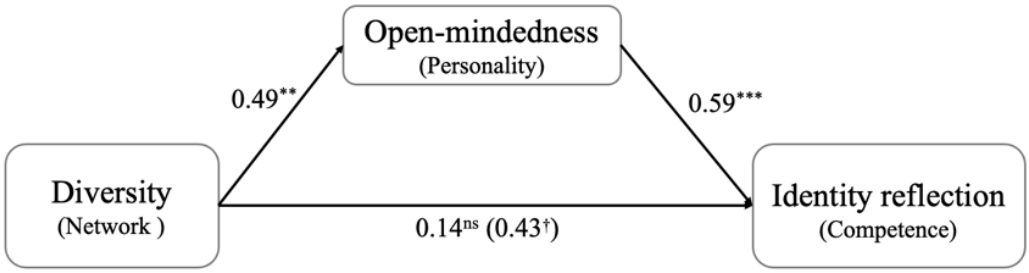
Mediation Model for Diversity and Information Seeking through Open-Mindedness



Notes: All coefficients in the figure are unstandardized; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.
The direct effect of *X* on *Y* (in the presence of *M* and the covariates) is listed on the path, whereas its total effect (only *X* and the covariates) is listed on the same path in parentheses.

Figure 12

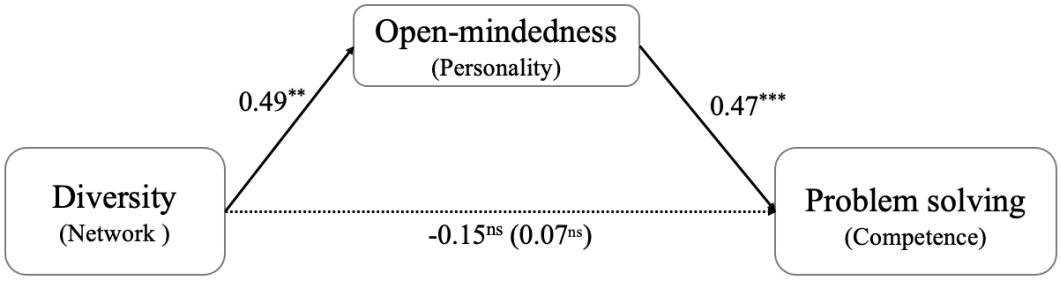
Mediation Model for Diversity and Information Seeking through Open-Mindedness



Notes: All coefficients in the figure are unstandardized; $^{\dagger}p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.
The direct effect of *X* on *Y* (in the presence of *M* and the covariates) is listed on the path, whereas its total effect (only *X* and the covariates) is listed on the same path in parentheses.

Figure 13

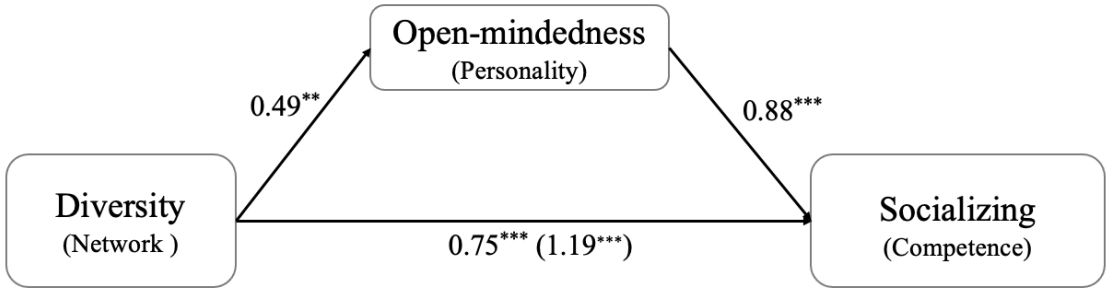
Mediation Model for Diversity and Problem Solving through Open-Mindedness



Notes: All coefficients in the figure are unstandardized; $^{**}p < .01$; $^{***}p < .001$.
The direct effect of *X* on *Y* (in the presence of *M* and the covariates) is listed on the path, whereas its total effect (only *X* and the covariates) is listed on the same path in parentheses.

Figure 14

Mediation Model for Diversity and Socializing through Open-Mindedness



Notes: All coefficients in the figure are unstandardized; $^{**}p < .01$; $^{***}p < .001$.
The direct effect of *X* on *Y* (in the presence of *M* and the covariates) is listed on the path, whereas its total effect (only *X* and the covariates) is listed on the same path in parentheses.

Next, the Sobel test was also conducted to examine further the indirect effects for all network-to-personality model relationships specified in Table 15. The Sobel test provides an estimate of the standard error of *ab*, which equals the square root of $b^2sa^2 + a^2sb^2$ (Kenny, 2021). This test determines whether a mediation effect is statistically significant by diagnosing whether the reduction in the effect of the independent variable, after including the mediator in the model, is a significant reduction (Kenny, 2021). The results (see Table 15) indicated that the indirect

effects of diversity on five of the ICC dimensions through open-mindedness were significant in the Sobel test.

These results provide an answer to RQ4. The significant mediations from diversity to five of the ICC components through open-mindedness represent the *network-to-personality* model. Therefore, as a response to RQ4, there was one personality trait, open-mindedness, that mediated the effects of one network variable, diversity, on ICC.

In sum, the results show that all five MPQ traits relate to ICC but with different dimensions. With or without the presence of network variables included in the predictions, the associative relationships between MPQ traits and ICC components did not change substantially. However, the effects of network variables on ICC were somewhat different. When their effects were examined separately from trait variables, information seeking was predicted negatively by strong intercultural network size and positively by network heterophily and diversity; socializing was positively predicted by network diversity. Nevertheless, when network and trait variables were simultaneously examined for predicting ICC, the association between diversity and information seeking disappeared. Regarding how the two types of antecedents (network and personality) might relate to each other, network diversity was found a positive predictor for the trait of open-mindedness, and the trait of social initiative was a positive predictor for the effective size of strong network. In addition, network diversity had indirect effects on five of the six ICC dimensions (mediating differences, information seeking, identity reflection, problem solving, and socializing), as mediated by open-mindedness. Thus, a *network-to-personality* model was supported by the data in the present dissertation for the interrelations between traits, networks, and ICC.

CHAPTER 5: DISCUSSION

This dissertation aimed to extend the literature on ICC by examining individual traits and relational characteristics as predictors of this type of competence. Specifically, resting on the theoretical perspective of personality traits and social network theory, five intercultural MPQ traits and several ego network properties of living-abroad individuals were tested as two types of ICC antecedents, separately and jointly. Furthermore, additional analyses were conducted to explore whether MPQ traits and ego networks related to each other, and whether one mediated the relationship between the other and ICC.

This chapter begins by summarizing and explaining the main findings of the dissertation. Then, the chapter discusses the theoretical and practical implications of these findings. Lastly, the chapter concludes by acknowledging the limitations of the research conducted in this dissertation and proposing directions for future research.

Multicultural Personality Traits

The first part of this dissertation focused on the impacts of MPQ traits on ICC. van der Zee and van Oudenhoven (2013) described the five multicultural traits as having two different functions. Cultural empathy, open-mindedness, and social initiative were called *social-perceptual traits,* which were posited to orient living-abroad individuals to perceive intercultural settings more as positive challenges than threats (van der Zee & van Oudenhoven, 2013). Emotional stability and flexibility were classified as *stress-buffering traits,* which function to help individuals manage their negative feelings associated with intercultural communication (van der Zee & van Oudenhoven, 2013). Both types of traits were expected to facilitate competent adaptation to intercultural settings (van der Zee & van Oudenhoven, 2013; van der Zee et al., 2004). Nevertheless, the findings from this dissertation were somewhat different than this

expectation. On the one hand, as expected, the three social-perceptual traits—cultural empathy, social initiative, and open-mindedness—indeed had consistently *positive* relations with ICC. However, on the other hand, stress-buffering traits—flexibility and emotional stability—were *negatively* related to ICC, which was opposite to the prediction of the hypotheses proposed.

First, the trait of social initiative had positive associations with the competence dimensions of communication sensitivity, mediating differences, and socializing. These predictions illustrated that the courage to take action and make things happen had helped living-abroad individuals to attend to the verbal and nonverbal cues of intercultural communication, negotiate between parties with different interests, and extend their networks by socializing with new people (Schnabel et al., 2015). van der Zee et al. (2004) explained that the social-perceptual traits should generate positive intercultural outcomes because they could reinforce individuals' positive feelings toward other cultures and orient people to cope with communication challenges actively. According to this account, social initiative can contribute to intercultural success because individuals high on this trait tend to be highly motivated to make things happen, using constructive strategies to regulate their challenges (van der Zee & van der Gang, 2007). These strategies include initiating communication, establishing new relationships with outgroup people, and actively seeking help from their social connections for solving problems (van Oudenhoven & van der Zee, 2002). The findings of this dissertation echo these assertions: social initiative positively related to one's communication sensitivity, mediating differences, and socializing in intercultural settings. These findings illustrate that the courage to make things happen is crucial for competent living-abroad life.

Second, the trait of cultural empathy was found to be a positive predictor for the competence dimensions of communication sensitivity, mediating differences, identity reflection,

problem solving, and socializing. These results demonstrate that living-abroad individuals who can empathize with the feelings, thoughts, and behaviors of intercultural interactants were more sensitive to communication cues, more capable of creating synergies between parties with conflicting interests, more attentive to reflecting who they were, more strategic in resolving the problems they encountered, and more able to build and maintain relationships in intercultural interactions (Schnabel, 2015). Third, the trait of open-mindedness was found to positively relate to four competence dimensions: mediating differences, information seeking, identity reflection, problem solving, and socializing. These findings point out that those who were more open and unprejudiced toward cultural differences were also more competent in mediating between different people, seeking information about other cultures, actively reflecting their own cultural identity, and increasing self-knowledge, using strategic methods to resolve intercultural problems, as well as building social relationships in their work and life abroad (Schnabel et al., 2016).

van der Zee and van Oudenhoven (2013) argued that cultural empathy and open-mindedness should be the primary explanatory traits for why people perceive intercultural situations differently. People high in open-mindedness are less rigid in their mindset about value judgments, which, in turn, leads to their preference for diversity over a single standard (Ramirez, 2016). Open people are less prejudiced toward other perspectives and, thus, more capable of establishing relationships with people holding opinions different than their own (Korzilius et al., 2011). Similarly, one's cultural empathy directly relates to their awareness of cultural differences (Bennett, 1998). It enables individuals to switch between different cognitive frames and easily accept another perspective (Bennett, 1998). Thus, cultural empathy and open-mindedness facilitate individuals' ability to bridge cultural differences (van der Zee & van Oudenhoven,

2013). The results of this dissertation also reveal that empathizing with culturally different others and having an open mindset are valuable merits that can help communicators competently interact with others in a multi-cultural environment.

Other findings from research on personality also suggest that the three social-perceptual traits discussed above would facilitate positive intercultural outcomes. For example, Peltokorpi's (2008) investigation found that international expatriates' cultural empathy promoted work-related and non-work intercultural adjustment in Japan. Wilson et al.'s (2013) meta-analytic study revealed that the traits of openness and cultural empathy had strong, positive associations with sociocultural adjustment. Yakunina et al. (2012) concluded that international students who were more open-minded and empathic had greater acceptance of diversity, which, in turn, led to better intercultural adjustment. Leong (2007) conducted a longitudinal study and found that increased social initiatives between Time 1 and Time 2 predicted a reduction in behavioral and psychological difficulties at Time 2. My dissertation complements this body of literature with evidence for the positive relations of these traits with ICC, a behavioral orientation to interact adequately in intercultural settings (Schnabel et al., 2015). That is, the dispositions to empathize with people from other cultures, be initiative and make things happen, and openly accept differences help the individual take positive and effective actions in intercultural interactions.

Contrary to the proposed hypotheses, the two stress-buffering traits—flexibility and emotional stability—were found to have *negative* associations with ICC, which also contradicted the propositions of the MPQ framework (van der Zee & van Oudenhoven, 2013). Specifically, flexibility negatively related to two competence dimensions—information seeking and problem solving, meaning that the disposition to switch quickly from one behavioral strategy to another did not help but rather decreased living-abroad individuals' motivation to seek cultural-related

information and solve intercultural problems. Emotional stability was found to be negatively associated with identity reflection as well, implying that the tendency to stay calm under novel and stressful conditions weakened individuals' tendency to reflect on who they were culturally constantly.

These results also contradict several findings from previous studies. For example, van der Zee et al.'s (2004) research uncovered that emotional stability improved the well-being, and flexibility enhanced the academic performance of students in a culturally diverse team. Horverak et al. (2013) found that emotional stability was associated with managers' bias in employee selection—the less emotionally stable the managers were, the more likely they preferred a native, less qualified job candidate over a Turkish immigrant. In addition, emotional stability was found to influence employees' mastery of foreign languages (Korzilius et al., 2011), work-related and non-work intercultural adjustment (Peltokorpi, 2008; Ward & Fischer, 2008), and trainees' performance in the intercultural training (Hofhuis et al., 2020) positively. Flexibility was also found to affect the motivational cultural intelligence and the general adjustment of international students in New Zealand positively (Ward & Fischer, 2008). These studies imply that the stress-buffering traits would similarly enhance individuals' ICC, a behavioral aspect of intercultural success. This dissertation, however, found results opposite of this inference, suggesting that stress-buffering traits may not improve but rather attenuate one's behavioral commitment to identity reflection, information seeking, or problem solving.

According to the MPQ framework (van der Zee & van Oudenhoven, 2013; van der Zee et al., 2004), stress-buffering traits should protect individuals from being overwhelmed by the stress created in intercultural communication, buffering them from feelings of fear and anxiety. To clarify further, van der Zee and van Oudenhoven (2013) related this mechanism to Gray's

(1972, 1991) description of the behavioral inhibition system, which refers to a physiological mechanism that controls how the human brain experiences and responds to anxiety-relevant cues. According to Gray, when people sense signals of punishment, non-reward, insecurity, and novelty in the environment, their inhibition system will actively orient them to withdraw from actions that can possibly make things worse. In this way, the inhibition system encourages humans to adopt avoidant strategies (e.g., withdraw from communication) to aversive cues in order to bypass negative consequences (Gray, 1972, 1991). Following this line of thinking, van der Zee and van Oudenhoven (2013) argued that the traits of emotional stability and flexibility should make individuals less sensitive and less anxious about situations in which they lack control. This view assumes that stress is essentially negative for intercultural learning outcomes and, in extreme cases, can undermine an individual's health. This assumption is the underpinning for the MPQ framework to predict positive functions of flexibility and emotional stability for intercultural competence—through inhibiting one's sensitivity to threats and stress (van der Zee & van Oudenhoven, 2013; van der Zee et al., 2004).

Nevertheless, another line of research argues the opposite of van der Zee and van Oudenhoven's (2013) idea about the purely negative role of stress in intercultural settings. For Kim (2001) and Gudykunst (2005a, 2005b), stress, anxiety, uncertainty, and strangeness are intrinsic features of intercultural communication. Feelings of unease do not necessarily suppress one's competence to handle intercultural situation. Specifically, in Kim's (2001, 2005) view, stress is a source of intercultural growth. Stress occurs when one's internal capabilities are inadequate to meet the demands of the intercultural environment. Stressful events can activate a person's motives to work out new ways of handling problems and leap forward to intercultural adaptation (Kim, 2001, 2005). Thus, in this view, heightened stress is the force driving the

individual to take moving-forward changes in an intercultural environment. In a similar manner, Gudykunst (2005a, 2005b) agreed that uncertainty and anxiety can harm communication effectiveness when their levels were too high, because one would avoid or withdraw from the overwhelming situation. However, uncertainty and anxiety are not always bad for intercultural interactions. If they are managed so that they stay within moderate levels, they can motivate communicators to engage in the intercultural interaction effectively. Hence, for Gudykunst (1993, 2005a), ICC is the mindful management of anxiety and uncertainty to be optimal so that it can help communicators function effectively in intercultural communication. In his view, not feeling anxious or stressful at all is not optimal either as it reduces motivation for effective commuication.

Results of the dissertation regarding flexibility and emotional stability better correspond with Gudykunst and Kim's arguments than the MPQ framework (van der Zee & van Oudenhoven, 2013; van der Zee et al., 2004; van Der Zee et al., 2007). The MPQ framework considers stress as a painful feeling that individuals should minimize, whereas Kim (2001, 2005) and Gudykunst (1993, 2005a) see this potential pain as a resource for personal growth in intercultural settings. The negative associations between the two stress-buffering traits and ICC imply that flexible and emotionally stable people might not be motivated by the stress of intercultural communication to make moving-forward changes for meeting the demands of the environment.

The hypotheses proposed in this dissertation also predicted that each MPQ trait would be associated with all six ICC dimensions, but results revealed that some of these predictions were not supported as the associations were not statistically significant. Social initiative did not predict information seeking, problem solving, or identity reflection significantly. Cultural empathy did

not relate to information seeking significantly either. Open-mindedness had no significant relationship with communication sensitivity. There were no significant associations between emotional stability and the other five competence dimensions except for identity reflection. Similarly, flexibility did not relate significantly to communication sensitivity, mediating differences, identity reflection, or socializing. This is not surprising, though. Research has rarely found all traits of the MPQ traits or the Big Five to be significantly related to all proposed aspects of intercultural success (e.g., Hofhuis et al., 2020; van der Zee et al., 2004; Peltokorpi, 2008; Yakunina et al., 2012). Thus, the results of the current dissertation that every MPQ trait predicted some but not all competence components, are not uncommon. The findings suggest that different traits likely have unique functions for ICC. The value of a single trait is very limited in describing one's personality and its influences on behaviors (Littlejohn et al., 2021). Thus, the trait perspective nowadays focuses on the predictive value of a combination of traits (Littlejohn et al., 2021). This is especially true for a complex concept such as ICC, which contains multiple dimensions. Different aspects of competence are associated with different traits, but the five MPQ traits working together explained a large variance in ICC across different dimensions (see ΔR^2s in Table 9). Accordingly, it can be concluded that the MPQ traits together constitute a good predictor of (various aspects of) one's competence to communicate interculturally.

The dissertation also compared personality and networks, examined individually and together. This research contributes to a deeper understanding of ICC antecedents by revealing that, with or without network factors, the MPQ traits predicted ICC in a similar manner. That is, the three social-perceptual traits had consistently positive, and the two stress-buffering traits had constantly negative associations with the same competence dimensions in both cases, when

examined as predictors of ICC by themselves or when social network variables were included as predictors as well. This result suggests that, with one's relational environment accounted for, the effects of MPQ traits on ICC are relatively constant and stable. Personality traits are essential inner resources or determinants for one's intercultural performance. These individual differences can broadly explain living-broad individuals' psychological functioning in an intercultural setting. One could conclude that people with similar traits are likely to react to intercultural communication in a particular way (Costa & McCrae, 1998; McCrae & Costa, 2008).

To summarize, the first part of the dissertation focused on the roles of personality in propelling living-abroad individuals' behavioral tendencies in intercultural settings. Results from this portion contribute to the literature on the linkages between individual differences and ICC by confirming that the traits of cultural empathy, social initiative, and open-mindedness were essential inner resources for one's ICC and, simultaneously, questioning the common belief that emotional stability and flexibility would facilitate this competence.

Social Network Properties

Another set of research questions and hypotheses in the dissertation explored how different ego network characteristics related to ICC. The results demonstrated that only two competence dimensions were influenced by network factors. That is, information seeking was predicted negatively by strong intercultural network size and positively by the heterophily and diversity of ego network. Socializing was positively related to ego network diversity. Communication sensitivity, mediating differences, identity reflection, and problem solving had no significant relationships with any network characteristics.

In the current study, strong intercultural network size was counted by the number of specific persons originating from a different country with whom the participant had close

relationships in the host country. These persons can be host nationals or other nationals. The negative association between information seeking and strong intercultural network size suggests that the more strong intercultural relationships one had, the less likely they were to collect new information about other countries actively. This outcome was opposite to the prediction for H6c but not surprising in light of social network literature. The current research hypothesized the association between network size and information seeking would be positive based on the consideration that information seeking is a dimension of ICC (Schnabel, 2015). Therefore, it was considered, based on the other arguments put forth by Schnabel (2015) to follow the pattern of relationship posited for the other dimensions of ICC. Nevertheless, traditional network research would consider strong network size to relate to information seeking behaviors negatively. Because information is already shared among people in one's strong network, one is less likely to seek information from their strong networks (Granovetter, 1973, 1983). In the context of this dissertation having a large strong intercultural network composed of people from other cultures that one can trust could give a person the impression that they have already received enough information about other cultures. Thus, they tend not to search for information actively before a new intercultural trip because they perceive they already have such information.

Although strong intercultural network size was negatively associated with information seeking, ego network heterophily and diversity were positively related to information seeking. Heterophily and diversity are measures of network composition, with the former indicating the relative proportion of intercultural to co-cultural ties and the latter capturing the extent to which the network connections span across different cultural categories (Burt, 1983). That is, heterophily describes ego-alter dissimilarity, whereas diversity captures alter-alter dissimilarity (Perry et al., 2018). This result implies that it was not the absolute number of strong intercultural

ties but rather the level of difference in one's network that motivated individuals to gather intercultural information deliberately. That is, having a network with complex constituents meant that individuals perceived the need to seek and learn more knowledge about other countries before a new trip. This result echoes other findings in the literature, which show that network diversity is related to one's tendency toward intercultural learning. For example, Rienties et al. (2013) found that international students interacting in multicultural teams tended to learn multiple perspectives from their teammates. In reverse, Kimmel and Volet's (2012) study demonstrated that students working in culturally homogenous teams had more negative attitudes toward intercultural learning. Therefore, when living-abroad individuals perceive their ego network to contain a large degree of cultural dissimilarity, they are more likely to consider themselves as in need of more intercultural information and more willing to invest their time to learn the knowledge. These results suggest that cultural differences in one's network composition matter as they can increase people's ICC.

Another competence dimension, socializing, refers to the tendency to establish new contacts with people and maintain them while staying abroad (Schnabel, 2015). The study results demonstrated that maintaining a culturally diverse network motivated one to continue developing more new social connections. Burt (2004, 2005) reasoned that access to dissimilar networks (i.e., networks consisting of diverse people), as a form of social capital, could expose people to novel information and ideas. That is, culturally diverse social connections may have delivered various visible social capital to living-abroad individuals, possibly for which they were more passionate about making new friends so that they can continuously benefit from their network resources.

Interestingly, when network and personality factors were examined together as antecedents of ICC, the association between network diversity and information seeking

disappeared. Namely, when the effects of MPQ traits were controlled, diversity did not relate to living-abroad individuals' information seeking behavior anymore. Table 11 shows that the significant trait predictors for information seeking are flexibility (negative) and open-mindedness (positive), meaning that the effect of network diversity was likely to be cancelled by the stronger effects of flexibility and open-mindedness. In other words, the linkage between network diversity and information seeking behavior could be explained by flexibility and open-mindedness. These two traits were possibly the immediate influencers of the tendency to collect intercultural information.

Contrary to the proposed relationships, other ICC components, except for information seeking and socializing, did not relate significantly to other network properties. This outcome is somewhat surprising, as one's relationships in a new culture should be most influential for one's identity transformation, adaptation, and communicative competence (Smith, 1996, 1999; Kim, 2001). Like other human behaviors, ICC as a behavioral style should be accounted for by relationships among and between individuals (Smith, 1996, 1999). Networks exert influence on people by transmitting information that changes their attitudes, knowledge, or behaviors (Kadushin, 2012). For example, people can solicit advice from their connections about a decision during their living-abroad experience, or their connections can actively persuade them to take action or simply inform them how to live better in the country (Kadushin, 2012). Network theory deems ties between individuals as conduits for information to flow, transfer, or diffuse (Everton, 2012). Hence, the outcome that ego network properties did not relate to the other ICC components might be based on the measure of ICC used in this research—the one that considers ICC as a set of observable behavioral orientations (Schnabel et al., 2015). Other measures that deem ICC as knowledge, attitudes, or skills might relate to social networks differently.

Overall, not every network metric was associated with ICC as the predictions proposed by the dissertation posited. However, the dimensions of information seeking and socializing were found to be related with one's relational environment, without or with the consideration for personality effects.

Combined Effects of Personality Traits and Social Networks

When comparing personality and network effects, results of this dissertation showed that the set of personality factors tended to be a stronger predictor than the network set for one's ICC, based on three types of evidence. First, every MPQ trait related (positively or negatively) to one or more competence dimensions. In turn, every ICC dimension was predicted by at least two traits both when they were examined separately from or together with the network antecedent variables. For social networks, a few properties predicted only two ICC dimensions—information seeking and socializing, both when they were tested alone or together with traits. Hence, there was a wider range of relationships between personality traits and ICC than between social networks and ICC. Personality traits had a wider range of relationships with ICC dimensions than social networks.

Second, when the two sets of variables were examined, personality traits added more incremental predictive validity over network properties to the predictions of different ICC dimensions, with the effects of demographic variables controlled. As shown in Table 9 and Table 10, personality traits altogether explained more change in the variance of every ICC component than network properties together did: 40% for personality and 1% for network for communication sensitivity; 38% for personality and 1% for network for mediating differences; 14% for personality and 3% for network for information seeking; 23% for personality and 1% for network for identity reflection; 26% for personality and 2% for network for problem solving;

and 35% for personality and 6% for network for socializing. Based on the statistics, personality had much more explanatory power than network properties did. This finding illustrates once again that personality tends to be a stronger predictor than network variables for ICC.

Third, the associations between MPQ traits and ICC facets did not change in the presence or absence of network factors, whereas this was not the case for network factors. In the presence of personality, the significant association between network diversity and the ICC dimension of information seeking was not significant any longer. That is, how one's personality related to their ICC did not depend on their relational characteristics, but how one's relational environment was associated with their competence interfered with their personality. Thus, this study comes to the following conclusions regarding the comparative effects of networks and personality. (1) Both individual traits and relational factors were related to ICC, which confirmed the proposed framework of competence that contains antecedents at multiple levels of analysis. (2) However, factors at the individual level (i.e., MPQ traits) had stronger influences than the relational level (i.e., social networks) on competence.

These conclusions echo Kealey's (2015) assertion. In his reflection on past ICC literature, he commented, "I learned that the greatest obstacles to their (i.e., international co-workers) living and working together effectively did not derive from their national cultural differences but from their personality (and interpersonal style) differences" (Kealey, 2015, p. 15). That is, both the relational environment and personality shape one's behavioral style to interact with culturally distinctive others, but the difficulties created by personality differences tend to be the predominant concerns for effective interactions to occur. As shown by this dissertation study's results, traits explain much of what defines a person, including in the context of intercultural communication (Matthews et al., 2009; McCrae & John, 1992). Individuals' underlying

dispositions interact with their relational environment to facilitate their behaviors, meeting the demands of a situation such as living-abroad experience (Allik & McCrae, 2002). This might explain why, to date, the individual approach that defines ICC in accordance with personal attributes remains the mainstream paradigm in this body of literature (Hammer, 2015).

To forge a cross-paradigmatic inquiry between the trait and network understandings of ICC, the current study also examined whether the five traits would mediate the effects of the networks, or vice versa. Two sets of mediated models met the necessary conditions of mediation and were further tested: open-mindedness mediating the associations between network diversity and five ICC dimensions—mediating differences, information seeking, identity reflection, problem solving, and socializing (network-to-personality models). This set of mediated models were statistically supported—open-mindedness was a mediator between network diversity and the five competencies. These mediated effects reflected a *network-to-personality* relationship, which implies that networks might exert influences on one's ICC by eliciting particular traits in the individual. More precisely, the result suggests that maintaining relationships with diverse people was related to an increase in one's open-mindedness; the inclination to accept other cultures openly also facilitated increased abilities in mediating differences, information seeking, identity reflection, problem solving, and socializing. The results imply that ICC may be originally derived from the cultural diversity of one's relational environment. Namely, living-abroad individuals' ICC was constructed through relationships.

To my knowledge, this dissertation is the first study evaluating the relationship between personality and social networks and their individual or combined influences on ICC. There is not much evidence on this topic that can be directly compared with the current research findings. However, research on other types of competence has encountered a somewhat similar debate:

Where is competence initially derived from? Balkundi et al. (2011) studied leadership competence and found that leaders' charismatic personality was constructed by their followers in team networks, and such a charismatic personality further facilitated better team performance. Their study concluded that leadership competence primarily emerged in networks. This dissertation echoes their study findings by demonstrating that another human competence—ICC, similarly, emerged from networks instead of personality. Fang et al.'s (2015) research on work competence also revealed that one's network position in the organizational network mediated the effects of certain personality traits (the Big Five) on job performance and career success. Their research outcomes point in the opposite direction of results from the current dissertation: work competence was primarily derived from personality traits. This dissertation contributes to the discussion of where human competence emerges from by expanding it to ICC, showing that ICC is more likely to originate from certain characteristics of one's network developed in a multicultural environment, and these network properties foster beneficial traits in a person.

In short, regarding the combined effects of personality and network on ICC, the dissertation draws the following conclusions. Both sets of variables had several significant relationships with ICC, but traits tend to be the stronger and more proximate predictors. Intercultural networks were likely predictors rather than outcomes of certain traits unfolding in an individual. A culturally diverse network provided living-abroad individuals the opportunity to develop or reinforce an open mindset, which further advantaged them in acquiring or developing their ICC.

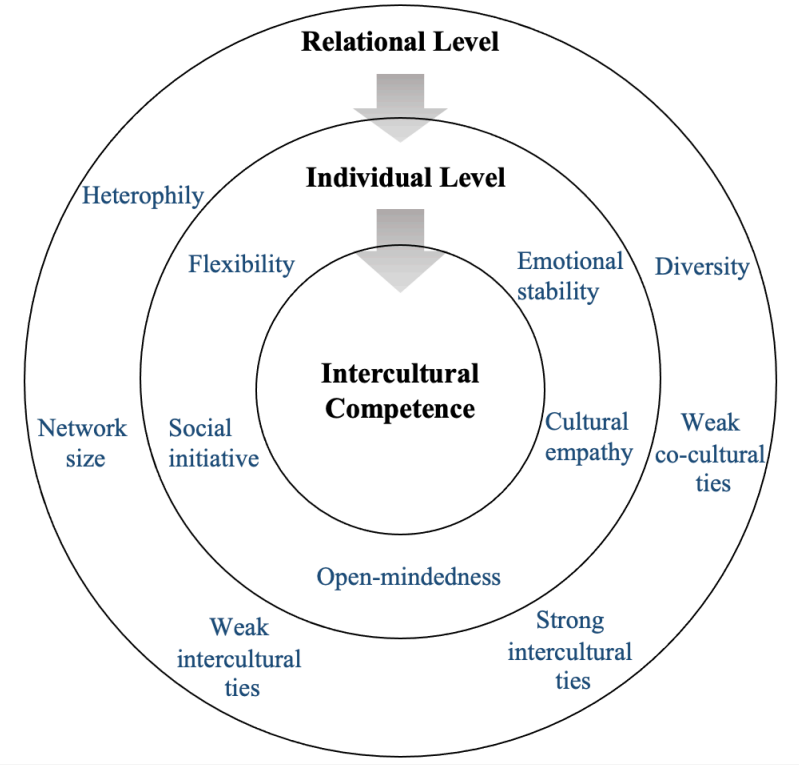
Theoretical Implications

The study has theoretical implications for the contested landscape of ICC. Despite several decades of research, what it takes for communicators to interact competently with intercultural

others has yet to be clearly answered (Schnabel et al., 2015; Spitzberg & Changnon, 2009). The individual and relational perspectives of ICC are at odds with each in respect to whether the communicator or the relationship is the fundamental locus of explanation for competence. The dissertation contributes to reconciling the theoretical debate between the individual and relational perspectives of ICC regarding competence, its locus, and predictors, by bringing them together and empirically testing facets of these two perspectives. To address this dispute, this dissertation brings together research on personality traits in intercultural settings (e.g., Hofhuis et al., 2020; Horverak et al., 2013) and research on intercultural networks (e.g., Chi & Suthers, 2015; Smith, 1999) by combining the trait perspective and social network theory as theoretical perspectives to examine ICC simultaneously, in the same study.

Figure 15

Multi-level Locus of Intercultural Communication Competence



The dissertation results suggest that a cross-paradigmatic insight into ICC is feasible. Figure 15 presents an integrating, bi-level framework that incorporates significant antecedents from both paradigms, revised in accordance with the study's results from Figure 8, Figure 9, and Table 2 proposed in the literature review. The cross-paradigmatic framework indicates that the five MPQ traits are factors explaining ICC at the individual level, whereas six network indices are determinants at the relational level. The resulting framework confirms that both social network theory and the trait perspective can shed light on the locus of ICC. Their intersection helps reconcile the competing arguments of the individual and relational perspectives of ICC. Specifically, one of the theoretical contributions of this dissertation is the theoretical framework of personality and network models, in which intercultural traits and social networks are proposed to be predictive of ICC. This theoretical merging of the two perspectives opens the door for further theorizing that can help us better understand ICC development. In what follows, interpretations of the cross-paradigmatic framework proposed in this dissertation will be detailed, from each perspective's point of view.

On the one hand, from a trait perspective, personality traits are intrinsic qualities of the individual (McCrae & Costa, 2008). Traits can set individuals apart from others in their overall behavioral styles (Costa & McCrae, 1998). In this dissertation, ICC refers to the overall behavioral orientation to interact adequately and effectively with others in intercultural settings (Schnabel, 2015). The trait theoretical perspective considers personality traits as the endogenous source of one's potential (e.g., McCrae & Costa, 2003, 2008; Zuckerman, 1998). The study found that three stable traits (remind readers here what they are) facilitated competent intercultural behaviors, which provides support for the idea that ICC develops from internal constructs. The relationships between the MPQ traits and ICC support Arasaratnam's (2009)

argument that individuals successful in one intercultural interaction should possess something internal enabling them to competently engage in different intercultural contexts. In the current study, these internal resources are cultural empathy, open-mindedness, and social initiative traits. Thus, the current study supports the main argument of the trait perspective in intercultural contexts: there are some traits especially relevant for intercultural communication that set individuals apart from others in their overall style of communicative behaviors. ICC, in essence, is trait-based, and it makes sense that dominant ICC research starts from an individual-based perspective to understand this concept.

Even so, trait research does not equate traits with moment-to-moment behaviors (McCrae & Costa, 2008). This scholarship acknowledges that traits only provide scientific explanations for human actions at the individual level (Steyer et al., 1999). There is always a context, situation, or social environment that interacts with traits to determine how one responds to a social setting (Steyer et al., 1999). Although trait research assumes situational influences are more or less self-evident but has not much interest in detailing them (McCrae & Costa, 2008). In the current study, social network analysis was utilized to describe, quantify, and analyze the complex influences of one's social milieu for living-abroad individuals (Marsella & Snyder, 1981). The associations between ICC and several network metrics (heterophily, diversity, and degrees of strong intercultural ties, weak intercultural ties, weak co-cultural ties, and ego network) demonstrate that central tendency of different types of relationships and the level of cultural differences in one's network added an increment to explaining two facets of ICC (with small effect sizes; refer to Table 9). Thus, the study of living-abroad individuals' networks contributes (albeit to a small extent) to detailing the nuanced external forces that the trait perspective assumes. In other words, this research contributes to the theoretical trait perspective

not only by empirically confirming that personality traits work together with the social environment to influence intercultural behaviors, but also by demonstrating that the so-called external influences beyond traits can be described, quantified, and assessed based on social network analysis.

On the other hand, from a social network theory perspective, even if well-controlled, human thoughts and actions are not independent of but bounded in further structures (e.g., one's relations with others), regardless of whether people realize it or not (Harre et al., 1985). An individual does not behave as an autonomous unit but rather functions based on the opportunities and choices offered by others around them (Everton, 2012). Individuals who interact with one another are interrelated in some fashion, and so are their behaviors and attitudes (Littlejohn & Foss, 2011). Accordingly, the most important characteristic of network research is turning the focus of scientific explanation from monadic data to relational data (Vicsek et al., 2016). This dissertation analyzed living-abroad individuals' relational data to verify empirically network assumptions in the intercultural context. Specifically, indices of degree centrality, heterophily, and diversity were treated as data at the dyadic level; density and effective size were treated as data at the network level. Although the two network indices did not relate to ICC, the three dyadic properties were found to have some associations with two facets of ICC—information seeking and socializing. Based on these analyses, the dissertation contributes to expanding social network theory by providing evidence for the assertions made within this paradigm about the interconnectedness of human behaviors, in this case in an intercultural context. As Radcliffe-Brown (1952) noted, social scientists cannot study humans except in terms of social systems; neither can they study social systems except in terms of the individuals who are constituent units

of the system. Hence, ICC is a relationally contingent concept as well. The conceptualization of this competence should not ignore the relational situations in which ICC emerges.

Although social network theory assumes that one's relational environment determines their potential, it does not deny that humans have the autonomy to make rational decisions (Smith, 1999). This aspect is somewhat analogous to the trait perspective, which deems individual differences to be at the center of scientific explanation but still leaves room to account for the influence of the external environment. The theoretical perspective of network acknowledges that individuals have rational choices of what constitutes their personal networks, for example, of whom they decide to socialize with from the available choices (Zeggelink, 1994). But what socializing opportunities are available to them is out of their control (Kadushin, 2012). Hence, individual attributes (e.g., MPQ traits), or node attributes in network terms, can be jointly considered to account for a social phenomenon in network research (e.g., Balkundi et al., 2011; Fang et al., 2015). This dissertation took advantage of the cross-level nature of social network analysis to integrate personality traits (node-level factors) and relational characteristics (dyad-level factors) into a cross-paradigmatic framework to explain ICC. Meanwhile, these factors at different levels were related by analyzing how one set of antecedents predicted the other (Table 11- Table 14). Therefore, the dissertation demonstrates that the theoretical and methodological grounds of social networks offer researchers new opportunities to approach the multilocus issue of ICC. Social network analysis is uniquely suited for intercultural communication research because it specifies the relational context for intercultural communication to occur while at the same time allowing for attention to be paid to individual-based constructs (Chi & Suthers, 2015).

The second major theoretical contribution of the dissertation is theorizing relationships between intercultural personality and social networks. Specifically, the study contributes to elucidating how different antecedents of ICC relate to one another. Empirical evidence indicated that network diversity predicted the trait of open-mindedness, which, in turn, predicted ICC. This outcome showed that contacting an advantageous network in intercultural settings could activate or strengthen certain personality traits in the individual, which can then facilitate one's ICC development. In other words, although MPQ traits were stronger and immediate predictors, networks were more likely to be the sources of traits. From a social network perspective, personality is more of an outcome than a cause of social networks (Balkundi et al., 2011). Relevant traits are constructed through interacting with people who help one develop such traits (Balkundi et al., 2011). The trait perspective also has statement regarding whether one's traits can be changed by the social environment. Even though traits are biologically based and develop mainly in the first third of one's life (McCrae & Costa, 2008), they are not perfectly stable across the lifespan but rather somewhat modifiable, depending on one's environment (Wilson et al., 2013). Individuals must adapt to the environment (Fleeson & Jayawickreme, 2015). During this process, they adopt different strategies to manage the challenges and opportunities posed by social circumstances (Matthews, 2008). Some traits emerge to be more beneficial than others for attaining one's goals of environmental adaptation (Buss, 1991; Caligiuri, 2006). Thus, such traits are gradually shaped and reinforced through the adaptive process to regulate external demands, opportunities, and pressures (Matthews, 2008). For example, in this study, a culturally diverse environment likely helped individuals to be open-minded, and an open mindset can then be reinforced while managing one's living-abroad life. That is, ICC seems to stem from networking with diverse people. Thus, this dissertation suggests that the intersection of traits and social

networks has implications for reconciling the dispute between the individual and relational viewpoints on ICC. Specifically, with the resulting cross-paradigmatic framework, the study showed that ICC had multi-level loci, which suggested that both theoretical perspectives were valid. The trait and network perspectives connect in their recognition of each other—trait research recognizes the influence of social relationships as the external environment, and network research recognizes the role of personality traits as node attributes in making a difference in relational patterns. They also connect regarding the sources of personality: trait research admits that the environment can change traits to some extent, and network research considers traits to be outcomes of relational patterns.

Based on the afore-discussed implications, the dissertation also contributes to reflections on the status of current ICC research. The nature of ICC has long been debated. In the past decades, intercultural research has generated many frameworks, models, and definitions of ICC. Despite this increased interest in ICC, a more convergent conceptualization or a better understanding of the concept has not yet emerged (Van de Vijver & Leung, 2009). Questions remain regarding whether ICC is an individual internal capacity, a social judgment, or something else altogether (Deardorff & Arasaratnam-Smith, 2017; Koester & Lustig, 2015). Albeit the individual approach is by far the mainstream and fits the normative sense of the term (Hammer, 2015; Spitzberg & Changnon, 2009), interactants and contextual factors have been largely left out in conceptualizations of this approach to minimize confounds when attempting to identify a universally generalizable set of personal attributes (Chi & Suthers, 2015). The over-emphasis on the individual communicator without adequate consideration for their social milieu is somewhat reductionistic for understanding human communication. As Collier (1998) asked, “Competence and acceptance from whom? Who decides the criteria? Who doesn't?” (p. 142). This dissertation,

based on its results, proposes a bi-locus view of ICC—competence resides in the communicator as well as the relationships that they have with others in a multi-cultural environment. For a complex topic such as ICC, an appropriate conceptual framework should embrace more than one domain or a single category (Trompenaars & Woolliams, 2009).

Lastly, to summarize the theoretical contributions, the biggest take-away point from this dissertation is that ICC not only relates to the internal resources of individual traits but is also socially constructed through interactions with others in a multicultural environment. Martin (2015) called on researchers to move beyond "individual-focused, reductionistic models" (p. 6) to frameworks that contain more relational, holistic views of intercultural communication. The relational approach does not assume the communicator to be an isolated, independent unit for assessing ICC (Smith, 1996). Instead, it emphasizes the relational nature of communication, culture, and competence (Spitzberg & Changnon, 2009). However, as seen from this dissertation's results, the internal attributes of personality traits had stronger influences on one's behavioral styles in intercultural communication than the external environment formed by one's network. The relational environment of the network affected ICC by facilitating open-mindedness in addition to its direct effects. Neither the power of human autonomy nor the social environment should be neglected. The trait and social network perspectives have a junction, as do the individual and relational perspectives of ICC. They should not be seen as competing with but rather complementary to and enriching each other (Smith, 2010). Both individual differences and relational characteristics should be considered the definitional root and analytic foundation for assessment toward a better synthesis of ICC.

Practical Implications

Findings from this dissertation suggest several recommendations to people who are living or will go abroad (i.e., sojourners or immigrants who move to another country and stay) and practitioners in intercultural trainings and educational settings. Identifying strategies to develop ICC is especially important for these groups of individuals.

Firstly, personality traits were found to be stronger and intermediate predictors for ICC. The social-perceptual traits—cultural empathy, open-mindedness, and social initiative—were all related positively to ICC development. Thus, sojourners and immigrants should understand that living in a different country can be very difficult, but that being empathetic, open-minded, and demonstrating social initiative are helpful for managing their lives in the new culture as they would likely be more competent at doing so when cultivating those traits. Before deciding to study or work abroad, one should seriously consider whether their personality traits are a good fit with life abroad. In other words, individuals should consider whether they possess these traits or whether they can develop them to facilitate for themselves more competence in their abroad experiences. As demonstrated by the study results, one's personality is modifiable to a certain extent, which means that people can consciously remind themselves that they need to be open to other cultures, have empathy for their friends from different cultures, and be brave enough to initiate conversations and develop new relationships for a better living-abroad experience. Individuals should keep practicing behaviors that facilitate the cultivations of these traits in their daily interactions.

Secondly, sojourners and immigrants should also realize that, although behavioral flexibility and emotional stability have been traditionally considered good traits for intercultural success (e.g., Bhawuk & Brislin, 1992; Zaidman, 2001), it can also be risky to behave in these ways. The study showed that flexible and emotionally stable people tended to have a lower level

of ICC. These two traits are posited to buffer one's stress in intercultural settings. However, living-abroad people should not forget that stress is also a source of personal growth (Kim, 2001). Feelings of uneasiness are an intrinsic part of the living-abroad experience, as any intercultural contact involves some degree of uncertainty (Gudykunst, 2005a, 2005b). Thus, sojourners and immigrants should not suppress their nervousness in intercultural communication encounters and, as a result avoid such interaction altogether, but rather take it as an opportunity to grow from challenges. No stress is neither possible nor helpful for intercultural success. Thus, rather than avoiding stress, living-abroad individuals should seek ways in which to grow when faced with instability, stress, and challenges.

Thirdly, people who work for international education programs and intercultural training programs should seek to adapt curriculum programs toward developing cultural empathy, open-mindedness, and social initiative in their international students or individuals working abroad. Trainers or coaches should help their trainees recognize the importance of developing traits that are likely to help their competence when living abroad. Educators and trainers can also incorporate information about the nature of culture shock and stress in a new culture and provide learners with strategies to manage it.

Another takeaway from this dissertation is that sojourners, expatriates, and immigrants should pay attention to their social networks in the host country. The study showed that ego network size, heterophily, and diversity positively influenced ICC. Thus, the practical recommendation based on these results is that individuals should deliberately establish relationships with more people, especially those from a different cultural background than their own, to function well in their new cultural environment. They should realize that not only the number of contacts but also a balanced combination of co-cultural and intercultural friends is

important. Thus, living-abroad individuals should take the initiative to expand their social networks to have more diversity and make use of the resources embedded in their social relationships.

Lastly, international educators should also incorporate thoughts about networks into their program and curriculum design (Chi & Martin, 2020). On the one hand, they can consider including networking goals in their learning activities for international and local students to help them recognize the benefits of a culturally diverse network for their personal growth and to help them explore strategies to develop such a network. On the other hand, they can think about the practical means to help international students integrate into the local community, for example, facilitating international and local students' interactions in their learning activities. Schools can also make use of campus residential spaces and student associations to create opportunities for students to form culturally integrated, diverse community networks. Corporate trainers or counselors who teach topics related to culture can propose strategies that facilitate inclusive networks among employees in their international organizations. As shown by this dissertation study, such a network environment can boost an open mindset among employees, further promoting their professional working abilities (Korzilius et al., 2011).

The above discussion outlines the practical implications of this dissertation. The implementation of these recommendations may lead to improved ICC for people who work, study, or live in another country. Overall, whether for those who experience life abroad in person or for those whose profession entails training or working with such people, considering the advantages of the inner (personality traits) and external (relational environment) resources that can help individuals develop their ICC is important.

Limitations and Future Research Directions

This dissertation has several limitations that ought to be acknowledged, which present opportunities for future research directions on this topic. First, due to the nature of the study's cross-sectional design, the results cannot be used to infer causality. The model supported by the study's results suggested a network-to-personality direction of the relationships, but this is not necessarily a causal order that could be concluded. It is also possible that higher ICC leads to certain social network characteristics and cultivates the MPQ traits or that ICC facilitates certain traits in the communicator, motivating one to form certain types of networks. Theoretically, this is less likely the case: ICC cannot come from a void but rather needs a social space of dependent relationships (Smith, 2013). Thus, it is more likely that ICC was an outcome instead of the cause of personality and networks. In addition, the statistical results showed open-mindedness did not significantly predict network diversity, meaning this relationship did not meet the precondition that the mediator should predict the dependent variable. So, a conclusion that a reverse order of mediation (i.e., from ICC to network diversity through open-mindedness) cannot be drawn. Still, a longitudinal design could aid in making causal inferences for the relationships between these variables. Future studies can consider collecting data on living-abroad individuals' social networks, MPQ traits, and ICC at multiple time points during their experience. A longitudinal study could observe changes in personality, social network characteristics, and ICC at different time points and then analyze how these variables at Time 1 predict one another at Time 2, Time 3, or subsequent times. The ability to indicate that something happens before something else will improve confidence in inferring causality between these variables.

Another limitation of the dissertation concerns the study participants. As the study focused on the intercultural experiences of living-abroad individuals, the participants were global Prolific workers who identified themselves as currently living abroad, regardless of their home or

host countries. To participate in the study, they needed to speak and understand English fluently (as informed by a Prolific pre-screen question), as it would be impossible to translate the survey into every participant's native language. The results showed that participants' English proficiency (self-rated) was a significant predictor for many ICC variables across the regression models.

Although the effects of this factor were controlled in data analyses, this participation selection criterion may have biasedly excluded some important participants in two ways. First, the requirement for English fluency may limit qualified participants to those whose home country and/or host country is an English-speaking country. In this case, people who come from or move to a non-English-speaking country may have been largely excluded from the study, for example, an Arabian speaker moving to South Korea. In this case, the conclusions are hard to generalize to all living-abroad people because they are less representative of non-English cultures. Second, for sojourners or immigrants in an English-speaking host country, the English proficiency requirement for this study may have excluded those with low proficiency in English. Their intercultural abilities in the host country may be highly constrained because they are not able to communicate with local people in the local language. Results may have yielded different patterns if such individuals had been surveyed given that their ICC could be quite low, along with their low English proficiency. Although the study sample spanned the lowest and highest ICC levels and had normal distributions across the six competence dimensions (see Table 4), the possibility of excluding people with low ICC due to their low proficiency in English must still be acknowledged.

There is no perfect solution to the dilemma between including a representative sample of living-abroad individuals spanning a wide variety of regions and collecting valid data with

proper languages. On the one hand, studies on sojourners and immigrants' intercultural experiences, like the current research, need to collect data from global participants in order to reach generalizable conclusions about the population of living-abroad individuals. However, on the other hand, if participants are all from different cultural and linguistic backgrounds, the questionnaire must be translated into a language they can understand well. Otherwise, they cannot provide valid data. Obviously, it is impossible to conduct a survey in every participant's native or fluent language if the sample is global. Thus, very likely, researchers who study living-abroad experience need to make a compromise decision between (1) choosing one or more workable language(s) to conduct the research and then recruit participants based on the languages, together with other relevant study requirements and (2) choosing particular regions/countries of study interest as the home cultures or host cultures, then the dominant languages of selected places can be used to conduct the research. This dissertation chose the former operationalization, which provided a valuable perspective on the study topic from the experience of living-abroad English speakers worldwide. Future studies on ICC, intercultural personality, and intercultural networks can also consider the second option. For example, Lee's (2014) and Lee & Katz's (2015) works studied Korean immigrants in the United States to research their social networks and intercultural development. These studies, although they cannot represent global immigrants and sojourners, can provide another perspective on how people coming from or moving to a particular culture develop ICC.

Another limitation concerning the participants was that over two-thirds of the participants in the dissertation study reported having obtained permanent residency in their host country (see Table 3). There may be psychological disparities between the two groups as the status of legal identity in the host country might be a concern across various life aspects, including social

communication and networking. For example, the analyses showed that permanent residency was a significant covariate for four ICC dimensions (see Table 8), one MPQ trait (see Table 12), and two network indices (see Table 13 and Table 14). The effects of having permanent residency or not were controlled in the regression analyses conducted in the dissertation study but may be worth further investigation. The decision to seek permanent residency in a country could be influenced by several factors, including one's competence in navigating communication encounters in that country. Thus, future research could examine possible differences between individuals based on their residency status in a country to obtain more knowledge regarding whether their intercultural experiences differ. This would contribute to informing intercultural research about how residency status may influence immigrants' cultural identity and subsequent consequences.

Next, this dissertation adopted an ego network design because it fit well the study's goal of capturing the characteristics of one's immediate relational environment, which were then related to MPQ traits and ICC. An ego network design has many advantages; for example, it does not need participants' identifiable information and is easily adaptable to a survey design (Borgatti et al., 2018). However, an ego-network approach is less advantageous than a full-network approach for describing and analyzing socio-structural factors. In an ego network design, data about their directly connected partners was collected and used to indicate the structure of their ego network (Chi & Suthers, 2015). A full network design, through collecting information about all community members' connections, can observe the entire network of the community of interest, including those who can connect with the ego through indirect connections, for example, a third person (Borgatti et al., 2018). Thus, the influence of indirectly connected people on an individual's ICC can be analyzed and counted. The opportunities,

resources, and constraints embedded in the community network but beyond one's ego network may also influence one's behavioral tendency toward intercultural interactions. Therefore, although the structural measures (i.e., density and effective size) of ego networks did not relate to the MPQ traits and ICC in this dissertation, it may or may not be the case for the same structural measures of a full, local community network in which living-abroad individuals stay. Accordingly, more future efforts can be devoted to studying sojourners' and immigrants' intercultural experiences with a full network approach. This can bring another perspective regarding how a socio-structural system relates to one's intercultural development.

One important aspect to note in the current research, or in any quantitative research, is that the outcomes and conclusions regarding the relationship among variables of interest are reached based on the measures used. In this dissertation, ICC was measured as an overall behavioral orientation in an intercultural context (Schnabel, 2015; Schnabel et al., 2015), consisting of six dimensions: communication sensitivity, mediating differences, information seeking, identity reflection, problem-solving, and socializing. If other types of ICC measures were to be used, for example, Chen and Starosta's (2000) Intercultural Sensitivity Scale that deems ICC as an affective construct, research on how personality traits and social network properties relate to ICC might yield similar or different results. For future direction, it is worth exploring the topic using different measures of ICC to see if the relations between network, personality, and ICC can be generalized across different measures.

Lastly, the study proposed to reconcile the individual and relational perspectives of ICC by combining the theoretical lens of traits and social networks, which were treated as proxies of the two perspectives. It ought to be acknowledged that there are other approaches that can represent each ICC perspective, respectively. For example, Ang et al. (2020) conceptualized

ICC as a form of intelligence, that is, cultural intelligence. Hammer et al. (2003) conceived ICC as an attitude, that is, intercultural sensitivity. The assumptions of these frameworks can also align with the individual perspective, so that intelligence or attitudes could be used as proxies for the individua perspectives. Similarly, Spitzberg and Hecht's (1984) and Imahori and Lanigan's (1989) relational models of ICC equated competence to a set of relational outcomes, such as relational satisfaction and intimacy, which align with the relational perspective, and could be used as proxies for this approach in research. The dispute regarding where ICC is located can also be answered by studies combining ideas from these or other relevant frameworks. This dissertation provided one possible answer to this debate by positing that people can differ in their personality traits, but these traits also need to be expressed in a social environment (i.e., social networks). Future research can explore the multi-locus of ICC with other frameworks, which will contribute a more comprehensive understanding to the nature of this competence.

Conclusion

ICC has been recognized as an important concept with practical ability in the field of intercultural research. Yet, throughout decades of research, what it takes for communicators to interact competently with intercultural others remains a contested conceptual site. This dissertation addresses the debate between the individual and relational perspectives regarding the origins and predictors of intercultural competence. An individual approach equates ICC with a set of individual attributes located within the communicator and, thus, derived from internal sources. In contrast, a relational perspective conceives ICC as a social judgment that communicators can make about each other through interactions, and thus, rooted in relationships.

In an effort to reconcile these two perspectives, this study combines the theoretical perspective of traits and social networks. In line with the individual approach to ICC, the trait

perspective argues that key personality traits are the endogenous source of competence for individuals to handle intercultural difficulties. In line with the relational perspective on ICC, social network theory contends that intercultural communicative behaviors can be explained by analyzing one's relational patterns. Building on these arguments, the dissertation proposed a cross-paradigmatic framework to embrace insights from both traditions. This framework recognizes personality traits and social network factors as antecedents of ICC at different levels: traits are explanatory factors at the individual level, and network properties describe one's relational context at the dyadic and structural levels. In this manner, ICC is understood as possibly influenced by or derived from sources at multiple levels.

The results revealed that multicultural personality traits were strong predictors of ICC. Specifically, when the traits were evaluated separately from or together with network variables, open-mindedness, cultural empathy, and social initiative positively, and flexibility and emotional stability negatively related to ICC. Ego network characteristics also had relationships with ICC, but these variables were weaker predictors compared to personality traits. In particular, when the ego network variables were examined separately from traits, strong intercultural network size negatively, and heterophily and diversity positively related to ICC. When the network variables were examined together with traits, the influence of network diversity disappeared. In addition, the trait of open-mindedness was found to mediate the associations between network diversity and several competence dimensions.

These results demonstrate that ICC may not only stem from the internal resources of individual traits but may also be socially constructed through relationships with others in a multicultural environment. The dissertation contributes to reconciling the conflicting ideas stemming from the individual and relational perspectives on ICC regarding what it takes to

become intercultural competent, by bringing these approaches together and empirically testing relevant factors from each framework. The research also sheds light on how sojourners and immigrants can practically improve their living-abroad experiences and how educators and trainers can improve the curriculum of their intercultural programs. In sum, ICC can be conceptualized as a set of individual attributes but that, nevertheless, ought to be developed through intercultural interactions and social relations.

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APPENDIX A

Survey Questions for Pilot Study

1. Which of the following best describes your current situation?
   - I am currently living abroad.
   - I am currently living in my country of origin.
   - I am in my country of origin but will leave the country soon.
   - I recently returned to my country of origin after living abroad.
   - None of the other options applies. Specify your current life status:

2. In which country do you currently reside? Select the country from the drop-down menu below.

3. What is your country of origin? Select the country from the drop-down menu below.

4. What was your purpose in coming to the country where you currently live?
   - I came to this country as an international student.
   - I was sent by my company on assignment to this country.
   - I was hired by an organization in this country.
   - I am an immigrant or refugee in this country.
   - I accompanied a family member or significant other to this country.
   - Others. Please specify:

5. How long have you been living in your current country? Please be as precise as possible, to the number of months.

6. Have you obtained permanent residency in the country where you currently live?
   - Yes
   - No

7. How long do you plan to continue living in the current country?
   - I will continue living in this country for a definite time. Please specify the estimated number of remaining months you will be in this country:

     _____
   - I will live in this country permanently.
   - I have not decided, or I am not sure whether I will live definitely or indefinitely in this country. Indicate the minimal time (in months) that you know for sure you will continue living in this country: _____

APPENDIX B

Instruments for Main Study

Network Generator

Alter Generator

1. In your current country of residence, whom do you consider to be your **close connections**?

Close connections mean people who you feel close to, AND/OR with whom you interact regularly on a weekly basis. They could be your family members, friends, coworkers, or anyone else.

Please think of specific persons and put their initials in the boxes below (one row for each connection). **List as many as you can recall, up to 12**. If two people have the same initials, add a number to differentiate them, e.g., "W.Y.1", or "W.Y.2".

Note: We would like your honest answers that truly reflect your connections. The number of names you enter will NOT influence your compensation, meaning you won't be paid more if you enter more names or less if you enter fewer names.

(1)

(2)

(3)

(4)

(5)

(6)

(7)

(8)

(9)

(10)

(11)

(12)

2. Now think about your acquaintances in your current country of residence.
Acquaintances mean you know these people and interact with them sometimes, but you do not feel as close or interact as often as your close connections.
Do not count the close connections that you mentioned before as your acquaintances in the following questions.
In your current country of residence, how many of your acquaintances are from your heritage country? Enter your best estimation - e.g., 1, 10, 15, etc.

3. Now think about the rest of your acquaintances (i.e., not from your heritage country) in your current country of residence. Tell us where these other acquaintances are from; then also enter the number of acquaintances from this country.

For example, if you have 3 acquaintances from the U.S. and 2 acquaintances from China, you would write "3 U.S. + 2 China", and so forth.
If you do not any acquaintances who are not from your heritage country, enter "0".
_____

Alter Interpreter*
****Use Qualtrics Piped Text and Loop & Merge functions to (1) carry forward names generated from close connections, and (2) repeat the same set of questions for each name written.*** *https://www.qualtrics.com/support/survey-platform/survey-module/block-options/loop-and-merge/#LoopAndMergeFields*

Please tell us more about {name}, whom you have indicated is one of your close connections.

4. {name} is your:

   Friend

   Family member

   Coworker

   Other, please specify: _____

5. {name}'s gender is:

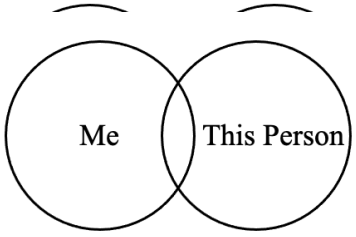
   Male

   Female

   Other

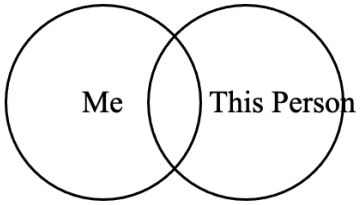
6. What is {name}'s country of origin?
7. {name}'s age:
8. Now select the image below that best describes how close you and {name} are. More overlapping circles indicate greater closeness.

   (1)

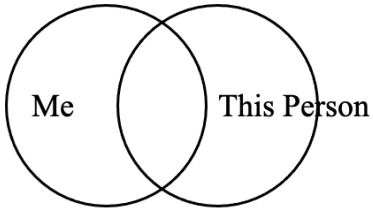


   (2)

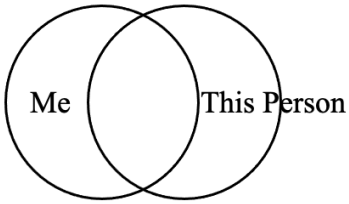
(3) .



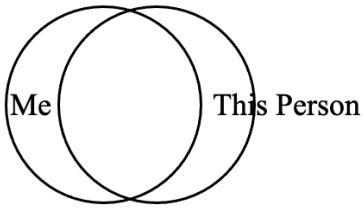
(4) .



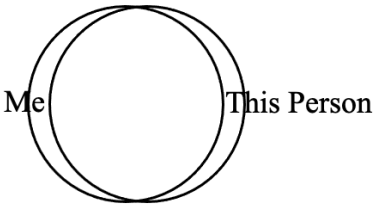
(5) .



(6) .



(7) .



Alter-Alter Ties*

**Use Qualtrics Piped Text and Loop & Merge functions to (1) carry forward names generated from close connections, and (2) repeat the same set of questions for each name written.*

9. Who does {name1} know from the rest of your close connections? Check all that apply except

the person him/herself. If ${name1} does not know anyone, leave it blank.

{name1}
{name2}
{name3}
{name4}
{name5}
{name6}
{name7}
{name8}
{name9}
{name10}
{name11}
{name12}
{name13}
{name14}
{name15}

Multicultural Personality Questionnaire

To what extent do the following states apply to you?
1 (totally not applicable) to 7 (completely applicable)

Cultural empathy

I pay attention to the emotions of others.
I am a good listener.
I sense when others get irritated.
I get to know others profoundly.
I enjoy other people's stories.
I notice when someone is in trouble.
I sympathize with others.
I set others at ease.

Flexibility

I work according to strict rules. *
I work according to plan. *
I work according to strict scheme. *
I look for regularity in life. *
I like routine. *
I want predictability. *
I function best in a familiar setting. *
I have fixed habits. *

Social Initiative

I take the lead.

I leave initiative to others to make contacts. *
I find it difficult to make contacts. *
I take initiative.
I am inclined to speak out.
I am often the driving force behind things.
I make contacts easily.
I am reserved. *

Emotional Stability

I worry. *
I get upset easily. *
I am nervous. *
I am apt to feel lonely. *
I keep calm when things don't go well.
I am insecure. *
I am under pressure. *
I am not easily hurt.

Open-mindedness

I try out various approaches.
I am looking for new ways to attain my goal.
I start a new life easily.
I like to imagine solutions to problems.
I am a trendsetter in societal developments.
I have feeling for what's appropriate in culture.
I seek people from different backgrounds.
I have broad range of interests.

*Reverse score items

Intercultural Communication Competence

Communication: Communication sensitivity

I notice right away when my conversation partners' behavior does not match what they are saying.
I recognize right away when a conflict is brewing.
I can quickly pick up on underlying tensions between two people.
I can sense how others feel without them telling me.
It's easy for me to interpret the tone of a conversation based on the other person's behavior.

I can recognize changes in the tone of a conversation quickly.
I can empathize with other people's feelings well.

Creating synergies: Mediation of different interests

I am good at finding compromises.

In a group, I am the person who combines different approaches to find solutions.
I am good at mediating between people with conflicting interests.
I know how to get involved in group discussions so as to balance things out.
It is easy for me to be a mediator when different opinions clash in a discussion.

Learning: Information seeking

Before I travel to another country, I read a lot about it.
I gather specific information to prepare myself for a stay abroad.
When planning a trip abroad, I use different sources of information.

Self-knowledge: Identity reflection

When I observe people from a different culture, I imagine how they see things.
I think about what makes up my culture.
I wonder about my cultural identity.
I try to understand how my behavior is influenced by my culture.
I consider to what extent my views are shaped by my cultural background.

Self-management: Problem solving

I consider various alternative solutions in order to solve a problem.
I try to define what the problem is precisely before trying to solve it.
Before committing to a solution, I think about the consequences.
I deliberately consider the consequences of a specific solution to a problem.

Social interaction: Socializing

I find it hard to maintain contact with people I have just met.*
I spend a significant amount of my free time maintaining my contacts.
I take part in all sorts of activities to make new contacts.
I actively contribute to building my social network.
I am eager to meet new people.

*Reverse score items

Demographics

1. What is your age, in years?

_____

2. Sex What is your sex?
   - Male
   - Female
   - Intersex
   - Prefer not to answer

3. What is your ethnicity?

_____

4. What is your highest level of education?
   - Some high school or less
   - High school diploma
   - Some college, but no degree
   - Associates or technical degree
   - Bachelor's degree
   - Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS, etc.)
   - Other, please specify: _____
   - Prefer not to answer

5. What is your current relationship status?
   - Single
   - Dating someone, not committed
   - In a committed relationship
   - Married
   - Widowed
   - Divorced
   - Other, please specify: _____

6. What is your primary religious affiliation, if any?
   - None (atheist or agnostic)
   - Christian (Protestant)
   - Christian (Roman Catholic)
   - Muslim
   - Jewish
   - Buddhist
   - Mormon
   - Other, please specify: _____
   - Prefer not to answer

7. To what extent do you identify as liberal versus conservative, in general?
   - Very conservative
   - Moderately conservative
   - Slightly conservative
   - Neutral
   - Slightly liberal
   - Moderately liberal
   - Very liberal

8. What is your occupation?

_____

9. Please estimate your total income last year, as best you can.
    - I was unemployed or a student without income.
    - Less than $10,000
    - $10,000 to 25,000
    - $25,000 to $50,000
    - $50,000 to $100,000
    - More than $100,000
    - Prefer not to answer

10. How many children do you have, if any?
    - 0
    - 1
    - 2
    - 3
    - 4
    - 5
    - 6 or more

11. Prior to your living in the current country, how often did you go abroad for a short-term stay (less than a month)? Choose the answer that best describes your case.
    - I had never gone abroad to another country before moving to the current country.
    - Once every few years
    - Once a year
    - A few times per year
    - Once every few months
    - Every two months
    - Almost every month

12. Have you lived abroad for more than a month before living in the current country? If yes, indicate the total number of years and number of countries. If no, fill in "0" for both.
    - Years lived abroad before the current country:

      _____
    - Number of countries in which you had lived before the current country:

      _____

13. Before living in the current country, how often did you interact with people from a different country? Choose the answer that best describes your case.
    - Never
    - Only a few times
    - Once every few months
    - Once a month
    - Several times per month
    - Several times per week
    - Almost every day

14. How would you rate your English proficiency?
    - 0
    - 1
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10

APPENDIX C

Participants' Country of Origin and Host Countries Detailed

Country of Origin	*N*	Percent	Host Country	*N*	Percent
1. Albania	1	0.16	1. Australia	47	7.57
2. Algeria	1	0.16	2. Austria	2	0.32
3. Angola	2	0.32	3. Belgium	3	0.48
4. Argentina	1	0.16	4. Canada	78	12.56
5. Australia	9	1.45	5. Chile	1	0.16
6. Austria	3	0.48	6. Czech Republic	5	0.81
7. Azerbaijan	1	0.16	7. Denmark	4	0.64
8. Bangladesh	6	0.97	8. Estonia	2	0.32
9. Bosnia and Herzegovina	1	0.16	9. Finland	5	0.81
10. Brazil	9	1.45	10. France	11	1.77
11. Bulgaria	5	0.81	11. Germany	36	5.80
12. Canada	10	1.61	12. Greece	3	0.48
13. Chile	1	0.16	13. Hungary	6	0.97
14. China	45	7.25	14. Ireland	4	0.64
15. Colombia	5	0.81	15. Israel	4	0.64
16. Croatia	2	0.32	16. Italy	7	1.13
17. Cyprus	1	0.16	17. Japan	13	2.09
18. Czech Republic	4	0.64	18. Malawi	1	0.16
19. Democratic Republic of the Congo	1	0.16	19. Mexico	9	1.45
20. Djibouti	1	0.16	20. Netherlands	20	3.22
21. Dominican Republic	1	0.16	21. New Zealand	19	3.06
22. Egypt	1	0.16	22. Norway	2	0.32
23. El Salvador	1	0.16	23. Poland	6	0.97
24. Estonia	1	0.16	24. Portugal	19	3.06
25. Fiji	1	0.16	25. Slovenia	1	0.16
26. Finland	1	0.16	26. South Africa	48	7.73
27. France	10	1.61	27. South Korea	4	0.64
28. Germany	11	1.77	28. Spain	13	2.09
29. Ghana	2	0.32	29. Sweden	3	0.48
30. Greece	5	0.81	30. Switzerland	4	0.64
31. Hungary	2	0.32	31. United Kingdom of Great Britain and Northern Ireland	193	31.08
32. India	13	2.09	32. United States	48	7.73

			of America
33.	Indonesia	7	1.13
34.	Iran	3	0.48
35.	Iraq	2	0.32
36.	Ireland	16	2.58
37.	Israel	1	0.16
38.	Italy	14	2.25
39.	Jamaica	2	0.32
40.	Japan	4	0.64
41.	Kazakhstan	1	0.16
42.	Lao People's Democratic Republic	1	0.16
43.	Latvia	1	0.16
44.	Lebanon	3	0.48
45.	Lesotho	1	0.16
46.	Lithuania	5	0.81
47.	Madagascar	1	0.16
48.	Malawi	1	0.16
49.	Malaysia	4	0.64
50.	Mexico	3	0.48
51.	Morocco	3	0.48
52.	Myanmar	1	0.16
53.	Nepal	4	0.64
54.	Netherlands	11	1.77
55.	New Zealand	8	1.29
56.	Nigeria	69	11.11
57.	Norway	1	0.16
58.	Pakistan	7	1.13
59.	Peru	1	0.16
60.	Philippines	15	2.42
61.	Poland	18	2.90
62.	Portugal	5	0.81
63.	Romania	12	1.93
64.	Russian Federation	15	2.42
65.	Saint Lucia	1	0.16
66.	Saudi Arabia	2	0.32
67.	Serbia	5	0.81
68.	Singapore	3	0.48
69.	Slovakia	1	0.16
70.	Slovenia	1	0.16
71.	South Africa	11	1.77
72.	South Korea	5	0.81
73.	Spain	9	1.45
74.	Sri Lanka	3	0.48

75.	Sudan	1	0.16			
76.	Swaziland	1	0.16			
77.	Sweden	2	0.32			
78.	Switzerland	1	0.16			
79.	Syrian Arab Republic	6	0.97			
80.	Togo	1	0.16			
81.	Tunisia	2	0.32			
82.	Turkey	31	4.99			
83.	Ukraine	8	1.29			
84.	United Arab Emirates	2	0.32			
85.	United Kingdom of Great Britain and Northern Ireland	47	7.57			
86.	United States of America	36	5.80			
87.	Uruguay	1	0.16			
88.	Uzbekistan	1	0.16			
89.	Bolivarian Republic of Venezuela	3	0.48			
90.	Viet Nam	3	.48			
91.	Zambia	3	0.48			
92.	Zimbabwe	33	5.31			
	Total	621	100.00	Total	621	100.00