The Role of Multicultural Social Network in the Relationship between Acculturative Stress and Depression among Korean Immigrants in the U.S.

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Acculturative stress is a salient predictor of depressive symptomatology among immigrant populations while social support and social networks among the immigrant population have been shown to buffer the effects of stress. Drawing on acculturation theory and stress-coping theory, this study tested the associations between social support (measured by global social support measure (i.e., 2-way SSS) and egocentric social network, acculturative stress (measured by RASI) and depressive symptomatology (measured by PHQ-9). More specifically, this study investigates if the source of social support of immigrants, whether it originates from the conational, host, and non-conational immigrant groups, influences these relationships. Compared to the studies of conational and host groups, the effect of non-conational immigrant groups' social support and social networks in the relation to acculturative stress and depressive symptomatology is rarely studied. To address this gap, the current study used a non-probabilistic sampling method to recruit a total of 190 adult Korean immigrants to complete an online survey. This study hypothesized that global social support and egocentric social network components from non-conational immigrants are significantly associated with a lower level of depressive symptomatology controlling for acculturative stress. In addition to this, its' buffering effect with acculturative stress on depressive symptomatology are tested. This study cannot find the buffering effects of the social interaction of this group as well as the other two groups between

acculturative stress and depressive symptoms. However, the significant main effects of the emotional and instrumental support from non-conational friends on depression were strong even controlling for other two groups' level of supports. These results lend support to the argument that the preexisting acculturation models, mainly focusing on the two-dimension, need to be reconsidered with more flexible and culturally delicate models. Based on the findings of this study, I propose a three-dimensional model including multiculturalism presenting the non-conational network and culture. This finding can provide social work practitioners with more culturally competent knowledge to effectively deal with the issues of the immigrant population in the U.S.

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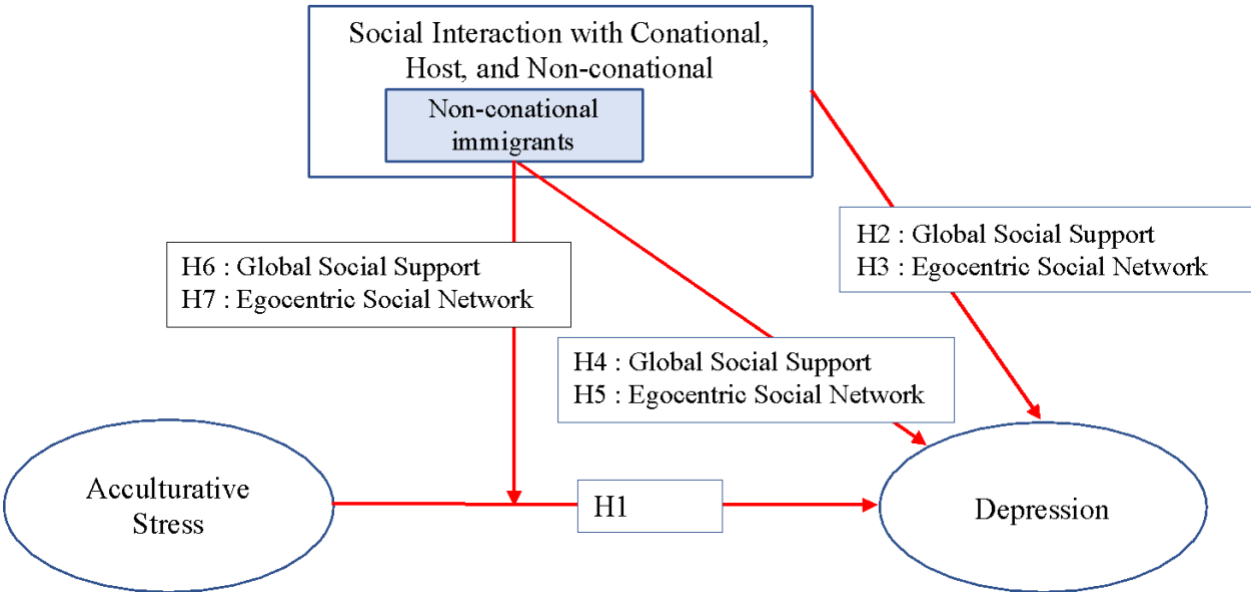
1.0 Chapter 1. Introduction

1.1 Overview of the Dissertation

As one of the common and critical mental disorders, depression has drawn attention from diverse social science areas including social work. Despite the widely acknowledged importance, studies regarding depressive symptomatology in Asian American population, specifically among Korean immigrants are relatively few. Acculturative stress is a salient predictor of depressive symptomatology among immigrant populations. Social support and social networks among the immigrant population have been shown to buffer the effects of stress. Drawing on acculturation theory and stress-coping theory, this study tested the associations between social support (measured by global social support measure (i.e., 2-way SSS) and egocentric social network, acculturative stress (measured by RASI) and depressive symptomatology (measured by PHQ-9). More specifically, this study investigates if the source of social support of immigrants, whether it originates from the conational, host, and non-conational immigrant groups, influences these relationships. Compared to the studies of conational and host groups, the effect of non-conational immigrant groups' social support and social networks in the relation to acculturative stress and depressive symptomatology is rarely studied. Given the increased diversity of the immigrant population in the U.S., a more in-depth understanding of the role of social support and networks across immigrant groups may help social workers support immigrant mental health. To address this gap, the current study used a non-probabilistic sampling method to recruit a total of 190 adult Korean immigrants to complete an online survey that included 2-way SSS, egocentric social network measure, RASI, PHQ-9, and demographic questions. In this study, I hypothesized that

global social support and egocentric social network components from non-conational immigrants are significantly associated with a lower level of depressive symptomatology controlling for acculturative stress. In addition to this, its' buffering effect with acculturative stress on depressive symptomatology are tested along with the hypotheses testing the main effect of acculturative stress, overall social support on depressive symptomatology (Figure 1).

Figure 1. Hypotheses and Framworks in the Present Study



1.2 Problem Statement

1.2.1 The negative effect of depression among Asian immigrant populations

Depression is acknowledged as one of the leading causes of disability and premature mortality worldwide (Strakowski & Nelson, 2015). According to the recent epidemiological data, approximately 20% of adult individuals in the U.S. reported that they have experienced a

depressive disorder (*Explore Depression in the United States*, 2019). Depression can comprehensively change the quality of life of a person via negatively affecting personal, social, and work life including sleeping, eating habits, and general health (Spijker et al., 2004). Depression imposes considerable burdens on societies as well as on the individuals who experience it (Levinson et al., 2010; Wittchen et al., 2011). Early-onset of depressive disorder is strongly associated with multiple social disruptions including marital instability, and long-term unemployment (Breslau et al., 2008; Clayborne et al., 2019; Ronald C. Kessler, Adler, et al., 2005). The associations between immigration and depression are inconclusive (Alegría et al., 2007; Breslau & Chang, 2006; Levecque et al., 2007; Revollo et al., 2011). However, for Asian immigrant populations in the U.S., multiple empirical studies reported a higher prevalence of depression, and social anxiety among Asian immigrants than other ethnic groups (H. J. Kim et al., 2015; Okazaki et al., 2011; Takeuchi et al., 2007). A meta-analytic study showed that the prevalence of depression among Asian immigrants is so high (35.6% assessed by the CESD measure, 33.1% by the GDS, and 26.9% by the PHQ) that the prevalence levels of the depression were similar to those observed among patients with chronic illness (H. J. Kim et al., 2015). Moreover, during the COVID-19 pandemic, Asian Americans reported that they have experienced an increase in discrimination since the pandemic (S. Lee & Waters, 2021) and this increased perceived discrimination led Asian immigrants to experience more mental health issues including depression than white Americans and Canadians (Wu et al., 2021, 2020). Specifically, the high prevalence of depression has frequently been observed among the older adult Asian immigrant population (G. Kim et al., 2010; Kuo et al., 2008; Mui & Kang, 2006) implying the representation of cumulative acculturative stress (Gupta et al., 2013).

Similar to the pattern of emigration of other Asian immigrant groups in the U.S., the Korean immigrant population grew drastically from 11,000 in 1960 to 290,000 in 1980, and 1,100,000 in 2010, staying at approximately 1 million (1,063,000) in subsequent years (O'Connor & Batalova, 2019). Korean immigrants have a relatively higher risk of depressive symptoms than other Asian ethnic groups across diverse age groups (K. Bernstein et al., 2021; H. J. Kim et al., 2015; Koh, 2018). For instance, a recent meta-analysis reported that the estimates of the prevalence of depression among Korean Americans were twice as high as those of Chinese-Americans (H. J. Kim et al., 2015). A recent community-based study reported that 45% of the sample consisting of Korean Americans had CES-D scores of 16 or greater, indicative of clinical depression (K. Bernstein et al., 2021).

1.2.2 Acculturative stress and Korean immigrants' mental health

For cross-cultural immigrants experiencing a rapid transition from one country to another adapting to a new environment can be challenging (Taft, 1977). These adaptational reactions lead to the phenomena of acculturation defined as "cultural and psychological change that results from the continuing contact between people of different cultural backgrounds" (Berry, 2006, p. 27). Depending on the resources or susceptibility of the participants, the process of acculturation can induce stress reactions, on which cross-cultural psychologists coined the term "acculturative stress" (Berry, 2006).

Acculturative stress is one of the most salient psychological factors to determine the psychological well-being of immigrants (Bekteshi & Kang, 2020; Gomez et al., 2011; Hovey, 2000; M. Lee et al., 2018; Miller, Yang, et al., 2011; Torres, 2010). Specifically, many cross-cultural psychologists and social workers working with immigrant populations have reported that

acculturative stress is associated with the presentation of depressive symptoms across diverse immigrant populations (Joiner & Walker, 2002; Park & Rubin, 2012; Roley et al., 2014). For these reasons, acculturative stress has been understood through multiple psychology and sociology theories (Berry, 2006). Specifically, stress and coping theory argues that stress occurs when an individual perceives barriers to achieving a goal and that exceeds their ability to cope (Lazarus & Folkman, 1984). For example, in the immigrant context acculturation stress may occur when an immigrant experiences language barriers, discrimination, or an acculturation gap between parents and children (Berry, 2006; Gil et al., 1994).

Asian immigrants in the U.S. seem to have experienced a higher level of acculturative stress than European immigrants (Yeh & Inose, 2003). For instance, they go through fundamental value conflicts between their own ethnic culture (e.g., collectivism) and that of mainstream Americans such as individualism (S. J. Schwartz et al., 2010; Triandis, 1993). This factor has been termed perceived cultural distance, defined as the differences or similarities between two cultures in various areas including physical (e.g., climate) and social (e.g., language, religion, value) characteristics (Babiker et al., 1980). Empirical studies reported that perceived cultural distance is one of the crucial factors to yield acculturative stress (Babiker et al., 1980; Searle & Ward, 1990). Multiple studies indicated that Asian immigrants/ international students tend to perceive a higher level of cultural distance toward the host country culture in English speaking countries (e.g., the U.S., Australia) than immigrants/students from European countries or New Zealand (Nesdale & Mak, 2003; Redmond & Bunyi, 1993).

Asian immigrants have historically been targets of racial discrimination mainly due to their physical distinctiveness from European Americans (Gee et al., 2009; Leong & Okazaki, 2009; Takaki, 1998). Moreover, since the onset of the COVID-19 pandemic, discrimination against

Asians in the U.S. has been enormously increased and more explicit than ever (Tessler et al., 2020). Discrimination has been acknowledged as one of the most salient sources of acculturative stress leading to negative mental health outcomes among immigrants (Finch et al., 2004; Flores & Tomany-Korman, 2008; Schmitt et al., 2014).

Asian immigrants residing in the U.S. are heterogenous with diverse nationalities, languages, and religions (Zong & Batalova, 2016). Koreans are one of the smaller groups of Asian immigrants in the U.S., making up only 8.5% of Asian immigrants (Zong & Batalova, 2016) and 2.2% of the total immigrant population in the U.S. (O'Connor & Batalova, 2019). Although there are few studies to directly compare the level of acculturative stress with other immigrant groups from the different origins of the country, a study targeting adolescent populations has reported that Korean adolescents show higher acculturative stress than Chinese and Japanese adolescents in the U.S. (Yeh, 2003). In relation to the discrimination-related stress, Korean adult immigrants reported a higher level of distress than their counterparts from Vietnam, Iran, and Ireland (I.-H. Kim & Noh, 2016). In another study, Korean adult immigrants have shown a higher-than-medium level of acculturative stress (K. S. Bernstein et al., 2011; Shin et al., 2017). Several studies have reported that acculturative stress was strongly associated with a higher level of depression among this population (K. S. Bernstein et al., 2011; Oh et al., 2002; Park & Rubin, 2012).

1.2.3 Conventional social network intervention: Stress buffering effect of social interaction

Researchers have found that one of the ways that Asian immigrants buffer the negative impact of acculturative stress on mental health problems is through the use of social support or social networks. Specifically, perceived social support has been acknowledged as playing a critical buffering role against various stressors (Sheldon Cohen, 1992; R. C. Kessler et al., 1985). Indeed,

in the context of immigrants, empirical studies have shown that social support, social networks, and social interaction buffer the effects of acculturative stress (Crockett et al., 2007; J. Kim et al., 2012; Raffaelli et al., 2013; Xingmin Wang et al., 2014). Particularly, the buffering role of family support between acculturative stress and depression was supported by multiple studies targeting Asian and Hispanic immigrant populations (Chae et al., 2012; Crockett et al., 2007; Raffaelli et al., 2013). Beyond the family support, a study reported only social support from friend groups not from family buffered the relationship between discrimination-related stress and psychological distress (S. Singh et al., 2015). In addition to that, studies have reported the buffering role of social support depending on the group that is providing the support, be it co-ethnic immigrants or native residents of the host country. Particularly, social supports from conational groups have been found to buffer the relationship between discrimination-related stress and depression among diverse immigrant populations (Finch & Vega, 2003; Jasinskaja-Lahti et al., 2006; I.-H. Kim & Noh, 2016; Samuel Noh & Kaspar, 2003). Social support from people from the host country can function as a facilitator for social integration as well as enhancing the sense of well-being (Doucerain et al., 2015; Lu et al., 2011; Martínez García et al., 2002; Vacca et al., 2018).

1.2.4 Neglected factor: The role of social interaction with non-conational immigrants

Over the last decades, cross-cultural psychologists have explored the effect of the social interactions of immigrants depending on whether the interaction happens among host country social networks (i.e., the mainstream community in immigrants' receiving country, e.g., Americans in the U.S.) and the co-ethnic social networks (i.e., immigrants' conational community in a receiving country, e.g., Korean community to Korean immigrants in the U.S.) (Jasinskaja-Lahti et al., 2006; Searle & Ward, 1990; Vacca et al., 2018; Yoon et al., 2008). For instance, the

increase in social interaction with members of the co-ethnic social network was associated with immigrants' positive mental health outcomes such as reduced depression (Ayers et al., 2009; Samuel Noh & Kaspar, 2003; Yoon et al., 2008) while it was negatively related with socio-cultural adaptation in the receiving country (E. C. Johnson et al., 2003). On the other hand, social interaction with members of a host group appears to help immigrants better adapt to the host society (Crockett et al., 2007; Doucerain et al., 2015; Lu et al., 2011) while it increased the level of psychological distress (Jasinskaja-Lahti et al., 2006). Depending on the domains of immigrants' adaptation and their context, the effects of social interaction with each group can vary. For example, social interaction with co-national members can hinder immigrants' socio-cultural adaptation in the host country, and in turn, become a factor to reduce their psychological well-being, especially when they are sojourners, living in the receiving country temporarily (Briody & Chrisman, 1991; Geeraert et al., 2014). Despite these mixed results, social interactions with either host members or co-national immigrants generally have reported promoting mental health status among immigrants.

Social interactions can occur, however, with other immigrants residing in the same host society. The present study defines the term non-conational immigrants as "people from countries other than an immigrant's own or the host society"(Kashima & Loh, 2006, p. 472). While a study used this term directly (Pho & Schartner, 2019), others termed it as "international ties" (Kashima & Loh, 2006) or "multi-national friendships" (Hendrickson et al., 2011). For Korean immigrants, these non-conational immigrants include immigrants sharing a similar cultural background such as Chinese, Japanese, Vietnamese, and immigrants originating from South America, Africa, Europe, and the Middle East. From an immigrant's perspective, non-conational immigrants living in a host country may be considered an outgroup similar to the members of the host country.

However, in a practical sense, non-conational immigrants are different from native-born members of a host country in important ways, including language usage, culture, accessibility, and social status. Therefore, Korean immigrants living in the U.S. may perceive clear distinctions between immigrant groups other than Korean (e.g., Chinese, Asian Indian, Mexican) and the host population group, that is, (native-born) Americans. Despite the potential differences, existing acculturation literature does not provide sufficient empirical evidence or theoretical explanation of the role of interaction with non-conational immigrants in acculturation and subsequent adaptation processes, particularly regarding the mental health outcomes (van Oudenhoven & Ward, 2013). The majority of extant research investigating the effect of social interactions on immigrant acculturation and mental health simply make distinctions between interactions with the host country members versus interaction with the conational members.

Although there are only a few and they typically focus on international students or expatriates, recent studies have begun assessing a broader range of social network features and report interesting results regarding the role of non-conational networks in addition to the role of traditional host or conational networks (Hendrickson et al., 2011; Kashima & Loh, 2006; Pho & Schartner, 2019; Rienties & Nolan, 2014). Some studies reported no significantly different effect of social ties with non-conational international student networks and host student networks (Hendrickson et al., 2011) while others found the significant and unique contribution of social networks with non-conational international student peers on psychological outcomes (Kashima & Loh, 2006; Pho & Schartner, 2019).

These studies of international students suggest several ways that interactions with non-conational immigrants may impact mental health. First, social ties with non-conational immigrants from diverse countries might provide opportunities to learn about other cultures, not only the host

country's culture for immigrants (Hendrickson et al., 2011). Second, there might be a "sense of commonality that makes an immigrant feel like one is not alone in a new environment" (Hendrickson et al., 2011, p. 283). Third, in language learning, contact with no-conational immigrants may provide opportunities for an immigrant to learn and exercise the host country's language use without fear of discrimination (Hendrickson et al., 2011). For these reasons, non-conational immigrants may be more approachable than people of host country members when an immigrant needs social support from outside their conational ties. Lastly, social interaction with non-conational immigrants can stimulate an immigrant to negotiate their ethnic or national identity in more dynamic ways. For example, international students more actively communicating with non-conational peers in Australian universities have a more positive ethnic identity as well as host country identity than other students (Kashima & Loh, 2006).

Although some studies have explored international students' non-conational peer ties, the context or motivation of international students' social interaction is inherently different from adult immigrants who are envisioning and planning their future lives in a host society (Bierwiaczonek & Waldzus, 2016; Colleen Ward & Geeraert, 2016). Studies examining the role of social interaction with non-conational immigrants targeting adult immigrants are scarce. To address this gap, the present study aims to explore the relationship between the social interaction patterns of Korean immigrants with non-conational immigrants in the U.S. and their psychological outcomes. In order to accomplish this goal, an online survey was conducted to explore the focal phenomenon of social interaction among Korean immigrants in the U.S.

1.3 Relevance to Social Work

According to the Code of Ethics of Social Workers (*NASW*, 2008), social workers' primary mission is "to help meet the basic human needs of all people, with particular attention to the needs and empowerment of people who are vulnerable, oppressed, and living in poverty". As reviewed in the previous section, Asian immigrants have long been a target of racial discrimination in the U.S. (Gee et al., 2009; Leong & Okazaki, 2009) and this discriminatory atmosphere has been intensified even more during the pandemic (Center For The Study of Hate and Extremism, 2021). As a result, considerable numbers of Asian immigrants in the U.S. suffer from multiple mental health problems including depression (S. Lee & Waters, 2021).

The goal of early social workers working with the immigrant population was to help them successfully assimilate to the host country, a goal that was based on the theory of the "melting pot" (Balgopal, 2000). Compared to the previous immigrants mainly from European countries, the new immigrants were much more visible and diverse (Balgopal, 2000). Along with this demographic change of the immigrant population, criticism of the underlying assumption of assimilation was intensified. Many scholars began to claim that the concept of assimilation stereotyped immigrants as ignorant, poor, unhygienic, criminal so that it objectified immigrants as targets for relieving these problems through modernization, specifically in Anglo-Saxon ways (Escobar et al., 2000; Hunt et al., 2004; Lara et al., 2005; Rudmin, 2009). Social work's recognition of immigrant's cultural assets and the role of white supremacy in the professional approach to supporting immigrants has led to a shift of the goals and approaches (Bouvier, 1992).

In response to this criticism, "cultural pluralism" has emerged as an alternative goal in social work practices. Cultural pluralism urges that "the society permits the existence of multicultural communities that can live according to their styles, customs, languages, and values

without penalty to their members" (Pantoja & Perry, 1976, p. 81). Based on the perspective of cultural pluralism, social workers learn skills to encourage immigrants to maximize the strengths of their own culture while helping them meet their needs in American society (Balgopal, 2000).

Helping clients build social support networks is a traditional approach to intervening when they are experiencing anxiety or depression (Hogan et al., 2002). Contrary to the traditional view that more people in a social network is generally better for people (Berkman & Syme, 1979), many scholars have reported that each social interaction has a different role and yields different outcomes (Hirsch & Hirsch, 1980; James S. House, 1981; N. Lin, 1999). As discussed earlier, the social interactions of immigrants with the host group and ethnic group produce different outcomes depending on the domains of immigrants' adaptation such that the social interaction with the host group increases socio-cultural adaptation (Crockett et al., 2007; Doucerain et al., 2015; Lu et al., 2011) while the social interaction with the conational immigrant buffers psychological distress (Samuel Noh & Kaspar, 2003). In addition to these two categories of social interaction, social workers can draw detailed intervention plans regarding the relationship among immigrant groups of different nationalities. A deep knowledge regarding the effect of social interaction among diverse immigrant groups may provide social work practitioners with a useful lens and tools that allow better support for immigrants as they deal with stressors that arise as a result of acculturation.

For example, for the immigrants who recently arrived in the U.S., active social interactions with host members could be a burdensome task because they are not yet familiar with various cultural elements of the host society including language or social etiquette. They tend to be afraid of making a mistake in the interaction and this fear leads to a "separation strategy" such that immigrants exclusively interact with their conational immigrants (Berry, 1997). In this situation,

non-conational immigrants specifically from similar cultural backgrounds can be a bridge for immigrants to initiate their social interaction outside the conational community.

Social workers would benefit from the knowledge regarding the social interaction patterns and the following outcomes of immigrants. As previously discussed, American society is getting more diverse. Consequently, the dynamics among immigrant groups might not be as straightforward as before. As a result, social workers working with immigrants need to pay attention to this complex trend to serve the population better.

1.4 Overview of the Dissertation

The goal of this dissertation is to extend our understanding of the role of social interaction in the relationship between acculturative stress and mental health outcomes among Asian immigrants, particularly Korean first-generation immigrants residing in the U.S. As discussed previously, extant cross-cultural psychology and relevant social work studies have mainly focused on two groups, conational immigrants versus the host country people. As a result, we do not have even basic exploratory data regarding how immigrants have interacted with other immigrant groups and its possible mental health outcomes. This dissertation explores how the social interaction of Korean immigrants with other non-conational immigrants may buffer the relationship between acculturative stress and mental health outcomes, specifically depression. This dissertation compares social interactions with the previously studied groups, that is, with conational immigrant group (i.e., Korean) and host group (i.e., native-born American) and non-conational immigrants. In addition, this study more thoroughly measures social support by assessing both global social support measures and egocentric social networks. While previous

literature has mainly used the global social support measure to explore the associations between social support and health outcomes (Cobb, 1976; L. H. Cohen et al., 1997), recently social network analysis increasingly attempts to measure more specific and accurate social network features around focal individuals (ego-centric social networks) (Bolíbar et al., 2015; Brandes et al., 2010; Doucerain et al., 2015). In this study, global social support is assessed using a brief 12-item version of the 2-Way SSS (Obst et al., 2019), which evaluates received emotional and instrumental support from friends in each group (e.g., conational, host, non-conational). To assess egocentric social network measure, a name generator was used (i.e., an individual who identifies their own connections; (Burgette et al., 2021) asking questions regarding each individual identified and their relationships (e.g., expected support, perceived closeness).

1.5 The Aims of the Study and Research Hypotheses

This study aims to extend our understanding of the role of social interaction in the relationship between acculturative stress and depression among first-generation Korean immigrants in the U.S. by:

1. Examining the direct effect of acculturative stress on mental health outcomes, specifically depression **(study aim #1)**
2. Examining the role of social interaction with three groups (e.g., conational immigrant group, native-born Americans, and non-conational immigrant groups) in relation to depression **(study aim #2)**

3. Examining the buffering role of social interaction with various groups (e.g., conational immigrant group, native-born Americans, and non-conational immigrant groups) between the negative influence of acculturative stress on depression **(study aim #3)**

   More specifically, this study will test the following hypotheses:

Hypothesis 1: Acculturative stress is associated with a higher level of depression among Korean first-generation immigrants in the U.S. controlling for demographic or immigration context.

Hypothesis 2: Global social support components (e.g., the number of friends, received emotional support, received instrumental supports) are associated with a lower level of depression controlling for acculturative stress, demographic, and immigration context.

Hypothesis 3: Ego-centric social network components (e.g., network size, expected support from alters, perceived closeness to alters) are associated with a lower level of depression controlling for acculturative stress, demographic and immigration context and associations remain after accounting for network structure indicators (e.g., network density, centrality).

Hypothesis 4: Global social support components (e.g., the number of friends, received emotional support, received instrumental supports) from non-conational immigrants are associated with a lower level of depression controlling for acculturative stress, demographic, or immigration context.

Hypothesis 5: Egocentric social network components (e.g., network size, expected support, perceived closeness) from non-conational alters are associated with a lower level of depression controlling for acculturative stress, demographic, or immigration context.

Hypothesis 6: Global social support components (e.g., the number of friends, emotional support, instrumental support) from non-conational immigrants buffer the effects of the acculturative stress

on depressive symptoms among Korean first-generation immigrants in the U.S. controlling for acculturative stress, demographic or immigration context.

Hypothesis 7: Egocentric social network components (e.g., network size, expected support, perceived closeness) from non-conational immigrants buffer the effects of the acculturative stress on depressive symptoms among Korean first-generation immigrants in the U.S.

2.0 Chapter 2. Literature Review

2.1 General Characteristics of Depression

2.1.1 Definition of depression

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM), depressive disorders range from major depressive disorder (including major depressive episode), disruptive mood dysregulation disorder, persistent depressive disorder, substance/medication-induced depressive disorder to other unspecified depressive disorders depending on duration, timing, or presumed etiology (*American Psychiatric Association*, 2013). The major depressive disorder (MDD), characterized by at least two weeks of pervasive low mood such as sad, empty, or irritable mood, loss of interest in normally enjoyable activities, followed by physical and cognitive changes that significantly affect the individual's capacity (*American Psychiatric Association*, 2013).

There have been two different approaches to discern mental health from mental illness including depression (Brown & Scheid, 2010). One is the medically oriented approach to claim that health and illness are dichotomous opposites so that individuals can be fit into specific disease categories once their symptoms are determined. This view emphasizes diagnoses to determine whether one is sick or not, consequently, focuses on individual treatment to relieve the symptoms including medication. On the other hand, the psychosocial model argues that mental health and illness can be identified in terms of a continuum so that most individuals fall somewhere in between (Brown & Scheid, 2010). Especially this approach is interested in the social conditions affecting degrees of mental health and mental health problem, that is, how social context or

environment leads to the problem or shapes even definitions of mental illness (Horwitz, 2010). The approach based on this perspective prefers to use continuum measurements of mental health problems such as scales to assess the degree of psychological well-being or distress because the indices can be used not only for determining the problem but also measuring its severity and frequency along a continuum (Burdzovic Andreas & Brunborg, 2017; Losada et al., 2018; Mirowsky & Ross, 2002). Indeed, these two approaches are not mutually exclusive, but rather, empirically interconnected such that depressive symptomatology has been acknowledged as a strong predictor and a basic criterion of major depressive disorder (Malgaroli et al., 2021; Verhoeven et al., 2018). For a clinical diagnosis of major depression, multiple persistent symptoms with the specific duration (e.g., more than two weeks) in addition to simply depressive mood are required, but people with only a few certain symptoms may get help from the treatment of their "subsyndromal" depression since the actual presentation of symptoms varies depending on individuals or the stage of the illness (Malhi & Mann, 2018). For those reasons, this study is more interested in measuring the degree of the depressive symptomatology than the dichotomous diagnosis of the major depressive disorder.

2.1.2 Descriptive epidemiology of depression

The lifetime prevalence of the major depressive disorder is relatively higher (16.6%) than other individual disorders such as alcohol abuse (13.2%) or specific phobia (12.5%) (Ronald C. Kessler, Berglund, et al., 2005). The most common time of onset of depression is in the early to mid-20s and generally goes down with age (Ronald C. Kessler et al., 2010). However, recent cross-cultural studies have shown the age pattern might be either nonlinear or reversed depending on the country's socioeconomic or cultural condition (Ronald C. Kessler & Bromet, 2013). Women are

typically affected about twice as often as males (Brody et al., 2018; Van de Velde et al., 2010) and individuals who are separated or divorced show a higher prevalence of major depression than do those that are currently partnered (R. C. Kessler et al., 2015). Associations between socioeconomic status and depressions have been widely observed across diverse countries and measures of SES. In terms of educational attainment, a meta-analysis (Lorant et al., 2003) revealed that 24 among a total of 26 studies showed that lower educational attainment was significantly associated with a higher prevalence of depression. Also, income has been reported as a strong predictor of depression (Blazer et al., 1994; Brody et al., 2018; Eaton et al., 2001).

2.1.3 Risk factors of depression

The cause of the major depressive disorder is acknowledged to be a combination of biological, environmental, and psychological factors (*American Psychiatric Association*, 2013). Studies with twin samples claim that a considerable proportion of individual differences in risk for depression can be accounted by genetic factors (Belmaker & Agam, 2008; Sullivan et al., 2000), however, there exist still plenty of inconclusive evidence around the path from the onset to psychopathological development of depression (S. Schwartz & Corcoran, 2010; Susser et al., 2006). For example, even among identical twins, the concordance rate of depression was in the 20% to 40% range, not 100% (Belmaker & Agam, 2008). Moreover, recent studies based on the medical model have found that the biological factors including genes cannot be turned on and off independently (Rutter et al., 2006), indicating the interaction effects between biological and environmental factors (S. Schwartz & Corcoran, 2010). Those findings give sociologists room to find the role of social or environmental factors in relation to the onset or development of

depression. For instance, Klerman and Weissman (1994) have articulated the critical role of an individual's closest relationships as a resource of treatment as well as a cause of depression.

2.1.4 Empirical findings regarding the prevalence of depression among the immigrant population

As mentioned in the introduction, the association between immigration status and depression is inconsistent (Alegría et al., 2007; Breslau & Chang, 2006; Grant et al., 2004; Levecque et al., 2007). Immigrants encounter various challenges as they settle in a new cultural environment and those experiences generally induce stress reaction, which has been called acculturative stress (Berry et al., 1987). Despite this salient influence of acculturative stress on mental health outcomes, immigrant populations do not have poorer mental health. Rather, epidemiological findings show that immigrant mental health including depression is better than the health of residents in the receiving country (Blair & Schneeberg, 2014; Markides & Rote, 2019; G. K. Singh & Miller, 2004; G. K. Singh & Siahpush, 2002; Vang et al., 2017). This phenomenon has been termed as the healthy immigrant effect, mainly hypothesized to occur due to the selection effect whereby healthy individuals are more able to migrate (Chou et al., 2010; Kennedy et al., 2015). However, immigrant health including psychological health steadily declines over time (Markides & Rote, 2019; Vang et al., 2017). Specifically, the prevalence of depression has distinctly increased over time and across generations for Asian immigrants (Takeuchi et al., 2007). For instance, elderly Asian immigrants over age 50 tend to show a much higher prevalence of depression than other ethnic group seniors (G. Kim et al., 2010; Kuo et al., 2008; Mui & Kang, 2006). This pattern implies the cumulative effect of acculturative stress on the mental health

outcomes of immigrants (Tran et al., 2010) along with the limited access to health care services (Sentell & Braun, 2012; Sentell et al., 2007).

2.2 Acculturative Stress and Mental Health Outcomes

2.2.1 Definition and the characteristics of acculturative stress

Acculturative stress is an affective response to challenges encountered in the process of acculturation (Colleen Ward, 1997; Colleen Ward et al., 2005). While acculturation refers to the cultural and psychological change resulting from the enduring contact between people of different cultural backgrounds, the process of acculturation is not necessarily stressful (Berry, 2006). There are however many sources of stress that occur in the acculturation process that might challenge a person's ability to cope. They include linguistic challenges, loss of social ties, lack of social supports, job instability, discrimination, family disruption, social isolation, and immigration status (Arbona et al., 2010; Berry, 2006; Martinez et al., 2015; T. N. Thomas, 1995).

Acculturative stress can be examined within the stress-coping-adaptation framework (Berry, 2006; Cervantes & Castro, 1985; Chataway & Berry, 1989; Mendenhall & Oddou, 1985). General models of stress assume that depending on dispositional or situational factors, individuals' tendency to perceive the challenges arising from similar experiences as "stressful" rather than "benign" or "irrelevant" can be different (Lazarus & Folkman, 1984). Specifically, when the stressor is perceived beyond one's coping resources, it creates a stress response, leading to negative results (S. Cohen & Wills, 1985; Lazarus & Folkman, 1984). In the immigrant context, this

theoretical framework implies that the degree of acculturative stress can vary across individuals depending on their context, resources, and individual characteristics.

2.2.2 Demographic correlates of acculturative stress

Berry and colleagues identified several factors that predict the level of acculturative stress that immigrants experience (Berry et al., 1987). First, refugees and sojourners, defined as temporary residents such as expatriate employees, international students, and their families, report higher levels of acculturative stress than immigrant groups. Second, immigrants who settle in countries with an assimilationist ideology rather than a pluralistic (multicultural) ideology are more likely to experience acculturation stress. Besides this early study, scholars of cross-cultural psychology have empirically examined demographic factors that are associated with acculturative stress. Some studies have found that being female predicts a higher level of acculturative stress (Berry et al., 1987; Ra, 2016; Sirin et al., 2013) while no gender differences have been more frequently reported (Hovey, 2000; Lueck & Wilson, 2010; Miranda & Matheny, 2000; Yeh & Inose, 2003). Earlier studies demonstrated that higher educational attainment is negatively correlated with acculturative stress (Berry et al., 1987). Recent empirical studies also report that higher education is a significant predictor for low levels of acculturative stress (Dillon et al., 2013). Younger immigrants appear to experience less acculturative stress than older (Hovey & King, 1996; Ra, 2016). However, another study found that younger age is linked to higher acculturative stress (du Plooy et al., 2019). The longer immigrants live in the host country, the less acculturative stress they experience (Miranda & Matheny, 2000). Individuals who migrate after the age of 14 experience higher levels of acculturative stress than those who migrate before age 14 (Padilla et al., 1985).

Besides these demographic factors, linguistic factors have been reported as one of the strongest predictors for acculturative stress (Masgoret & Ward, 2006; S. Singh et al., 2015). A significant number of studies have reported that the English proficiency of immigrants or international students in the English-speaking receiving countries significantly affects their degree of acculturative stress (Miranda & Matheny, 2000; Poyrazli et al., 2004; Yeh & Inose, 2003). Recent studies have found that the fluency of the native language as well as the proficiency of the receiving country language affects acculturative stress (Lueck & Wilson, 2010). These findings suggest that bilingual (or biculturalism) can experience less acculturative stress than the case of monolinguals.

Having religion or participation in religious activity has been reported to show the association of acculturative stress. For adult Latino immigrants living in the U.S., pre-immigration external religious coping experience predicts high levels of acculturative stress at post-migration (Sanchez et al., 2012). For Chinese immigrants, spiritual well-being and regular church attendance were positively associated with a low level of acculturative stress (Chau, 2006).

2.2.3 Acculturation and acculturative stress

In addition to these demographic and linguistic factors, one of the important predictors that have been frequently examined for acculturative stress is the mode of acculturation (Berry et al., 1987; Oh et al., 2002; Sullivan et al., 2015) or the degree of acculturation (Miranda & Matheny, 2000; Sodowsky & Wai Ming Lai, 1997). The classical definition of acculturation was from Redfield and colleagues (1936) such as phenomena occurring when different cultural groups come into continuous contact with consequent changes in the original cultural components of either or both groups. Broadly, acculturation can be understood as a process of a cultural learning process

of individuals participating in cross-cultural contacts (Rudmin, 2009). According to these definitions, acculturation per se does not necessarily imply acculturative stress. However, the relationship between acculturation and acculturation stress is well documented with the less acculturated immigrants reporting the higher level of acculturation stress (Miranda & Matheny, 2000; Sodowsky & Wai Ming Lai, 1997).

Historically, acculturation was conceptualized as "assimilation"; a unidirectional process whereby the more a person is acculturated, the less the person endorses his or her culture of origin (Cuellar et al., 1995; Y. Y. Kim, 2008). More recently acculturation has been discussed as bi-directional and more complex. Berry (1997) identified four modes of acculturation or strategies that immigrants use to adjust to life in a new country, which impact acculturative stress. The four types of acculturation strategies suggested by Berry (1997) are based on an immigrant's attitude toward both co-ethnic (e.g., positive vs. negative) and host society (e.g., positive vs. negative) and included marginalization (negative-negative), separation (positive-negative), assimilation (negative-positive), and integration (positive-positive). Immigrants who are marginalized keep distance themselves from both the host country and their co-ethnic peers. Immigrants who chose a separate strategy retain close ties with co-ethnic immigrants but do not develop relationships with members of the host county. Assimilationist modes of acculturation are characterized by immigrants not retaining close ties with co-ethnic immigrants but developing associations with the host country. Lastly in the integration mode of acculturation immigrants retain close ties to their co-ethnic community but also develop ties to the host country.

Among these four types, Berry and colleagues (1987) suggested that integration would be associated with a lower level of acculturative stress. Even in a recent study targeting international students (Sullivan et al., 2015), students categorized as integration groups showed significantly

lower levels of acculturative stress than the students in the other three groups (e.g., separation, assimilation, and marginalization group). In contrast, students in the separation and assimilation groups are similar but lower in acculturative stress than the students in the marginalization group. In line with these results, another study examining the acculturative stress pattern among immigrants in Rome (Kosic, 2004) found each positive attitude to the host group and the heritage group is a significant predictor of the level of acculturative stress of immigrants. The concept of acculturation is a considerable component in relation to the discussion of acculturative stress because acculturative stress has been defined as a response to life events stemming from intercultural contact and the interaction between cultures, that is, the process of acculturation (Berry, 2006; Torres, 2010).

2.2.4 Relationship between acculturative stress on depression

A substantial body of literature has reported significant associations between acculturative stress and unfavorable mental health outcomes. A number of studies examining the impact of acculturative stress on mental health status have targeted second-generation youth or college students (Cervantes et al., 2013; Crockett et al., 2007; Hwang & Ting, 2008; Sirin et al., 2013) or international students temporarily residing in undergraduate or graduate universities (J.-S. Lee et al., 2004; Poyrazli et al., 2004; Sullivan et al., 2015; Yeh & Inose, 2003). For instance, a study using a sample of 107 Asian American college students found acculturative stress as a significant predictor of the youth's psychological distress and clinical depression, holding demographics and other financial and general stresses constant (Hwang & Ting, 2008). Another study using a sample of 148 Mexican American college students found that acculturative stress was significantly associated with higher levels of anxiety and depressive symptoms (Crockett et al., 2007).

A similar pattern is found among adult immigrants. Among Mexican immigrant adults in the U.S., acculturative stress alone accounted for 29% of the variance in depression and 16% of the variance in suicidal ideation (Hovey, 2000). For the Hispanic immigrants in the Midwest of the U.S., people who reported high acculturative stress are 2.4 times more likely to experience depression (Torres, 2010). Another study targeting Korean adult immigrants in the U.S. shows a similar result: acculturative stress accounts for 22% of the variance in depressive symptoms controlling for demographic variables (M. Lee et al., 2018). A study targeting Asian adult immigrants from a community sample in the U.S. revealed that acculturative stress and racism-related stress were significantly associated with negative mental health outcomes including depression and social distress (Miller, Yang, et al., 2011).

When expanding the concept of acculturative stress to specific stressors such as discrimination, language fluency, family conflict resulting from acculturation gaps among family members, the literature reporting the significant associations between acculturative stress and mental health outcomes substantially increases. For instance, perceived discrimination has been acknowledged as a significant factor in predicting negative psychological well-being (Finch et al., 2004; Flores & Tomany-Korman, 2008; Schmitt et al., 2014). Family conflict resulting from the acculturation gap between children and parents is also known to yield adverse psychological and behavioral outcomes among immigrant adolescents such as delinquency, social anxiety, and depression (Costigan & Dokis, 2006; Gonzales et al., 2006). Not only that, but poor English proficiency is also significantly associated with a higher prevalence of anxiety and depression among the immigrant population (S. Hong et al., 2014; S. Singh et al., 2015). Indeed, many acculturative stress measures consist of the above components: perceived discrimination, stress related to linguistic competency, and family conflict (Rudmin, 2009).

2.2.5 Moderators between acculturative stress and depression

Many moderators in the relationship between acculturative stress and depression have been investigated (Crockett et al., 2007; Jasinskaja-Lahti et al., 2006; Katsiaficas et al., 2013; M. Lee et al., 2018; Miller, Yang, et al., 2011). Specifically, scholars have examined coping strategies as a moderator between acculturative stress and depression. According to the stress and coping theory (Lazarus & Folkman, 1984), active coping style refers to the behavioral or psychological tendency to actively change the relationship between the person and the stressors via various ways including seeking information, support, professional help, or planning activities. Avoidant coping involves trying to avoid stressors rather than dealing with them actively (Endler & Parker, 1990). Crocket and colleagues (2007) found that Mexican American college students who adopted an active coping style showed less depressive symptoms in response to high acculturative stress. Similarly, among Korean American immigrants an avoidant coping style is associated with more depressive symptoms when acculturative stress is high (M. Lee et al., 2018). In line with these findings, Noh and Kaspar (2003) show that active, problem-focused coping styles were reducing the impact of perceived discrimination on depression, while passive, emotion-focused coping had led to an increased level of depression.

The mode of acculturation has been found to play as a moderator between acculturative stress and depression (Ayers et al., 2009; Hwang & Myers, 2007; Miller, Yang, et al., 2011). Targeting 1,747 Chinese adult immigrants and Chinese Americans in the U.S., researchers conducted a field study and found that the acculturation level moderated the effects of acculturative stress on depression such that more acculturated immigrants tend to experience decreased depressive symptoms when they face high acculturative stress (Hwang & Myers, 2007). Collecting data from a community-based sample of 367 Asian American adults, a study found that bi-cultural

self-efficacy (i.e., integration) plays a significant buffering role between acculturative stress and psychological distress among native-born Asian Americans while no significant buffering role was found among foreign-born Asian Americans (Miller et al., 2011).

In addition to these psychological components, one of the critical moderators that have been frequently tested and acknowledged between acculturative stress and mental health outcomes including depression is social support (Crockett et al., 2007; Jibeen, 2011; J. Kim et al., 2012; Raffaelli et al., 2013; Xingmin Wang et al., 2014). Social support is widely acknowledged as a factor that may play a buffering role between stress and psychological outcomes according to the general stress process theories and social support theory (Cobb, 1976; S. Cohen & Wills, 1985; B. H. Kaplan et al., 1977; Lazarus & Folkman, 1984).

2.3 The Buffering Role of Social Support between Acculturative Stress and Depression

A variety of terms have been used in studies examining the role of social relationships in health outcomes. Social network refers to the structure of social relationships that surround individuals, while social support is one of the essential functions of social relationships (Heaney & Israel, 2008). Social support is defined as "the provision of assistance or comfort to others, typically to help them cope with biological, psychological, and social stressors. Support may arise from any interpersonal relationship in an individual's social network, involving family members, friends, neighbors, religious institutions, colleagues, caregivers, or support groups." (APA, 2021). Therefore**,** all members of a social network may or may not provide social support. The term social capital has been used to specify particular resources that arise from social networks (Ferlander, 2007). In relation to psychological adaptation, social connectedness has been used to describe an

individual's subjective recognition of closeness with the social world (R. M. Lee & Robbins, 1998).

2.3.1 The role of social support in the immigrant context

Social support might be one of the most widely recognized and most frequently tested domains among social relationships in immigrant studies. Social support, whether providing psychological or material resources, has been acknowledged as mitigating the effects of stress (Cobb, 1976; B. H. Kaplan et al., 1977). Two distinctive roles of social support have been suggested: social support can enhance psychological well-being regardless of stress level presented (i.e., main effect) and/or buffer the negative effect of stress by providing a potential solution to a problem, or reducing its perceived harm, or promoting healthy behavioral responses (i.e., buffering effect) (S. Cohen & Wills, 1985).

In studies examining social support in immigrant mental health, evidence has been found for the stress-buffering role and the main effect (Crockett et al., 2007; Raffaelli et al., 2013; Kim, Suh, Kim, & Gopalan, 2012; Wang, Cai, Qian, & Peng, 2014). Particularly studies with Asian and Hispanic immigrants in the U.S. have tested the role of family support in protecting those experiencing acculturation related stressors from leading to depression, indicating a buffering effect of family support (Chae et al., 2012; Crockett et al., 2007; Raffaelli et al., 2013). Also, earlier studies show the main effect of family support in relation to depression, suggesting that family support is associated with a lower level of depression (Fuligni et al., 1999; Han et al., 2007; Vega & Rumbaut, 1991). The other studies were interested in the role of family support as a predictor of the level of acculturative stress such that a higher level of family support was associated with a

lower level of acculturative stress (Miranda & Matheny, 2000; M. Thomas & Baek Choi, 2006; Vidal de Haymes et al., 2011).

Social support does not come merely from family. Social support stems from multiple sources, and different sources may provide different kinds of support or yield different results (N. Lin, 1999). For instance, according to Singh and colleagues (2015), among Asian Americans, including Vietnamese, Filipino, and Chinese, high family social support decreased the levels of psychological distress while friend social support buffered the relationship between discrimination-related stress and psychological distress. Interestingly, only friend support not family support significantly buffered the associations between stress and psychological distress (Singh, McBride, & Kak, 2015). The authors argued that immigrant family members may share limited resources to cope with discrimination-related stress so that social support from friends can play a supplementary role that the social support of family members cannot fulfill. The differential effect of social support dependent on the sources of support is also found in a study examining Latino college students' mental health such that support from friends, but not family, predicted lower psychological distress (Rodriguez et al., 2003).

While it is clear that family social support buffers against psychological distress, immigrants may need to build new social ties with members in the receiving country to achieve successful adaptation in economic, socio, and cultural domains since new social ties can help them acquire necessary resources, and information (Berry et al., 1992; Segal & Mayadas, 2005). Since family members of immigrants share cultural backgrounds and limited resources, social support outside the family can have significant implications for immigrant families in terms of socioeconomic adaptation and further mental health outcomes (Bankston, 2014; Boyd, 1989). This

situation motivates immigrant studies to expand their research interests from the social support within the family to a more comprehensive network outside the family of an individual immigrant.

2.3.2 Studies based on perspectives from social network and social capital

Cross-cultural studies examining the effect of the social network have primarily targeted the expatriate population, mainly focusing on their performance at work (Liu & Shaffer, 2005; Osman-Gani & Rockstuhl, 2008; Xiaoyun Wang & Kanungo, 2004; Xiaoyun Wang & Nayir, 2006). Along with expatriates, some studies have targeted international students and tested their social network characteristics in relation to sociocultural adjustment (Bochner et al., 1985; Furnham & Alibhai, 1985; Hendrickson et al., 2011; Kashima & Loh, 2006). Another stream of studies examines immigrant social networks in association with their entrepreneurship (Collins & Low, 2010; Mustafa & Chen, 2010; Ndofor & Priem, 2011; Quan, 2012).

According to social capital theory (Adler & Kwon, 2002; N. Lin, 2001), more extensive social networks can lead to better outcomes because the relationships are direct channels for the flow of social resources such as informational, instrumental, emotional, and feedback support. These types of social resources mainly serve to reduce uncertainty via providing knowledge, assurance, or a sense of belongingness (Albrecht et al., 1987), which in turn, reduce anxiety resulting from acculturative stress and yield better mental health outcomes among immigrants. In this regard, the effort to increase the number of social network ties can be an essential task for immigrants because the size of the social ties of immigrants is known to be significantly smaller than the native-born people regardless of the length of stay of immigrants (Viruell-Fuentes et al., 2013).

Arguments have been made those strong ties provide more social support than weak ties. However, the actual evidence for the advantage of strong ties over weak ties is inconclusive. When the strong tie was operationalized as frequent contact, Wang and Kanungo (2004) reported the positive association between strong ties and positive mental health outcomes among expatriates, whereas Wang and Nayir (2006) did not find significant associations. When the strong tie was operationalized as the subjective closeness of network partner, some studies (Furukawa et al., 1998) found support for the relationship between strong ties and psychological well-being while other studies (Wang & Kanungo, 2004; Wang & Nayir, 2006) found the opposite outcomes depending on the characteristics of network partner. In other words, if expatriates perceive closeness toward their conational colleagues, this network was negatively associated with psychological well-being.

One of the classical findings of social network research is the 'strength of weak ties' phenomenon claimed by Granovetter (1973). His findings emphasized the importance of weak ties for job information and job opportunities such that weak ties can build a bridge linking individuals from their familiar inner circle to the outer world where information or resources could be more available than their own closed circle. In the immigration context, such weak ties, particularly formed with the host or other non-conational immigrant group members, can have critical implications for immigrants seeking socio-cultural opportunities such as finding a good residential neighborhood or getting a decent job (Padilla et al., 1988; L. R. Smith, 1999).

2.3.3 Recent immigrant studies conducted based on social network analysis

Besides the international and expatriate population, recent studies utilizing advanced social network analysis targeting immigrant populations are increasing. Specifically, these studies try to

identify the actual composition or structure of a social network of immigrants to map out the overall relationship (Bolíbar et al., 2015; Brandes et al., 2010; Lubbers et al., 2010). For example, Brandes and colleagues (2010) attempted to empirically find the four modes of acculturation model (e.g., integration, assimilation, separation, marginalization) conceptually suggested by Berry (1997) from actual social network data using the social network classification method. The researchers conducted interviews with 504 immigrants living in Spain and the U.S. who immigrated from South America, Middle America, Africa, and East-European countries. Each respondent was asked to provide demographic information about the respondent (i.e., ego), a list of 45 persons (personally known to the respondent; alters), relationship characteristics of each referred person, and an evaluation of the ties between alters (whether they know each other). They categorized the network alters into four classes such as origin (i.e., the alter currently living in the country of origin), fellows (i.e., the alter stems from the same country as the ego and also immigrated), host (i.e., the alter lives in the country the ego immigrated to and stems from that country) and transnationals (i.e., all other). Among them, ‘transnationals' seem to be an equivalent group with non-conational immigrants in the host country. Based on these egocentric social network data, they analyzed the social network pattern using cluster technique and found four and eight cluster groups along with the structural summary of the social network of immigrants. Interestingly, among the final four cluster groups, one group consisting of a total of 77 among 504 immigrants (15.3%) have transnational network as their main network group (more than 50% among the total alters they referred) while the other three cluster groups reported that less than 8% of alters were non-conational immigrants. This result indicates that 15% to 8% of participants' total social network size was non-conational immigrants.

Bolibar and colleagues (2015) and Lubbers and colleagues (2010) explore the longitudinal change of the immigrant population's social network composition the longer they reside in a receiving country. First, Bolibar and colleagues conducted two sets of field studies targeting Ecuadorian and Moroccan immigrants living in Catalonia, Spain in 2010. The first study was a quantitative study asking personal social networks questions completed by 153 adult immigrants and the second study was a qualitative study with 18 respondents selected from the previous sample. They categorized the alters into four groups such as originals (those who are originally from and live in the respondents' home country), fellows (those from the same country of origin but living in Spain), hosts (those born and living in Spain), and others (those from other origins living in Spain and those living in countries other than the home and host countries). The authors claim that the longitudinal change of the social network can be observed via the combination of two methods. First, they calculated how long the immigrants had had their contacts and compared it to how long they had resided in Catalonia. Second, they used the qualitative interview to retrospectively track their change of networks. While they reported that 29% of 4590 contacts identified were 'originals', 39% were 'fellows', 20% were 'hosts' and 12% were 'others', they focused on the question of whether the composition of the networks varies with the length of stay. They found that the proportion of hosts in the personal network increased while the proportion of originals decreased as immigrants have spent more years in Catalonia. However, they pointed out that this process occurs slowly and some level of the proportion of originals is maintained even in networks of immigrants who have resided in the host country for a long time. They did not identify specifically the proportion change of 'others' with the length of stay in their article.

Second, Lubbers and colleagues (2010) extracted a longitudinal dataset from the project Development of a Social Network Measure of Acculturation and its Application to Immigrant

Populations in South Florida and Northeastern Spain, conducted in the years 2004-2006 and 2007-2008. For this project, a total of 77 respondents of the first wave were re-interviewed 2 years after the first wave, among whom 25 were Argentinean. Their study targeted this sample of 25 Argentinean immigrants. The social network questions and categories of alter the authors used are similar to the two studies (Bolibar, et al., 2015; Brandes, et al., 2010) already reviewed above. The strength of this study is using the actual longitudinal data in order to track the change of the social network pattern of the immigrant population. They found that the stability of immigrants' networks during the two-year period was 52%, indicating that about half of the alters who were nominated at time 1 were again nominated at time 2. They mainly focused on the factors to predict the persistence of ties using the binary multilevel regression model. They reported that relational characteristics such as network density, frequency of contact, closeness, alters' country of origin and current residency (e.g., host, fellow immigrants, transnational) are stronger and significant predictors for the persistence of ties than immigrant demographic characteristics such as gender, age, marital status. The relationships with originals (e.g., Argentinians currently living in Argentina) are more likely continued than relationships with the host members (e.g., Spanish), fellow immigrants (e.g., Argentinean migrated to Spain), and transnationals.

This stream of studies has used advanced social network analysis compared to the previously conducted immigration studies, mainly focusing on specific parts or social networks (e.g., social support, social connectedness) in an aggregated and vague way depending on the simplified group categories such as co-ethnic group and host group. Thus, these studies imply the possibility to tease out the role of non-conational immigrants from overall social networks of immigrants in a more exact way. Indeed, these studies suggest a new dimension of categorization regarding the social network of immigrants, such as introducing transnational ties. However, most

of the studies have not yet paid particular attention to the role of other immigrant social ties compared to host or conational ties.

Most of the studies have also not yet tested the relationship between structures or features of social networks and outcomes, particularly psychological outcomes. A few studies have explored the association of social networks with economic outcomes (Vacca et al., 2018) and communication-related acculturative stress (Doucerain et al., 2015). However, the relationship between social network structure (e.g., size, interconnectedness, the composition of the groups within the network) and psychological outcomes, including social distress, and depressive symptomatology is less studied (Repke & Benet-Martínez, 2019). According to Repke and Benet-Martinez (2019), the social network perspective has mainly focused on the social network structure per se, while little is known regarding the role of individual characteristics that may influence the shape of the network.

2.3.4 The role of interaction with conational groups

Since Berry's bi-dimensional framework was presented (Berry, 1997), many immigrant studies have differentiated the social network that arises in the host society and the co-ethnic society (Doucerain et al., 2015; Finch & Vega, 2003; Gellis, 2003; Jasinskaja-Lahti et al., 2006; I.-H. Kim & Noh, 2016; S. Noh & Avison, 1996; Samuel Noh & Kaspar, 2003). At an early stage of migration, recent immigrants tend to interact with their conational members more actively than with host or other group members because conational immigrants are generally more accessible (Knight et al., 2017). The longer an immigrant is in a host society, the more likely they are to form associations with non-conational immigrants and people from the host country depending on their acculturation strategy (Berry, 1997). For example, immigrants who try to expand their social

network to the host country members in addition to the effort to maintain the social network of the conational immigrants can be categorized as adopting the 'integration' strategy. On the other hand, immigrants may only try to expand their social network to the host country members while no more efforts are spent on maintaining the social network of the conational immigrants. This strategy can be termed as an "assimilation" strategy (Berry, 1997). An immigrant's acculturation mode may depend on their contexts or circumstances (Berry, 1997).

Indeed, researchers have found that the increase in social support from members of their co-ethnic community yields somewhat mixed or conflicting results depending on the characteristics of the population, the stage of acculturation, or particular outcomes (e.g., psychological well-being versus sociocultural adaptation). For instance, frequent contact with conational peers of international students may lead to inadequate adjustments such as lower academic success (Neri & Ville, 2008), lower levels of life satisfaction abroad (Hendrickson et al., 2011) and a higher level of acculturative stress (Poyrazli et al., 2004). Conational peers provide the most accessible and tangible support for international students (C. Lin, 2006) so that they lower acculturative stress (Berry et al., 1987; J.-S. Lee et al., 2004). Consequently, such interaction with conational peers can lead to increased socio-cultural adjustment and positive psychological outcomes (Colleen Ward & Kennedy, 1993). Similar to the outcomes of international students, adult sojourners such as expatriates, frequent contact with the conational members have been reported to have a significant relationship with delayed socio-cultural adjustments (E. C. Johnson et al., 2003). In contrast, frequent contact with host country nationals leads to faster adjustments to their work and social activity (Briody & Chrisman, 1991). Notably, in the later stages of the sojourn, sustaining more conational contacts led expatriates to higher levels of stress, reduced cultural adjustment (Geeraert et al., 2014).

Compared to these mixed effects from sojourning groups, the role of social interaction with the conational community has been reported as more protective than negative for other immigrant groups. In an early stage of migration, support from the conational community is a more accessible social resource to immigrants than the social support from the host or non-conational immigrant community (Hynie et al., 2011). Moreover, when the immigrant population suffers from racism or discrimination, social support from the conational community can function to protect them from psychological distress (I.-H. Kim & Noh, 2016; Samuel Noh & Kaspar, 2003). According to the comparative study in Canada (I.-H. Kim & Noh, 2016), social supports from conational communities buffered the relationship between discrimination-related stress and depressive symptoms among four ethnic groups (e.g., Iranian, Ethiopian, Korean, and Irish) except for the Vietnamese group. This study also confirms the overall main effect of social support from conational groups on depressive symptoms. Another example is the refugee population that benefits from their conational community through sharing their collective experiences and providing social resources to buffer their acculturative stress (Finch & Vega, 2003; Jasinskaja-Lahti et al., 2006).

2.3.5 The role of interaction with a host group

Compared to the mixed results regarding the role of conational social ties depending on the populations (e.g., international students, expatriates, immigrants), the increase of host social ties seems to yield consistently positive results across the diverse populations via various paths. For example, social interaction with host country members provides opportunities for learning culture and language so promotes acculturation (Cao et al., 2018). A high proportion of host social ties can reduce communication-related acculturative stress (Doucerain et al., 2015).

For international students, frequent contact with people of the host country can produce generally positive psychological outcomes. Students with more friends from the host country showed greater knowledge of the host culture and higher levels of well-being (Kashima & Loh, 2006). More frequent contact with host country members was related to better adjustment (C. Ward & Rana-Deuba, 2000; Colleen Ward & Kennedy, 1993). A systematic review (R. A. Smith & Khawaja, 2011) reports that the factors of the interaction with the host community tend to influence students' acculturation or psychological outcomes more than the conational community.

In line with the students' case, for expatriates, more frequent contact with host country members produced better adjustment (Johnson et al., 2003) and better psychological outcomes (Ward & Kennedy, 1993). From a social network perspective, a higher proportion of host country members among expatriates' social networks are related to better job performance; however, this was not related to better psychological well-being (Wang & Kanungo, 2004; Wang & Nayir, 2006). For immigrant populations, social interaction with people of the host country can function as a facilitator for social integration as well as accelerating social adaptation of immigrants (Jasinskaja-Lahti et al., 2006; Searle & Ward, 1990). Social support networks from people of the host country helped immigrants to better adjust to the host society (Martínez García et al., 2002), and achieve economic outcomes (Vacca, Solano, Lubbers, Molina, & McCarty, 2018). Socializing with members of the host country may reduce acculturative stress by improving communication skills (Doucerain et al., 2015), consequently leading to psychological well-being (Vinokurov et al., 2002). Social support from members of a host society at work can also enhance a sense of well-being in immigrant workers (Lu et al., 2011). However, for some immigrant groups, social contacts from host country members may make them vulnerable to various sources of distress, including

discrimination (Jasinskaja-Lahti et al., 2006). Particularly, encountering unsupportive interaction from the host society was reported to lead to psychological distress (Jorden et al., 2009).

2.3.6 The role of interaction with non-conational immigrant groups

Compared to the studies examining the distinct role of social contact with conationals or host country nationals, the studies examining the effect of social interaction with non-conational members are relatively few in the acculturation literature. Most studies, including this category, have been conducted with international students.

As one of the early studies on international students' social networks, Furnham and Alibhai (1985) attempted to examine the distinct contribution of non-conational ties among international students' relationship ties. They found that international students studying in London prefer conational peers, non-conational immigrant peers, and host nationals in their friendship, in that order. This study is one of the few studies to consider the non-conational immigrant ties of international students as an important aspect of their social networks in addition to conational and host social ties. However, this study did not test the association between these ties and mental health outcomes.

Extending this line of research, Kashima and Loh (2006) examined the role of these social ties in psychological outcomes and adaptation outcomes. They conducted a survey targeting Asian international students enrolled in universities in the Melbourne area. They let the students list their current friends/acquaintances they had locally and then report each person's country of origin. They categorized the social ties into three, that is, local Australians, conationals, and international students from a country other than the respondents' own countries of origin. They found that both non-conational ties and Australian ties significantly contribute to the students' enhanced

psychological adjustment, while conational ties do not show any significant effect. The authors also found that international ties play a unique role in strengthening a student's heritage cultural identity and Australian university identity, simultaneously.

In line with the results of this study, another study examining sojourners' level of satisfaction with their experience reported that exchange students evaluated their sojourn more positively when they have more non-conational international ties, as well as host ties than they have extensively conational ties (Geeraert et al., 2014). A more recent study (Pho & Schartner, 2019) reported that more frequent contact with non-conational peers is positively associated with better academic outcomes of international students studying in the U.K.

Despite empirical studies examining the role of non-conational ties on psychological outcomes among international students, few studies have tested this relationship among the general immigrant populations for two reasons. First, there is no consensus regarding the categorization of "non-conational ties." Since the well-known theoretical framework regarding acculturation mode suggested by Berry (1997), cross-cultural psychologists have focused on the interplay between host culture origin and ethnic culture origin. Van Oudenhoven and Ward (2013) proposed an alternative model adding the third dimension (i.e., interaction with non-mainstream, non-ethnic culture such as culture from other immigrant groups) on the two dimensions (i.e., a mainstream culture, an ethnic culture) of the initial acculturation model. They highlight the demographic changes of receiving countries regarding immigrant populations such as the diminishing size of host majority groups and the growth of the multi-ethnic characteristics.

In response to this proposition, Sam and Berry (2016) respond that "the formulation of … the existence of other groups except for a host group had been expanded beyond the original meaning, which referred to having contact with other groups in the larger society, which is

essentially a social variable" (Sam & Berry, 2016, p. 24). In this statement, Sam and Berry argue that their original model already takes account of other groups by incorporating these other immigrant groups into the mainstream group. In conclusion, they imply that 'other immigrant groups' is one sub-category of a mainstream group (out-group).

Rather than treating non-conational immigrant members of the host society separately, other studies have combined non-conational and conational immigrants into one group (Rostila, 2010). Another study categorized friendship with conational and non-conational peers as one category, such as 'non-American ties' (Poyrazli et al., 2004). In another study (Sullivan et al., 2015) distinguished three groups of networks of international students, the host student group, the ethnic student group, and the other international student group; however, they used pan-ethnicity as defining the same ethnic group (e.g., using "Asian" category instead of "Korean," "Chinese," or "Japanese").

Acculturation scholars tend to view the group dynamics or group interaction in terms of in-groups and out-groups (S. J. Schwartz et al., 2010). The discussions of these dynamics have focused on two distinct groups without an acknowledgment that there may be additional groups to consider. Research that has considered the role of non-conational immigrant groups in immigrant social networks, has sought to categorize this group as either part of the in-group or out-group. Reliance on these two categories is becoming increasingly over-simplistic as the country becomes more and more diverse. Depending on the domains, non-conational immigrants have been considered members of both the in-groups and out-groups. If we see them via the lens of the different group power status, it is reasonable to argue that immigrants regardless of their ethnicity would be more similar to each other (i.e., in-group) than they would be with the host group (i.e., out-group) (Abrams & Hogg, 2006; Tajfel et al., 1979). However, via the lens of the cultural

homogeneity shared within a co-ethnic (i.e., co-national) group, non-conational immigrant groups could be considered out-groups. These characteristics of non-conational immigrants have not been sufficiently discussed in the area of cross-cultural study so far. In addition to this, few studies explore the role of this group in relation to any mental health outcomes of a specific immigrant population. As reviewed above, social support is beneficial regardless of the sources although the specific roles may be different. Therefore, it is plausible that social support from non-conational immigrants may buffer the relationship between acculturative stress and depression among an immigrant population.

3.0 Chapter 3. Theoretical Frameworks

To better understand the phenomenon of Korean immigrants' acculturation experience, their mental health and the role of the composition of their social networks, two branches of literature are important: theory of stress and coping (Lazarus & Folkman, 1984) and acculturation theory (Berry, 1997). First, the theory of stress and coping provides a theoretical foundation for the relationship between acculturation stress and depression and the plausible buffering effect of social support and social networks (Lazarus & Folkman, 1984). Second, acculturation theory explains the acculturation process and its possible outcomes (Sam & Berry, 2016; Ward & Kennedy, 2001). This chapter begins with the theory of stress and coping and concludes by applying it to the process of acculturation in the immigrant context. This chapter then reviews existing literature on acculturation focusing on acculturation theory.

3.1 Theory of Stress and Coping

3.1.1 Central Concepts and Related Issues

3.1.1.1 **Stress**

The theory of stress and coping (Lazarus & Folkman, 1984) explores how significant life events and daily hassles affect an individual's emotions, how the individual appraises the events in relation to mental health outcomes and possible coping mechanisms or resources. *Psychological stress* is defined as the emotional response experienced by an individual when environmental

stimuli or events are perceived as exceeding one's resources (Lazarus & Folkman, 1984). In this theory, stress is not a static result from external environmental stimuli but a dynamic result depending on an individual's internal processes or perceptions. This process of stress assessment within a person is known as a *cognitive appraisal* (Lazarus & Folkman, 1984). Cognitive appraisal is the evaluative process in which a person actively categorizes circumstances (or stressors) through speculating personal meanings of the changing relationship between the person and the environment. This process can elicit an emotional response. Individuals and groups differ in the degree of reaction to external stimuli depending on their sensitivity, vulnerability, and subjective interpretation of the demanding situations (Lazarus & Folkman, 1984).

3.1.1.2 **Appraisal**

A cognitive appraisal consists of two stages: primary and secondary appraisal (Lazarus & Folkman, 1984). *Primary appraisal* refers to the assessment of the alarming tendency of any encounters to an individual. *Secondary appraisal* refers to a complex evaluative process that considers all possible coping options, its potential outcomes, and available resources required to respond to the stressor (Lazarus & Folkman, 1984). A person may assess a situation/environment as 1) irrelevant, 2) benign-positive, 3) stressful. When appraised as stressful, this may be due to harm/loss, threat, and challenge identified through the secondary appraisal. In the stage of primary appraisal, if an individual finds an encounter to be stressful, whether it be a harm/loss or a threat or a challenge, they may then begin to consider or enact coping strategies. This thought leads them to the second state of the secondary appraisal. Appraising a stressor as challenging rather than threatening or harming might be more likely to occur if the person has a stable sense of control over the stressor. This process determines the degree of stress and emotional reaction, and it can happen simultaneously with the primary appraisal (Lazarus & Folkman, 1984).

3.1.1.3 **Coping**

An individual selects different coping strategies depending on the result of the appraisal. Conventionally, *coping* is defined as "the constantly changing cognitive & behavioral efforts to manage specific external and internal demands that are appraised as taxing or exceeding the resources of the person." (Lazarus & Folkman, 1984, p. 141). Coping strategies arise from the secondary appraisal and are likely to be stimulated to deal with the specific stressors. Choosing an effective adequate coping strategy may significantly affect an individual's well-being and adaptation (Kuo, 2014). Coping strategies can be divided into two categories: problem-focused coping strategies and emotion-focused coping strategies. Problem-focused coping seeks to change the relations by acting on either the environment or the person. Emotion-focused coping attempts to change the way the stressful environment is perceived or persons' emotion toward the situation, which in turn results in distancing from the event and seeking social approval (Lazarus & Folkman, 1984). Endler and Parker (1990) also proposed a third type of coping strategy: avoidance-oriented coping. They identified avoidance-oriented coping as a strategy that is possibly adopted when individuals attempt to disengage from a stressful life event. One specific strategy is chosen over another, in part, by personality (e.g., some people tend to cope more actively than others) and the type of stressful events (e.g., daily hassle, divorce, etc.) (Lazarus & Folkman, 1984). For instance, people usually use problem-focused coping to deal with potentially controllable problems such as family- or work-related problems. People can also employ emotion-focused coping when they perceive the stressor as less controllable, such as certain types of macro social problems (Lazarus & Folkman, 1984).

3.1.2 Social Support as Resources for Stress Coping

As one of the social resources used to cope with stressors, social support has been studied as a critical component in various health outcomes (Cobb, 1976; Dean & Lin, 1977; Lazarus & Folkman, 1984). Many scholars have attempted to disentangle the components of social support from various viewpoints. First, scholars distinguish the subjectively appraised social support (e.g., perceived social support) from the structural component of social support (e.g., social network). Social network composes a relatively distal (i.e., indirectly affecting) variable while the perceived social support can be considered as a proximal (i.e., directly affecting) variable in terms of the effect on mental health outcomes (Jessor, 2013; Lazarus & Folkman, 1984). Perceived social support has been acknowledged as the strongest predictor of various health benefits over the structural component of social networks per se (James S. House, 1981). According to Berkman and Syme (1979)'s large-sample survey, social network index (e.g., size) modestly but significantly predicted all-cause mortality after controlling for health status and other demographic risk factors. People with the fewest social ties had the highest mortality rate.

Perceived social support has also been contrasted with received social support. Perceived social support has been known to be a better predictor of psychological distress or well-being compared to the received support (Wethington & Kessler, 1986). Two issues have been discussed around this conclusion. First, due to its subjectively evaluating properties, perceived social support shows strong correlations with other psychological variables such as self-esteem, attachment type (Sheldon Cohen, 1992; Pierce et al., 1997). According to Cobb (1976), the tendency to perceive others as supportive may be a reflection of an individual's personality. Other scholars argue that the belief in the availability of social support may be based on the real-world experiences resulting from others' support actions or expressions (Cutrona, 1986; Sarason et al., 1990). Second, Turner

and Turner (1999) argued that “received" social support was not appropriately measured in most studies. While perceived support has been delicately assessed by various measures, measuring “received" support tends to lack clarity (R. Jay Turner & Turner, 1999).

Third, scholars argued that social support is a multifactorial construct so that different types of categories of social support should be considered, which may yield differing outcomes (Hirsch & Hirsch, 1980; James S. House, 1981). Cobb (1976) categorized social support into three kinds: instrumental, active, and material. Schaefer (1982) distinguished three types of social support functions: emotional support, tangible, and informational support. Kaplan and Cassel (1977) added that appraisal (feedback) support is critical social support because it can help an individual maintain one’s social identity and a sense of integration in society.

Fourth, Lazarus and Folkman (1984) suggested that quality of support (e.g., positive versus negative) should be considered when discussing the effect of social support on mental health outcomes since negative social interaction can function as an additional stressor. House and colleagues (1988) also argued that the health benefits of social relationships arise exclusively from their supportive quality. However, according to many empirical studies (J. S. House et al., 1982; H. B. Kaplan et al., 1987), social support has presented important effects on health outcomes even though relationship content was not measured.

Much of interest in social support effects on mental health has been associated with the “how” component: the process of social support functioning in mental health outcomes (Cobb, 1976). There are two hypotheses: First, social support may act to buffer or moderate the effects of life stress (buffering effect); Second, social support may act to enhance psychological well-being regardless of the existence of the stress (main effect). According to the first hypothesis, social support can have mental health significance only within stressful circumstances. Some scholars

argue that human beings can perceive stress even in a benign environment (Antonovsky, 1979). If this constancy-of-stress argument is accepted, both effects can be observed and theoretically interpreted as the buffering effect. Studies found that perceived social support has dramatic significance in the high-stress circumstance (R. J. Turner & Noh, 1983; R. Jay Turner, 1981). Plenty of studies have found that a low level of support can increase the risk of depression regardless of unusual stressors (Henderson, 1992). Turner and Turner (1999) suggested below three working hypotheses based on available evidence with respect to the primary effects versus buffering effect debate: "1) Social support tends to matter for psychological well-being in general, and depression in particular, independent of stressor level; 2) social support appears to matter more where the level of stress exposure is relatively high; 3) the extent to which the above 1) and 2) are true varies across subgroups of the population defined by class level and perhaps, by other characteristics" (p.307).

Theoretical framework of the social network in relation to health outcomes mainly relies on the resource-based theory of social capital for health (Carpiano, 2006). According to this model, structural characteristics of the social network can play a positive or negative role to potentially impact health and well-being among the members of the network (Carpiano, 2006). In the social network framework, dynamic interplay among the multilevel actors (e.g., interpersonal, social, environmental) can influence the flow of resources, information, and behavioral patterns within the network actors (Burgette et al., 2021). Before the social network studies, extant studies examining the effect of social network components on health have commonly used global social support measures (e.g., Singh et al., 2015; Raffaelli et al., 2013). Although the global social support measures have revealed a wide range of effects of the social support in relation to depressive symptoms and other health outcomes (Cohen, 1997; Cobb, 1976), acculturative stress (Crockett et

al., 2007), attempts to measure more specific and accurate social network features around a focal individual have increasingly made (Brandes et al., 2010; Bolibar et al., 2015; Doucerain et al., 2015). Specifically, social network analysis is interested in the structure of an individual's web of relationships so that it enables health researchers to uniquely assess the impact of the relational environment on health (Burgette, et al., 2021).

3.2 Acculturation Theory

Acculturation theory began its theoretical discussion from the basic question "what happens to individuals who have developed in one cultural context when they attempt to live in a new cultural context?" (Berry, 1997, p. 6). The primary assumption of this theory is that cultural factors substantially influence the development and display of individual human behaviors so that individuals generally behave in ways that correspond to cultural influences and expectations. Based on this assumption, researchers have explored the process of acculturation, defined as "cultural and psychological change that results from the continuing contact between people of different cultural backgrounds" (Berry, 2006, p.27), focusing on the three hypotheses: Individuals continue to act in the new setting as they did in the previous one; individual's change their behavioral repertoire to be more efficient in the new setting, and there is a complex pattern of continuity and change as people go about their lives in the new society (Berry, 1997). Cross-cultural psychology have found evidence to support the third hypothesis, that individuals engage in a complex pattern of continuity and change as they adjust to life in a new country (Berry, 1997).

3.2.1 Central Concepts and Related Issues

Acculturation refers to "those phenomena that result when groups of individuals having different cultures come into continuous firsthand contact with subsequent changes in the original culture patterns of either or both groups" (Redfield et al., 1936, p. 149). Although the definition suggests that acculturation per se is a neutral term in principle to predict reciprocal changes in both groups, in practice, group (i.e., host society) exercises more influence on the other (i.e., immigrants) due to their power differences (Sam & Berry, 2010). However, treating the acculturation concept as a synonym of assimilation can be problematic in two ways. While the acculturation concept assumes that both groups (i.e., host society and immigrants) experience mutual changes depending on group power, assimilation concept assumes that only members in the non-dominant group change themselves or their culture into the ones of the dominant group in a unilateral way (Berry, 1997). Second, assimilation only reflects the single, unilinear characteristics of acculturation regarding their ethnic culture; the more a person is acculturated, the less the person endorses his or her culture of origin (Cuellar et al., 1995; Y. Y. Kim, 2008). However, individuals in cross-cultural settings can act in a bilinear way; they can develop cultural orientation both to the majority (host, mainstream, receiving) culture and to the culture of origin (ethnic, minority, heritage) (Chung et al., 2011). For these reasons, acculturation should be distinguished from assimilation.

In order for acculturation to occur cultures must come into contact. This can happen in several ways. Cultures come into contact when individuals from different cultures (Redfield et al., 1936). However, as information technology has advanced, people began to affect each other culturally without firsthand contact. For instance, Jamaican adolescents are taking on U.S. cultural characteristics without ever having been in direct personal contact with the U.S. society (Ferguson

et al., 2012). Scholars indicate that some acculturation can occur over the short term, for instance, tourists having a week of a holiday, or short-term sojourners living in another country for one or two years (Berry, 2019). Acculturation may take place even over several generations and centuries (Lamy et al., 2013). For a long time, acculturation studies have mainly explored the dyad relationship between a dominant group and a single non-dominant group (van Oudenhoven & Ward, 2013), however, as cultural diversity has increased in host countries, intercultural contacts becomes more diverse (Sam & Berry, 2016). This interest is a relatively new and emerging topic. Only recently, acculturation research has begun to investigate this area with a lens of multiculturalism (Sam & Berry, 2016).

While various groups and individuals are commonly identified as experiencing acculturation, cross-cultural migrants can be categorized into four types based on the voluntariness of transition and the nature of transition: voluntary-involuntary; and permanent-temporary and their combinations. According to this categorization, four groups are identified: immigrants (voluntary-permanent), sojourners (voluntary-temporary), refugees (involuntary-permanent), and asylum seekers (involuntary-temporary). Among these groups, the focus of this study is the immigrant category. Psychological characteristics such as attitude, motive, values greatly vary across these four types of migrants (Sam & Berry, 2016). For instance, since refugees and asylum seekers are commonly involuntary migrants, they are prone to face the most significant adversity in their acculturation process. Consequently, they might need somewhat different approaches from other groups to adequately support them in the acculturation process (Dona & Young, 2016).

The long-term outcomes resulting from the continuous acculturative changes for a significant time are referred to as adaptation (Sam & Berry, 2016). Two kinds of adaptation include psychological and sociocultural adaptation (Sam et al., 2006). Psychological adaptation is mainly

related to mental health and well-being, while sociocultural adaptation can be understood by the indications such as school adjustment for youth or occupational success for adults. Studies have found that both psychological and sociocultural adaptations are positively correlated (Colleen Ward & Kennedy, 1999; Wilson et al., 2013). Intercultural adaptation is introduced as a third kind of adaptation by Sam and Berry (2016). It refers to the capability or achievement of harmonious intercultural relations. In this adaptation, individuals develop "positive relations with members of different ethnocultural groups, including positive ethnic attitudes and stereotypes, low levels of prejudice and discrimination and the acceptance of a multicultural ideology" (Sam & Berry, 2016, p. 18). This description of intercultural adaptation is in line with the leading research and is the focus of the present study in terms of the immigrant group relations and dynamics. This adaptation is also directly related to psychological multiculturalism. (See section 3.2.3).

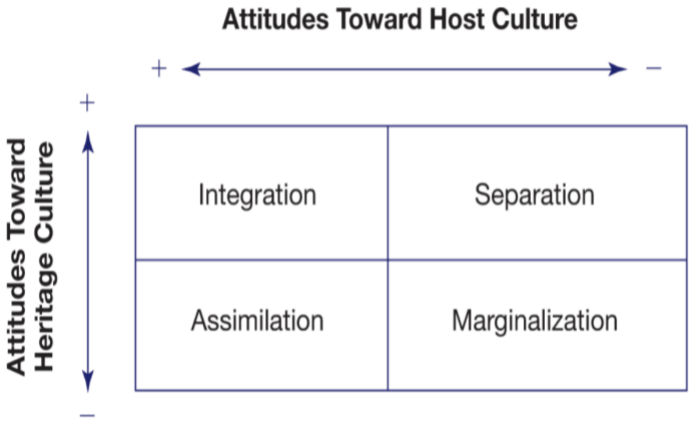
3.2.2 Four Types of Acculturation Strategies

The concept of acculturation strategies originated in the earlier concept of acculturation attitudes (Berry, 1974, 1980) is an essential component of the acculturation theory (Sam & Berry, 2016). Berry's (1997) initial acculturation model suggests four types of acculturation strategies as coping strategies (Figure 2.). This typology is available based on an immigrant's attitude toward both heritage (e.g., positive vs. negative) and host society (e.g., positive vs. negative): marginalization (negative-negative), separation (positive-negative), assimilation (negative-positive), and integration (positive-positive). A number of individual and situational factors that influence individual immigrants' choice of acculturation strategies were examined (Berry, 1997; Sam & Berry, 2016; Schwartz et al., 2010). Given both micro and macro levels of constraints and contexts, individuals can purposefully decide which cultural elements they wish to acquire or

retain and which elements they wish to discard or reject. Some macro contexts, such as the receiving country's attitude toward immigrants (e.g., discrimination or social support) can significantly affect an individual's decision of acculturation strategies.

Among the four types of acculturation strategies (i.e., integration, assimilation, separation, marginalization; Berry, 1997), integration (i.e., positive attitude toward both heritage and host society) has been acknowledged as yielding the most favorable outcomes (Bankston & Zhou, 1997; Berry et al., 2006; Colleen Ward, 1997). Specifically, bicultural identity refers to immigrants' self-identification with both countries of origin and host society (Benet-Martínez & Haritatos, 2005). Bicultural identity is often associated with the most favorable psychosocial outcomes among young immigrants (Coatsworth et al., 2005; David et al., 2009). A recent meta-analysis found that biculturalism has a significant and strong positive association with psychological and sociocultural adjustment (Nguyen & Benet-Martínez, 2013).

Figure 2. Berry's Four Acculturation Strategies



Biculturals are individuals who have been exposed and even internalized two or more sets of culture systems (Nguyen & Benet-Martínez, 2007). Given the different cultural settings, they are assumed to navigate the worlds through the switching of a cultural framework (Y. Y. Hong et al., 2000). Researchers also found that bicultural individuals should not be treated as a single

category because there are considerable variations among bicultural individuals. For instance, Phinney and Devich-Navarro (1997) suggest three types of biculturals: blended biculturals, alternating biculturals, and separated biculturals depending on their behavioral and psychological characteristics responding to multiple cultural settings.

The concept of biculturalism has an important implication in studying the role of multiculturalism in acculturation. First of all, biculturalism has been mainly discussed within the identity domain. A core part of psychological multiculturalism is specifically exploring identity issues such as the way of cultivating identity or applying the cultivated identity to human relationships and daily life settings (Sam & Berry, 2016). Moreover, biculturalism can expand the research scope of acculturation by including a wide array of potential positive outcomes. For instance, a study found that biculturalism predicts an integrated pattern of social relationships: biculturals have more non-coethnic friends and have greater interconnectedness with their non-coethnic friends (Mok et al., 2007).

3.2.3 Recent Advance in Acculturation Research

One of the critical issues in acculturation research is how to view the intercultural contact immigrants encounter and experience. The conventional approach views cultural contact as a dyadic relationship between the immigrant group and the host society. At the same time, recent research has begun to take account of more complicated relationships among multiple actors (i.e., the focal immigrant group, non-conational immigrant groups, and host society) under the framework of multiculturalism. The following section reviews these recent advances and related issues.

3.2.3.1 Multiculturalism and Intergroup Relations

Before discussing the psychological aspects of multiculturalism, the classic multiculturalism concept should be clarified to avoid conceptual confusion. Over the past four decades, multiculturalism has been developed as having several different meanings across societies (Sam & Berry, 2016). Berry and colleagues (Berry et al., 1976) categorized the meanings of multiculturalism into three domains: multiculturalism as demographic fact (e.g., most societies around the world are getting ethnically diverse), ideology (e.g., individuals and groups hold views and opinions about this diversity either acceptance or rejection), and public policy direction. While these three features are interrelated, cumulative studies conducted in major receiving countries such as North America, Europe, and Australasia have shown that the results of multiculturalism are mixed (Sam & Berry, 2016). In the societal level, a range of adverse outcomes such as anti-immigrant sentiments, hostility toward ethnic groups has increased (Bloemraad & Wright, 2014; Dustmann et al., 2013) while ethnic diversity reduces immigrants' perception of discrimination and emotional vulnerability within the society (Juvonen et al., 2006; Colleen Ward et al., 2011). In practice, the outcomes that multiculturalism brings in the society have shown considerable variability depending on the social context mainly established by multiculturalism as ideology or policy (Sam & Berry, 2016).

As such, multiculturalism has primarily been considered a macro phenomenon. However, individual and psychological multiculturalism may also play an important role in acculturation since psychological multiculturalism can be understood as "a confluence of intercultural perceptions and interactions that more broadly influence acculturation, adaptation and intercultural relations." (Sam & Berry, 2016, p. 450). Despite this potential, some scholars treat multiculturalism as an equivalent concept of biculturalism. However, multiculturalism must be

understood as a broader concept than biculturalism (Sam & Berry, 2016). Psychological multiculturalism does not yet appear to establish a concrete academic definition or general agreement on the operationalization in the field of acculturation research. Although Sam and Berry (2016) briefly used the term of psychological multiculturalism, many of the details of the concept are yet to be investigated.

The role of non-conational (e.g., immigrant groups from different countries from one's own country) on top of the host-conational group was proposed to understand the effect of individual immigrants' dynamic interactions with various groups. Moreover, the interaction with other immigrant groups may provide insights into multicultural psychology in the acculturation literature. Indeed, Van Oudenhoven and Ward (2013) suggested the importance of this new dimension beyond the pre-existing two dimensions (i.e., a mainstream culture, an ethnic culture) of the initial acculturation model. However, their suggestion did not receive further attention from scholars.

We might need to adapt an expanded theoretical framework to include multiple actors beyond the previous model focusing on the dyadic relationship. From the social identity theory perspective, an individuals' identification behaviors are substantially different depending on the comparable outgroup's power/status/size compared to the ingroup's characteristics (Abrams & Hogg, 2006; Tajfel & Turner, 2004). To a specific immigrant individual, a mainstream group can have a significantly different meaning, power, influence than other minority groups. Applying this discussion to immigrant contexts, it is possible that an immigrant who adopts the integration strategy, which endorses both her ethnic culture and mainstream culture, might show a separation attitude (i.e., exclusion) toward other non-conational immigrants. Similarly, it is also possible that an immigrant who seems to adopt the separation strategy, which interacts only with conational

immigrants while avoiding interactions with host members, might maintain social interactions with non-conational immigrants. Although mainstream cultures have gradually lost its exclusively dominant power than before due to transnational relations, demographic trends and the emergence of a global culture (van Oudenhoven & Ward, 2013), it also appears to be valid that mainstream culture still exerts significant influence on immigrants than any other (minority) groups. Replacing 'a mainstream group' with 'all other groups' might be practically acceptable. However, this approach may be conceptually incorrect because the nature of the host society and non-conational groups cannot be compatible. Given the weak basis for a new framework for multiculturalism, the present study aims to provide insight for the advancement of multiculturalism psychology.

3.2.4 Stress in the Context of Acculturation

The theory of stress and coping provides a useful framework for understanding how acculturation may be experienced as stressful events and leads to negative mental health outcomes (Sam & Berry, 2010). Participating in a new society's dominant culture and building a new network with people in the host society may be a taxing task especially when the intercultural contacts require new practices or a wide range of changes of perceptions or behaviors of the participants (Berry, 2006). With these new practices and behaviors, some elements can be perceived or interpreted as stressful based on the primary appraisal (Lazarus & Folkman, 1984). Depending on dispositional or situational factors, individuals' tendency to perceive these as "stressful" rather than "benign" or "irrelevant" may be different. It implies that the degree of acculturative stress can vary across individuals. Indeed, Berry (1997, 2006) pointed out that some immigrant groups such as seniors, femalse, and those with little social support tend to be more vulnerable than other immigrant groups to acculturative stress. Life stressors can be categorized

into acute stressors resulting from specific events and chronic stressors developing slowly with a longer time course (Wheaton et al., 2010). Berry (2006) implies that acculturative stress is more likely a chronic stressor than an acute stressor through preferring the term "acculturative stress" to the term "culture shock".

3.2.5 Coping in the Context of Acculturation

Individual immigrants encountering stressful acculturation experiences can react in quite different ways depending on how they process the secondary appraisal: their belief that they can handle this threat through their ability, resources, social support (Lazarus & Folkman, 1984). Even for the same event and under similar acculturative stress, an individual immigrant can perceive the event either as a challenge having ambivalent meanings, both negative and positive or as a threat possessing mainly negative meaning (Lazarus & Folkman, 1984). Berry (1997) suggested that immigrants adopt a wide range of coping strategies depending on their dispositional and situational factors. These coping strategies, in turn, can lead to differing levels of acculturative stress experienced by immigrants. In Berry's (1997) acculturation model, an individual immigrant may choose one of the four different coping behavioral patterns as one's acculturation strategy: marginalization, separation, assimilation, and integration as discussed above. Despite this use of the stress-coping framework, initial acculturation theory did not articulate the criteria that divide each category. Afterward, acculturation scholars have attempted to elaborate on the model with the stress-coping framework. If immigrant individuals judge a new situation as stressful and cannot be easily handled, they may choose separation or marginalization strategies, which immigrants attempt to limit their social interactions within their conational community or isolate themselves without significant social interaction with others. Even if they feel similar acculturative stress from

the primary appraisal, they can choose integration or assimilation strategies if they can handle the difficulties based on the secondary appraisal (Zee et al., 2016). If they perceive themselves as possessing appropriate resources including language proficiency, cultural knowledge, and instrumental resources to facilitate social interactions, they can be more open to the social interactions with the host society as well as the conational community.

In line with Lazarus's stress-coping model, not all acculturation changes bring in acculturative stress as several moderating and mediating factors may play a role during the acculturation process (Sam & Berry, 2010). Such factors influence individuals to make not only the primary appraisal (i.e., benign, irrelevant, stressful) but also the secondary appraisal (i.e., can do or cannot do). In the context of immigrant acculturation, factors affecting these appraisal processes may vary depending on immigrants' situations. Acculturation scholars have documented a number of factors that significantly influence the acculturation process. For instance, Berry (2006) listed up the factors such as immigrant's demographic characteristics (e.g., gender, age), socio-economic status, host country language proficiency, educational level, receiving country's attitude, and immigration motivation (voluntary vs. compulsory) as essential antecedents of successful acculturation.

Social support from multiple social groups is one of the primary coping resources for immigrants. Most immigrant populations receive social support from distinct social groups, such as ethnic and host groups. Indeed, Berry (1997)'s four typology was based on these two categories. As reviewed in the stress and coping theory, social support is a major coping resource even for the immigrant population, and the characteristics of the group with whom immigrants associate could be a differentiating factor in their experience of acculturative stress and subsequent mental health outcomes including depressive symptomatology. For instance, Berry differentiated the social

interaction only with ethnic group (i.e., separation) and only with host group (i.e., assimilation), both of which are associated with more depressive symptoms. Based on this theoretical combination, several empirical studies test the role of social support depending on its source groups (Jasinskaja-Lahti et al., 2006; I.-H. Kim & Noh, 2016). In addition to this traditional two group category, the third group, defined as the group consisting of non-conational immigrants, may also provide different types of social support used to cope with the acculturative stress differentially impacting mental health outcomes.

4.0 Chapter 4. Methods

4.1 Overview

The goal of this study is to examine the main effect of social interaction with non-conational immigrant groups on depression and its buffering role that may weaken the relationship between acculturative stress and depression, among Korean immigrants. Particularly, this study hypothesized, first, acculturative stress is associated with a higher level of depression; second, global social support components (e.g., the number of friends, received emotional support, received instrumental support) are associated with a lower level of depression; third, ego-centric social network components (e.g., network size, expected support from alters, perceived closeness to alters) are associated with a lower level of depression. And then, this study specifically tested the associations of global social support and social network components from non-conational immigrants and depression through Hypothesis 4 (global social support from non-conational immigrants with depression) and Hypothesis 5 (egocentric social network of non-conational alters with depression). Lastly, Hypothesis 6 tested the interaction effect of social support from non-conational immigrants with acculturative stress on depression. Hypothesis 7 tested the interaction effect of an egocentric social network of non-conational alters with acculturative stress on depression.

To test these hypotheses, an online survey was conducted with first-generation Korean immigrants living in the U.S. The structured questionnaire was initially developed in English and then translated into Korean. Participants were recruited through convenience sampling, using a combination of online methods, including: posting fliers on 1) faculty or graduate students'

bulletin (e.g., University of Pittsburgh) and 2) commercial website for Korean immigrants in the U.S. (e.g., Radiokorea.com., Missyusa.com). Participants who completed the survey were also asked to forward the fliers to others. The link to connect participants to survey questionnaires was live from September 29, 2020 to December 29, 2020. The online flier contained a link to directly connect participants to the online questionnaire created in the RedCap system provided by University of Pittsburgh. The online flier included the inclusion and exclusion criteria for the participation and the participant filled out a brief screening questionnaire before being given access to the full survey. Participants were included in the study if they identify themselves as Korean, were born outside of the U.S. regardless of age at arrival and are 18 years old or older. Participants were not considered if they had stayed in the U.S. less than one year and had a plan to leave the U.S. within one year. Because this study is targeting immigrants who have settled down in the U.S., sojourners or students were excluded unless they are pursuing a plan to live in the U.S. long-term. Before participating in the survey, the online consent form with a detailed explanation of the study and the names and contact information of the study personnel was provided to all participants.

Validated measures to assess the participant's level of depression, acculturative stress, global social support, and egocentric social network were included in the survey. The Patient Health Questionnaire-9 (PHQ-9) was used to measure depressive symptomatology. Acculturative stress was measured by the Riverside Acculturation Stress Inventory scale, consisting of 15 items. Global social support measures included the number of friends from an open-ended format and received emotional/instrumental support from a structured measurement, two-way Social Support Scale (2-Way SSS). Along with this global social support, this study implemented social network analysis, specifically, egocentric social network analysis to get the accurate picture of the social

networks that an individual has. Egocentric social network measures included the size of social ties, expected emotional/instrumental/informational support from social ties, perceived closeness to social ties and selected social network structural components (e.g., network density, ego-centrality, centrality betweenness). In order to control for confounding variables, questions about the immigrant context (e.g., length of stay, immigration status, English fluency, mode of acculturation) as well as demographic questions (e.g., gender, age, marital status, household income, educational level) were asked. These variables were selected based on the previous literature as significant factors on immigrant mental health.

Participants were able to complete the questionnaire on both a personal computer and smartphone. The completion time of this questionnaire was between 30 minutes to 50 minutes. The final sample size for the analysis was 190. Among them, 23 participants did not complete the egocentric social network questions. As a result, analytic sample size for the egocentric social network variables reduced to 166.

As an expression of appreciation, online credit valued to about ten dollars was offered to participants. All responses were stored securely and anonymously in the RedCap server. Data were cleaned and analyzed by the statistical software package, STATA 16.1 and the network analytic software, ORA. Hierarchical multiple regression analysis was used to test the main effect of social network components per each group category on depression and how it may modify the relationship between acculturative stress and depression.

4.2 Participants

Among Korean immigrants in the U.S., this study included participants who satisfy the following criteria:

1) Korean (or Korean American) whose birth country is Korea, currently residing in the U.S. more than one year

2) whose age is greater than 18.

Observations that meet the following criteria were excluded:

1) those who have lived in the U.S. less than one year.

2) those who plan to leave the U.S. in the near future.

3) whose purposes of stay in the U.S. are explicitly time-limited cases (e.g., expatriates, students). For the sojourners and students, additional questions were asked whether they have a plan to stay in the U.S. after graduating or completing their work because some sojourners and students have stayed in the U.S. pursuing permanent residence (Radford, 2019).

This study included time specific inclusion criteria (e.g., at least one year stay in the U.S.) because those who have arrived recently in the U.S. may not have had sufficient opportunities to build a social connection with non-conational immigrant groups. Also, those who will leave soon may not be willing to build any additional social connection. Since considerable different behavioral patterns have been found between sojourning groups and immigrant groups across various domains through the literature review (Bierwiaczonek & Waldzus, 2016), this study tried exclusively included immigrant groups.

The total 249 participants initiated the survey, however, 56 discontinued before completing any of the major study questions. Afterward, 3 were screened out due to extreme outliers on the global social support questions and 23 participants did not complete the egocentric social network

questions. The final sample size for main analysis was 190 while the analytic sample size for the egocentric social network variables reduced to 166. The residence of the respondents was distributed across the diverse states, originating from a total of 25 states in the U.S. (see Appendix Table1.) Participants' average age was 41.2 years old and approximately 70% (69%) of the participants (n=131) were female.

4.3 Study Design

This study utilized online survey to collect quantitative data. The questionnaire initially developed in English and translated into Korean. For linguistic equivalency between the English and the Korean version of the questionnaires, all questions were translated into Korean and back-translated into English independently by two people who are fluent in both languages. The RedCap system was used to create an online questionnaire and two versions of questionnaire were provided, one in English and the other in Korean depending on respondent's preference. Participants were able to access the questionnaire on either their personal computer or smartphone while internet connection was available. A total amount of time required to complete the survey was estimated to be approximately 40 minutes.

Participants were recruited via the convenience sampling method. Convenience sampling targets the respondents who meet certain practical criteria, such as easy accessibility including availability at a given time, geographical proximity and the willingness to participate (Etikan et al., 2016). This approach is typical for the non-probability or nonrandom sampling methods, which has been used for many social studies, especially when the target population is hard to reach via the random sampling method (Etikan et al., 2016). The geographical dispersion of Korean

immigrants makes this method the most feasible and efficient method to reach this population. Also, a convenience sample is useful when the researcher has limited resources, time and workforce (Etikan et al., 2016). Moreover, the current research environment affected by COVID-19 necessitated an internet-based sampling method to minimize participant contact. For this reason, a convenience sampling method based on physical sites such as restaurants, churches, and community centers, which has been a typical method used in previous studies, was impossible to implement. Although this method prevents researchers from claiming the generalizability of this sample, the purpose of this study is to understand the relationships among social network characteristics, acculturative stress, and depression. This sample allowed this study to test the hypotheses to examine the associations among the variables.

4.3.1 Power Analyses

A power analysis was conducted using G*Power 3.1 to provide an approximate estimate of power with the current sample size of 190 participants (with a regression containing 15 predictors and one dependent variable). With 80% power (1-β), the sample of 190 participants generated enough power to detect bigger than the effect size $f^{2=}0.11$. Based on the guideline from Cohen's f^2, this study can detect small effect size (.10-.30) (J. Cohen, 1992).

4.4 Survey Procedure

Before beginning the recruitment procedure, an online flier containing the research information such as purpose, outline, inclusion/exclusion criteria, introduction of the researcher

was produced and posted on various websites. (see the flier's contents in Appendix). This flier included a hyperlink that directly connected potential participants to a screening page produced on the online survey platform provided by RedCap. The screening page was used to examine whether the respondents met the inclusion criteria. When the respondent met the inclusion criteria, they were sent to the consent form that outlines the survey and any possible risks or benefits. The researcher's contact information was provided so participants could ask questions about the study when they had them. Participants were asked to click a button if they consented. Once they provided the consent via the online, they were guided to the questionnaire and given instructions about how to fill it out. If the respondent did not meet the inclusion criteria, they were kindly informed that they did not meet the criteria set by the researcher according to research purpose.

A combination of several online methods was used. First, nationwide commercial websites for Korean immigrants in the U.S. (e.g., Radiokorea.com., Missyusa.com; see Table 1) were used for uploading the flier. Along with these commercial websites, community websites for Koreans (e.g., Sacramento Korean Church Union) and, faculty or graduate students' bulletins (e.g., University of Pittsburgh Korean student associate) were utilized. Participants were also asked to forward the survey link to others after they finished.

The online links were completely anonymous although the I.P. (Internet Protocol) address remains in the respondents' records. The I.P. was used only to ensure that each participant only responded once. As an expression of appreciation, online credit for using in a major coffee store (e.g., Starbucks) valued as ten dollars was offered to participants. This study was approved by the Institutional Review Board of the University of Pittsburgh.

Table 1. Websites to distribute the survey flyer

Website	Characteristics
Radio Korea (http://www.radiokorea.com)	The most popular website for Koreans residing in the U.S. which provides various information for daily life such as national and domestic news, housing information, and trades for used items. Having a wide range of users due to its comprehensiveness.
Jung-ang Newspaper in the U.S. (http://www.koreadaily.com)	A website run by one of the major newspaper companies of Korea. Being used by mainly male users possessing relatively high socio economic status.
Han-kook Newspaper in the U.S. (http://www.koreatimes.com/)	A website run by one of the major newspaper companies of Korea. One of the newspapers having the longest history among news media used by Korean immigrants. Having a wide range of users, especially older adults.
Missy USA (http://www.missyusa.com)	The most popular website for Korean women living in the U.S. Women users dominant. Wide range of users including older women.
Missy Coupon in the U.S. (http://www.missycoupons.com)	The website specialized for shopping information, daily life information for Koreans living in the U.S. Women-users-dominant. Having relatively younger users.

4.5 Measures

4.5.1 Depressive symptoms

To assess participants depressive symptoms, this study used The Patient Health Questionnaire-9 (PHQ-9). The PHQ-9 was developed based on the diagnostic criteria of DSM-IV depressive disorders (Kroenke et al., 2001). PHQ-9 asks respondents to assess for the presence and frequency of depressive symptoms experienced during the previous two weeks consisting of nine items: (1) Little interest or pleasure in doing things, (2) Feeling down, depressed, or hopeless, (3) Trouble falling or staying asleep, or sleeping too much, (4) Feeling tired or having little energy, (5) Poor appetite or overeating, (6) Feeling bad about yourself, (7) Trouble concentrating on things, such as reading the newspaper or watching television, (8) Moving or speaking so slowly that other people could have noticed, (9) Thoughts that you would be better off dead or of hurting yourself

in some way. Its' scale ranges from 0 (Not at all), 1 (Several days), 2 (More than half the days), 3 (Nearly every day) so the total of PHQ-9 severity score is ranged from 0 to 27, and is assessed by summing up the score from the nine items. Kroenke and colleagues suggest PHQ-9 scores of 5, 10, 15, and 20 represent mild, moderate, moderately severe, and severe depression, respectively (Kroenke et al., 2001). This study used the measure as assessing the degree of depressive symptoms as a continuous variable rather than using a discrete diagnostic measure. The PHQ-9 shows strong correlations with other measures such as BDI-II (Kung et al., 2013), and CES-D (Milette et al., 2010) while the measure is much shorter and easy to be administered. The validity and reliability of the PHQ-9 has been well established in a number of settings and among diverse populations (Adewuya et al., 2006; Donlan & Lee, 2010; Gilbody et al., 2007; Rangil et al., 2001). Also, targeting Korean immigrant population in the U.S., its internal validity was high (Cronbach alpha=.92) (Donnelly & Kim, 2008). The PHQ-9 measure developed to Cronbach's alpha was .80 for the total score of the PHQ-9 in the current sample.

4.5.2 Acculturative stress

The Riverside Acculturation Stress Inventory scale was used to assess acculturation stress. The Riverside Acculturation Stress Inventory (RASI; (Benet-Martinez, 2003; Miller, Kim, et al., 2011) assesses five domains of acculturative stress: (a) Work Challenges, (b) Language Skills, (c) Intercultural Relations, (d) Cultural Isolation, and (e) Discrimination. To assess Work Challenges respondents were asked how much they agreed with the following statements: (1) Because of my Korean background, I have to work harder than most Americans, (2) I feel the pressure that what "I" do will be seen as representative of Korean people's abilities. (3) In looking for a job, I sometimes feel that my Korean background is a limitation. The items of Language Skills include:

(4) It's hard for me to perform well at work because of my English skills (5) I often feel misunderstood or limited in daily situations because of my English skills. (6) It bothers me that I have an accent in English. The items of Intercultural Relations include: (7) I have had disagreements with other Koreans (e.g., friends or family) for liking American customs or ways of doing things, (8) I have had disagreements with Americans for liking Korean customs or ways of doing things, (9) I feel that my particular practices as Korean have caused conflict in my relationships. The items of Cultural Isolation include: (10) I feel that there are not enough Korean people in my living environment, (11) When I am in a place or room where I am the only Korean person, I often feel different or isolated, (12) I feel that the environment where I live is not multicultural enough; it does not have enough cultural richness. The items of Discrimination include: (13) I have been treated rudely or unfairly because of my Korean background, (14) I have felt discriminated against by Americans because of my Korean background, (15) I feel that people very often interpret my behavior based on their stereotypes of what Koreans are like. Each item uses a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) so that the total score of this measure ranges from 15 to 75 by summing up the scores from a total 15 items. This measure was typically used as its sum values in previous studies (Adebayo et al., 2021; Cariello et al., 2020). Miller and colleagues (2011) show that this measure displays a high internal reliability as a single measure and among each domain. This study used this measure as a continuous variable ranging from 15 to 75 to indicate the magnitude of the overall acculturative stress of the sample rather than using a domain specific measure. This measure is shorter than other acculturation measures such as SAFE (60 items) while it contains important domains (e.g., intercultural relations), which other acculturative stress measures neglect (Miller et al., 2011). Multiple studies have demonstrated that this measure has sound psychometric properties across diverse

populations, particularly for the Asian immigrant population (Benet-Martínez & Haritatos, 2005; Gil et al., 1994; Miller, Kim, et al., 2011). This measure was also used for the Korean immigrant population and showed a high internal validity (Cronbach alpha=.90) (C. Kim, 2019). Cronbach's alpha was .80 for the total score of the RASI in the current sample.

4.5.3 Global social support

Global social support was asked by asking participants how many friend they had in category, American, conational immigrant and non-conational immigrant, and then participants were asked how much social support they received members of each group using the two-way Social Support Scale (2-Way SSS) (Obst et al., 2019). The scale was adapted to differentiate the nationality of the person/people providing the social support. First, participants were asked how many friends they have per each group category (i.e., American(host), Korean(conational), non-conational immigrant). The actual question was "Approximately, how many "friends" (or people whom you have received support or given support) do you have per each category below in the U.S. (regardless of the location of the friends)?" Participants responded with an actual number of friends depending on the suggested categories: (1) Americans (including all races such as White, Black, Asian, Hispanic, 2nd generation Koreans are American if they were born in the U.S.) (2) Koreans (including all Koreans regardless of their VISA status, 1st generation Koreans are regarded as Korean) (3) Other foreign-born immigrants (sojourners) (in this case, 2nd generation are American).

Next, a set of global social support measures were asked pertaining to each group. The original 20-item 2-Way SSS was designed to assess the subjective experience of the multiple aspects of social support, that is, giving and receiving both emotional and instrumental social

support (Shakespeare-Finch & Obst, 2011). Specifically, this measure developed to measure overall level of support depending on groups in which individuals join (Shakespeare-Finch & Obst, 2011). The brief version of the 2-Way SSS selected 12 items among the original 20-item through repeated confirmatory factor analyses and reliability tests. The brief 12-item version of the 2-Way SSS has been acknowledged as a psychometrically valid measure of the elements of social support (Obst et al., 2019). This study specifically focused on the "received" emotional and instrumental support since this measure intended to measure two ways, "received (6 items)" and "giving (6 items)" supports. This study repeated the following set of questions per group, for example, before asking each set of questions, respondents were asked such as "Think about American friends or acquaintances." And then "Korean friends or acquaintances" and lastly "non-conational immigrant(foreign-born) friends or acquaintances." Thus, respondents ended up answering a total of 18 questions ((3 emotional support items + 3 instrumental support items) X 3 groups) in the area of received supports. The items measuring received emotional support include: (1) There is a person in this group that I can share most things with (2) When I am feeling down there is someone I can lean on in this group (3) There is someone in my life I can get emotional support from. Second, the items for measuring received instrumental support include: (4) If stranded somewhere, there is someone who would come get me (5) I have someone to help me in this group if I am physically unwell (6) There is someone who can help me in this group to help me fulfill my responsibilities when I am unable.

Respondents indicated the frequency of their experience on a five-point scale rated from 1 (not at all) to 5 (always), where higher scores indicate greater social support received from each group. The score of the three items was averaged per emotional and instrumental support depending on the groups. For the emotional support, the range of Cronbach's alpha per each group

was .94 -.97. For instrumental support, the range of Cronbach's alpha per each group was .87 -.94. (Table 2.)

Table 2. Cronbach's alpha of global social support (emotional/instrumental) depending on the groups

Cronbach's alpha	Emotional Support	Instrumental support
American group	.94	.89
Korean group	.95	.87
Non-conational group	.97	.94

4.5.4 Social network measure

Along with the global social support measure, this study sought to evaluate participants' egocentric social networks (e.g., size of social ties, expected support of social ties, perceived closeness of social ties, network density, ego-centrality and centrality betweenness) and their relationship to depressive symptoms.

The social network analysis approach has two different but interconnected traditions, one assessing a socio-centric network and the other taking an egocentric network approach (Marsden, 2005). Sociocentric network approaches are used when a complete or whole closed network is present such as a classroom or a department of a company (Hanneman & Riddle, 2005). In contrast, the egocentric (or personal) network approach assesses the relationship patterns of a focal individual (i.e., ego) in connection with others (i.e., the alters) within the individual's network (Borgatti & Foster, 2003). In the present study, the egocentric network analysis was used based on the ego's evaluation of the relationship characteristics with the alters. This method yields network maps for each respondent, that is, represent the "perceived interpersonal environment of each ego" (Repke & Benet-Martínez, 2019, p. 439).

Egocentric social network questions mainly used Burt's (1997) name generator methodology to assess the characteristics of each network partner. More specifically, we asked "Please think hard and list up to 15 individuals (including family members, friends, neighbors, colleagues, acquaintances) whom you have communicated with regardless of the ways of communication for personal reasons (not for business) during the past one year (2019.9 - 2020.9)?" Participants freely listed up to 15 people following the direction. After the participant nominated the names of the alters, they were asked a series of detailed questions about each altar's including nation of origin, relationship, perceived closeness (intimacy), expected social support (instrumental, emotional, informational), and interconnectedness (see below regarding details of each measure, Table 3).

After the data was collected, the network characteristics of all alters that the participant identified as the social ties of American(host), Korean (conational), or non-conational (all foreign-born non-Koreans) were summarized. The social network components that were summarized included the number of social ties, expected support from social ties, and perceived closeness to social ties. This generated a variable for each group of alters, American (host), Korean (co-national) and non-conational immigrants.

Table 3. Egocentric social network measure components

Variable	Type	Question	Value	Base
Nationality	Categorical (Nominal)	What is the country of origin of ___ ?	1.American 2.Korean 3. Chinese 4.Japanese 5. Vietnamese 6.Filipino 7.Asian Indian 8.Other Asian 9. Mexican 10.Other Latin American 11.Canadian 12. European 13.African, and 14. Other	Per individual altar
Relationship	Categorical (Nominal)	What is the relationship with _____?	1.Family 2. Friend 3. Colleague 4. Neighbor 5. Acquittances 6. Other	Per individual altar
(Expected) Social Support – Emotional	Categorical (Ordinal-Likert)	If you were feeling down or stressed at some point over the next 30 days, how likely are you to talk to ____ for emotional support, encouragement, or advice?	4. Very likely 3. Somewhat likely 2. Somewhat unlikely 1. Very unlikely	Per individual altar
(Expected) Social Support – Instrumental	Categorical (Ordinal -Likert)	If you needed help with getting something done in the next 30 days, how likely are you to go to ____ for help?	4. Very likely 3. Somewhat likely 2. Somewhat unlikely 1. Very unlikely	Per individual altar
(Expected) Social Support – Informational	Categorical (Nominal)	If you needed any information or resources the next 30 days, how likely are you to go to____ for the information?	4. Very likely 3. Somewhat likely 2. Somewhat unlikely 1. Very unlikely	Per individual altar
Perceived Closeness (Intimacy)	Categorical (Ordinal -Likert)	How close do you think that you and ____ ?	1. Distant 2. Not close 3. Close 4. Intimate	Per individual altar
Alter's Interconnectedness	Categorical (Nominal)	Please think about the relations between the people you named earlier. Some may be total strangers and not recognize one another on the street. Others may know each other a little bit. Others may be very close. Thinking about ___and __, how close are they to one another?	0. They don't know one another 1. They know one another, but are not very close 2. They know one another and are somewhat close 3. They know one another and are very close	Between alters

Specifically, to measure each alter's nationality and nativity, participants were asked "What is [the alter's name] nationality?" with the following categories provided: 1) American, 2) Korean, 3) Chinese, 4) Japanese, 5) Vietnamese, 6) Filipino, 7) Asian Indian, 8) Other Asian (e.g., Cambodian, Lao, Thai), 9) Mexican, 10) Other Latin American (e.g., Cuban, Haitian, Columbian),

11) Canadian, 12) European, 13) African, and 14) Other. Along with this question, participants were asked the nativity status such as "Was [alter's name] born in the U.S.?" With the combination of the two responses, yes or no, all altars were categorized into the three categories, that is, "American (host)", "Korean (conational)", and "non-conational immigrant (all foreign-born non-Koreans)". For example, if an alter's nationality was Mexican and its nativity was "yes" (born in the U.S.), the alter categorized into "American" while the nativity was "no", the alter categorized into "non-conational immigrants".

The most basic feature of the participant social network considered was its size. Social network theory suggests that the network size is one of the most important indicators of the social network (Borgatti et al., 2009). To assess the social network size, this study summed up the number of alters each participant listed, and categorized the number of alters into each group, such as size of American social network, size of Korean social network and size of non-conational immigrant social network. Since this study asked all alters with whom a respondent interacted frequently over the recent one year, family members might be included in the responded 15 alters. To maintain the parallel structure with the global social support questions limiting the received support from "friends", all measures from egocentric social network questions except for the structural variables (e.g., centrality, density, betweenness) selectively removed the portion from family members when variables made for the models.

Expected Social Support among network partners was measured by asking respondents about their expectation of how much emotional, instrumental, and informational support from each alter (Gottlieb & Bergen, 2010; Schaefer et al., 1981). Expected emotional support was assessed by asking the participant "If you were feeling down or stressed at some point over the next 30 days, how likely are you to talk to [name of alter] for emotional support, encouragement, or

advice?" Expected instrumental support was assessed by asking the participant "If you needed help with getting something done in the next 30 days, how likely are you to go to [name of the alter] for help?" Lastly informational support was assessed by asking participants, "If you needed any information or resources the next 30 days, how likely are you to go to [the name of the alter for the information?" Possible responses include: 1-Very unlikely, 2-Somewhat unlikely, 3-Somewhat likely, and 4-Very likely. For each composite, a higher score reflects greater support expected. The three items' scores were averaged as a total expected support. And then, a mean score per group was created for the expected support by averaging scores across all alters responded depending on the group category (e.g., American, Korean, non-conational immigrant) of each alter. As a result, three new variables were created such as the mean value of the expected support from Americans, expected support from Koreans, and expected support from non-conational immigrants.

The strength of a person's tie with an alter was measured by perceived closeness. The closeness of each relationship was assessed by asking the participant to evaluate their relationship with each alter on a 4-point rating scale. More specifically they were asked "How close do you feel to the [the alters name]?" with the following four possible responses, 1-distant, 2-not close, 3-close, and 4-intimate. Based on the above group categories, three different independent variables were created such as closeness to the non-conational network, closeness to the Korean network and closeness to an American network depending on the alters' group category. Similar to the expected support measure, a mean score per group was created for the perceived closeness by averaging rating across all alters nominated.

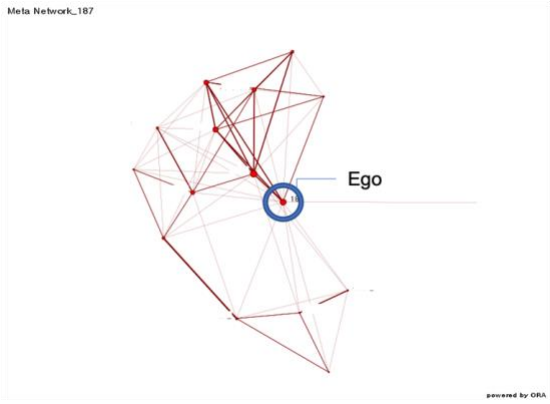
For understanding the structural feature of social networks, interconnectedness of each participant's alters was asked. Generally, interconnectedness has been reported to be positively associated with social support and strong interconnectedness facilitates the flow of information

and resources (Kadushin, 2012). Each participant was asked to describe the relationship between his/her all alters. The sample question is "Please think about the relations between the people you named earlier. Some may be total strangers and not recognize one another on the stress. Others may know each other a little bit. Others may be very close. Thinking about [name of one alter] and [name of another alter] (all possible pairs of alters), how close are they to one another?" with possible responses including, 0-They don't know one another, 1-They know one another, but are not very close, 2-They know one another and are somewhat close, and 3-They know one another and are very close.

Through these questions, a wide range of network structural properties can be generated. In addition to specific features of each relationship discussed above, these properties spotlight the structural characteristics of an individual's web of relationships (Burgette et al., 2021). Among the diverse properties, this study focused on three overarching categories: *access, brokerage, and social influence,* since these three categories have been acknowledged as major social network factors to play in relation to diverse health outcomes through previous literature (Burgette et al., 2021). First, measures of access can help researchers predict how likely an actor is to communicate information or resources within the network (Burgette et al., 2021). For measuring access, individual centrality was used, defined as "measure of the prominence of a node within a network as determined by how extensively connected that node is to other nodes within the network" (Burgette, et al., 2021, p. 8). Especially, 'ego-centrality total degree' captures the popularity or activity of an ego, implying that egos with high ego-centrality total degree are directly linked to more other alters and therefore have greater access to resources and information (Burgette et al., 2021). The examples from this sample to show the low- and high-ego-centrality total degree are suggested below (Figure 3, 4). The network characterized as high ego-centrality has many direct

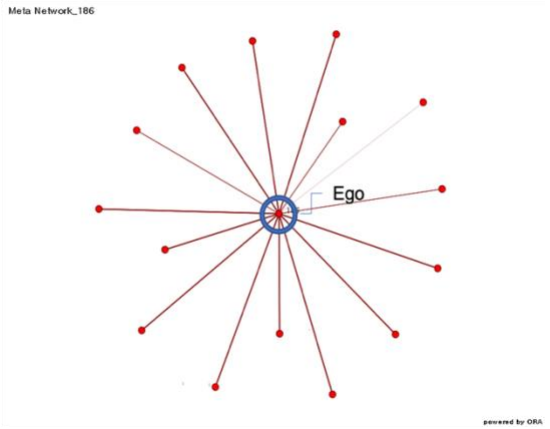
links from the ego without intensive interconnectedness among alters while the network with low ego-centrality was just a part of the intensively interconnected network.

Figure 3. Example of low ego-centrality



Ego-centrality Total Degree: 0.367

Figure 4. Example of high ego-centrality

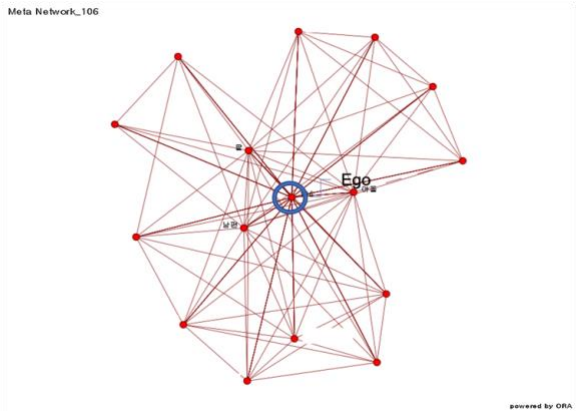


Ego-centrality Total Degree: 0.889

Second, brokerage "identify actors who are likely to be influential due to their positions along key paths of transmission, acting as gatekeepers or conduits of information or disease" (Burgette, et al., 2021, p.7). As a measure of brokerage, this study used centrality betweenness. Betweenness is defined as "the extent to which the ego connects pairs of other actors by falling on

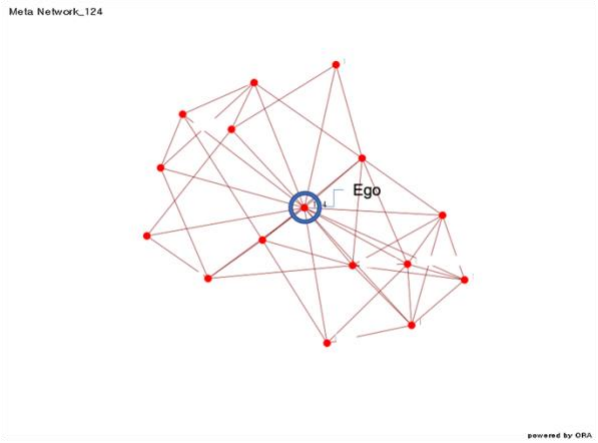
the shortest path between these actors" (Burgette, et al., 2021, p.7). Egos with high betweenness can be considered as mediators that control or broker between the alters that they connect so that they can be often exposed to any elements passed along the paths. Also, an ego in a high brokerage position may play as a gatekeeper along paths between other alters, acting as a bridge between two or more otherwise unconnected components (Burgette et al., 2021). The examples from this sample to show the low- and high-centrality betweenness are demonstrated in Figure 5, 6. The network with high centrality betweenness was characterized as a connector between separately interconnected multiple clusters while the network with low centrality betweenness does not have a separate cluster nor the ego does not have the position as a connector.

Figure 5. Example of low centrality betweenness



Centrality Betweenness: 0.024

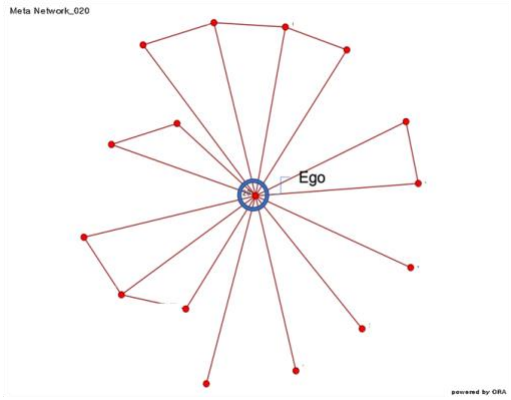
Figure 6. Example of high centrality betweenness



Centrality Betweenness: 0.205

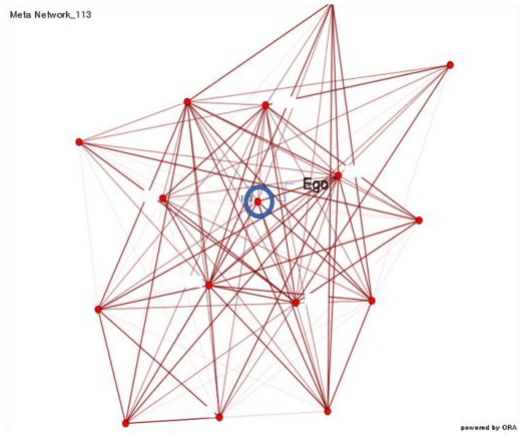
Lastly, social influence can be assessed by the degree to which an ego is impacted by her/his alters within the network. One of the primary measures of social influence is density, capturing how closely knitted an egocentric network is (Burgette et al., 2021). Among the composites of interconnectedness, density is the most commonly used index to represent interconnectedness (Scott & Others, 2012). High density networks are connected by strong or reciprocal links so the actors within the network are prone to experience greater social influence (Burgette et al., 2021). It is created from the ratio between the number of existing social ties and the total number of possible ties within the ego-centric network. Commonly, as network size increases, density tends to decrease (Burgette et al., 2021). Particularly, this study used weighted density, taking into account the strength of each link. Since this study measured the degree of interconnectedness via the 4-point Likert scale, the weighted density can reflect a more exact density of the network. The examples from this sample to show the low- and high- weighted density network are suggested in Figure 7, 8. In the network with high weighted density, alters are tightly interconnected with a strong degree of closeness.

Figure 7. Example of low weighted density



Density: 0.078

Figure 8. Example of high weighted density



Density: 0.628

These three structural social network indexes (e.g., ego centrality total degree, centrality betweenness, weighted density) cannot be separately calculated depending on the group category unlike the other egocentric variables (e.g., size of social network, expected support, perceived closeness). Also, these indexes contain all of the alters including family ties since they show the overall structure of each ego's social network. For those reasons, three structural indexes were separately tested in relation to the outcome variable (i.e., depression) and were input as control

variables when testing the effects of egocentric social network elements from each group's social ties to depression.

4.5.5 Control variables

As reviewed in the literature section, depression and acculturative stress have been reported to have associations with several demographic information. For instance, female, younger age, low education level and low income have been acknowledged as having positive association with depression (Brody et al., 2018; Eaton et al., 2001; Ronald C. Kessler et al., 2010; Lorant et al., 2003; Van de Velde et al., 2010). In terms of acculturative stress, immigration contexts such as length of stay in the U.S., immigration status, the mode of acculturation, English proficiency are significant factors to differentiate the outcomes (Masgoret & Ward, 2006; Miranda & Matheny, 2000; S. Singh et al., 2015). Therefore, this study controlled major demographic elements (age, gender, partner status, education level, household income) and immigrant context (length of stay, immigration status, the mode of acculturation, English proficiency) in each model.

1) Gender was asked as a categorical variable (1 = male, 2 = female, 3= Other).

2) Age was asked as a continuous variable such as "what is your birth year?" and then calculated their age by the current year minus the birth year. It was coded as categorical variable ranging from 1 = 18~29 years old, 2 = 30~39 years old, 3 = 40~49 years old, 4 = 50~59 years old, 5 = equal to or greater than 60 years old in the regression model afterward due to the collinearity with the variable of length of stay.

3) *Partner status* was asked as categorical variable such as (1=Never married and currently living alone, 2=Not married but have a partner, 3=Married and currently living together,

4=Married but currently living alone) and then coded as 1 = currently have a partner or 0 = not have a partner.

4) *Educational attainment* was measured as a categorical variable ranging from 1 = less than 12 years of education, 2 = High-school graduation, 3= Two-year College, 4=Four-year College, 5=Master's degree or equivalent, 6=Ph.D., or M.D., or other advanced degree.

5) *Household income* was asked as categorical variable ranging from 1= less than $13,000, 2=$13,000~$19,999, 3=$20,000~$24,999, 4=$25,000~$39,999, 5=$40,000~$59,999, 6=$60,000~$79,999, 7=$80,000~$99,999, 8= $100,000~$149,999, 9= $150,000~$199,999, 10= More than $200,000

6) *Length of stay* was asked as a continuous variable such as "how long have you been living in the U.S.? If you have left the U.S. more than one year between the arrival year and this year, please take out the number of the year from the duration."

7) *English proficiency* was measured using a part of acculturation measure, Abbreviated Multidimensional Acculturation Scale (AMAS-ZABB; (Zea et al., 2003)) consisting of 8 items. Items were rated on a 4-point rating scale (1 = Not at all, 2 = A little, 3 = Well, 4 = Very well). Sample items are: "How well do you speak English at school or work?", "How well do you speak English with American friends?" "How well do you understand English at school or work?", and "How well do you understand English in general?" Cronbach's alpha was .95 for this measure in the current sample.

8) Acculturation was measured via the Vancouver Index of Acculturation (VIA; (Ryder et al., 2000)). The VIA is a bilinear acculturation/enculturation measure designed to assess orientations toward the mainstream and heritage cultural groups consisting of 10 items for each dimension with parallel wording. Each dimension was separately measured to represent the degree

of acculturation toward the main culture (i.e., American culture) and the degree of acculturation toward the co-ethnic (heritage) culture (i.e., Korean culture). The total 20 items are rated on a 9-point rating scale. Sample items are; “I often participate in my Korean/ American cultural traditions”, “I am comfortable working with typical Americans/Koreans”. “I enjoy social activities with people from American/ Korean origin” A number of studies have tested its psychometric properties and found that it has high internal consistency, adequate convergence, discriminant, and concurrent validity across multiple ethnic groups (Huynh et al., 2009; Ryder et al., 2000). Cronbach’s alpha was .86 for the acculturation toward the co-ethnic culture score, and .82 for the acculturation toward the main culture score in the current sample.

4.6 Data Analysis

This study used STATA 16.1 for the descriptive, correlation and multiple regression analysis and ORA for social network analysis.

4.6.1 Analysis strategy

4.6.1.1 Preliminary analyses

First, descriptive statistics regarding the demographic characteristics of the sample such as means, standard deviations, and frequencies per group was summarized. The internal consistency of instruments was examined through Cronbach's alpha coefficient per measurement. Next, Pearson’s correlation was used to examine the association among acculturative stress, global social

support, social network components with each group (American/Korean/non-conational immigrant), and depression.

4.6.1.2 Comparisons of means

To test the mean differences of the numbers of friends, global social support, and egocentric social network components among the three groups (e.g., American, Korean and non-conational immigrants), the Hotelling's T-squared distribution, proposed by Harold Hotelling (Hotelling, 1992) was used. The Hotelling's t-squared statistic is a generalization of Student's t-statistic that is used in multivariate hypothesis testing (R. A. Johnson & Wichern, 2015). The dependent variables to test in this study were multivariate, rather than multivariable (Ebrahimi Kalan et al., 2021), because this study repeatedly and independently asked the number of friends or the level of support depending on the group.

4.6.1.3 Multiple regression analyses

Before testing regression models, outliers, influential data, and leverage were examined. Specifically, there exists distinctive outliers in the total number of friends (e.g., over 150 friends), these three observations were omitted from the analysis. There are some multicollinearity issues depending on global social support variables input (e.g., when emotional support per group and instrumental support per group were input together; VIF=11). For dealing with this issue, emotional and instrumental support per group were separately tested. Regression models were built based on the hypotheses. Ordinary least squares regressions were then estimated to test the studies hypothesis.

4.6.1.4 Egocentric social network analyses

ORA was used to capture the characteristics of the egocentric social network of the participants in a numeric and graphical way. ORA is defined as "a network analysis toolkit for graphical, statistical, and visual analytics on both social networks and high-dimensional networks that can vary by time and/or space" developed by Center for Computational Analysis of Social and Organizational Systems (CASOS) at Carnegie Mellon University (Carley, 2018). Particularly, this study utilized ORA to calculate the network structural properties (e.g., centrality, betweenness, density) and visualize the social network patterns among the immigrants having the non-conational social ties within their network.

4.6.2 Hypotheses and models

The seven sets of hypotheses and the following models to test the hypotheses were suggested below (Table 4.3.)

Hypothesis 1: *Acculturative stress is associated with a higher level of depression among first-generation Korean immigrants in the U.S. controlling for demographic or immigration context.*

To test Hypothesis1, the first model estimated the direct effects of acculturative stress on depressive symptoms in addition to the control variables.

Hypothesis 2: *Global social support components (e.g., the number of friends, received emotional support, received instrumental supports) are associated with a lower level of depression controlling for acculturative stress, demographic and immigration context.*

H2a: The number of friends is associated with a lower level of depression

H2b: Received emotional support is associated with a lower level of depression

H2c: Received instrumental support is associated with a lower level of depression.

Second model tested the main effect of the global social network components (e.g., number of friends, received emotional support, received instrumental support) regardless of the nationality of friends on depressive symptoms with three sub models in addition to the first model.

Hypothesis 3: *Egocentric social network components (e.g., network size, expected support from alters, perceived closeness to alters) are associated with a lower level of depression controlling for acculturative stress, demographic and immigration context and associations remain after accounting for and network structure (e.g., network density, centrality).*

H3a: The network size is associated with a lower level of depression

H3b: Expected support from alters is associated with a lower level of depression

H3c: Perceived closeness to alters is associated with a lower level of depression

H3d: The network size is associated with a lower level of depression accounting for structural components (e.g., network density, centrality).

H3e: Expected support from alters is associated with a lower level of depression accounting for structural components (e.g., network density, centrality).

H3f: Perceived closeness to alters is associated with a lower level of depression accounting for structural components (e.g., network density, centrality).

Aside from the global social network variables, the third model tested the main effect of the ego-centric social network components (e.g., size of the social ties, expected support, perceived

closeness). Like the second model, the ego-centric variables were tested separately and together in three sub models and then examined again with three separate sub-models controlling for the network structural variables (e.g., ego-centrality, centrality betweenness, density).

Hypothesis 4: *Global social support components (e.g., the number of friends, received emotional support, received instrumental supports) from non-conational immigrants are associated with a lower level of depression controlling for acculturative stress, demographic or immigration context.*

H4a: The number of non-conational immigrant friends is associated with a lower level of depression.

H4b: Received emotional support from non-conational immigrants is associated with a lower level of depression.

H4c: Received instrumental support from non-conational immigrants is associated with a lower level of depression.

Hypothesis 5: *Egocentric social network components (e.g., network size, expected support, perceived closeness) from non-conational alters are associated with a lower level of depression controlling for acculturative stress, demographic or immigration context.*

H5a: The network size of non-conational alters is associated with a lower level of depression.

H5b: Expected support from non-conational alters is associated with a lower level of depression.

H5c: Perceived closeness to non-conational immigrants is associated with a lowerer level of depression .

In the fourth and fifth model, the associations of global social support and social network components from non-conational immigrants with depression were tested.

Specifically, Model 4 tested the single (i.e., effect of non-conational immigrants without controlling for American and Korean social support) and exclusive effect (i.e., effect of non-conational immigrants controlling for American and Korean social support) of global social support components from non-conational immigrants. Model 5 tested the single and exclusive effect of ego-centric social network components of non-conational immigrants.

Hypothesis 6: *Global social support components (e.g., the number of friends, emotional support, instrumental support) from non-conational immigrants buffer the effects of the acculturative stress on depressive symptoms among first-generation Korean immigrants in the U.S. controlling for acculturative stress, demographic or immigration context.*

H6a: The number of non-conational immigrant friends buffers the effects of the acculturative stress on depressive symptoms among Korean first-generation immigrants in the U.S.

H6b: Received emotional support from non-conational immigrants buffers the effects of the acculturative stress on depressive symptoms among Korean first-generation immigrants in the U.S.

H6c: Received instrumental support from non-conational immigrants buffers the effects of the acculturative stress on depressive symptoms among Korean first-generation immigrants in the U.S.

Hypothesis 7: *Egocentric social network components (e.g., network size, expected support, perceived closeness) from non-conational immigrants buffer the effects of the acculturative stress on depressive symptoms among Korean first-generation immigrants in the U.S. controlling for acculturative stress, demographic or immigration context.*

H7a: The network size of non-conational alters buffers the effects of the acculturative stress on depressive symptoms among Korean first-generation immigrants in the U.S.

H7b: Expected support from non-conational alters buffers the effects of the acculturative stress on depressive symptoms among Korean first-generation immigrants in the U.S.

H7c: Perceived closeness to non-conational alters buffers the effects of the acculturative stress on depressive symptoms among Korean first-generation immigrants in the U.S.

Lastly, interaction terms between acculturative stress and global social support (Model 6) and egocentric social network components (Model 7) were added on the sixth and seventh model. Same with the main effect models, the interaction models were separately tested, first, the global social network variables (Model 6) and then the ego-centric social network variables (Model 7). In the interaction models, only interaction term between each social support/ social network of non-conational immigrants and acculturative stress was tested only with the control variables

without any additional interaction terms of other two groups (Korean and American) with acculturative stress. And then, controlling for other two groups' interaction with acculturative stress, the interaction term of each social support/ social network of non-conational immigrants with acculturative stress was tested. The regression models were summarized in the table shown below (Table 4).

Table 4. Regression analysis - models

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	■	■	■	■	■	■	■
Control Variables	■	■	■	■	■	■	■
Acculturative stress	■	■	■	■	■	■	■
Global social support		■					
Egocentric social network			■				
Global social support per group				■		■	
Egocentric social network per group					■		■
Acculturative Stress × Global social support						■	
Acculturative Stress × Egocentric social network							■
N							
F							
R squared							
p-value							

5.0 Chapter 5. Results

5.1 Descriptive Statistics

5.1.1 Description of the sample

A total of 190 responses were analyzed. Participants were on average 41.2 years old (SD=7.3; range 22-69) and approximately 70% (69%) of the participants (n=131) were female. Among participants, 15.3% (n=29) reported an annual household income less than $40,000 while 26.2% (n=50) had a household income of $40,000~$79,000, 34.7% (n=66) had a household income of $80,000~$149,000, and 23.7% (n=45) had a household income greater than $150,000. About 90% of the sample completed four-year college education or above. A half (56.7%) of the sample earned a master or Ph.D. degree. Approximately half of the participants (n=88, 46.3%) reported that they were employed, a quarter (n=51, 26.8%) of them were stay-at-home parents, and 9% (n=17) were students. Most of the participants (n=157, 82.6%) were partnered. Average length of stay in the United States was 13.1 years (SD = 7.8) (Table 5). Other demographic information such as residential area presented in the Appendices section.

5.1.2 Major constructs

English proficiency was measured as medium-high level (M=20; SD=6.1) based on the range of this measure from 0 to 32. In terms of the modes of acculturation, average scores of the acculturation toward its heritage culture (i.e., enculturation) were 29.2 (SD=6.8, total score 0-40)

and acculturation toward the host culture (i.e., assimilation) were 25.6 (SD=6.0, total score 0-40). Average scores of acculturative stress were 45.4 (SD=8.6, total score 21-67). Average scores of depressive symptoms were 4.8 (SD=3.7, total score 0-20) and the prevalence of depressive disorder was 14.1% based on the cutoff score at 10. Detailed scores per item of each construct presented in the Appendix section.

5.1.3 Global social support

When the distribution of the number of friends was examined, 3 outliers of improbable values were identified, the total numbers of friends were over 200. After these values were omitted, the total analytic sample was 190. On average participants reported having seven American friends (*SD* =10.2), twelve (*SD* = 12.4) Korean friends, and three friends (*SD* = 5.2) from the non-conational immigrant group, respectively. After removing the outliers, the total number of friends was summed up the number of friends of three groups ranged from 0 to 115, the mean numbers of the total friends were 21 (*SD* = 20.9). On average, participants reported receiving emotional support from American friends some of the time (*M(SD)* = 3.0(1.2)), Korean friends most of the time 3.8 (*M(SD)* = 3.8(1.0)), and from non-conational immigrant friends not often 2.4 (*M(SD)* = 2.4(1.2)). The mean scores of the frequency of instrumental support received from American friends were some of the time (*M(SD)* = 2.8(1.2)), Korean friends were most of the time (*M(SD)* = 3.5(1.0)), and non-conational immigrant friends were not often (*M(SD)* = 2.2(1.1)). Overall, this sample has more Korean friends and received more emotional and instrumental support from Korean friends than American and non-conational friends while the level of support as well as the number of friends from the non-conational immigrant group was least among the three groups.

Table 5. Descriptive statistics of demographic and major variables

Variable	N	%	Mean	Std Dev	Range
Age	190		41.2	7.3	22-69
Gender (1=female)	190		.69	.46	0-1
Household Income					
Less than $40,000	29	15.3			
$40,000-$79,000	50	26.3			
$80,000-$149,999	66	34.7			
More than $150,000	45	23.7			
Education Level					
Highschool	5	3.2			
Two-year college	12	6.4			
Four-year college	66	34.7			
Master's degree	57	30.2			
Ph.D. degree	50	26.5			
Employment Status					
Employed	88	46.3			
Student	17	9.0			
Self-employed	16	8.4			
Unemployed	13	6.8			
Stay-at-home parents	51	26.8			
Other	5	2.6			
Marital Status					
Never married	27	14.2			
Married	158	83.2			
Divorced	5	2.6			
Partner					
Partnered	157	82.6			
Alone	33	17.4			
Length of Stay (year)	190		13.1	7.8	1-40
English proficiency	190		20.1	6.1	8-32
Acculturation Ethnic	190		29.2	6.8	0-40
Acculturation Main	190		25.6	6.0	0-40
Acculturative Stress	190		45.4	8.6	15-75
Depressive Symptoms	190		4.8	3.7	0-27

Table 6. Global social support variables

Number of Friends	N	Mean (SD)	Range	No friend (%)
Total number of friends	190	21.0 (20.9)	0-115	.5
Number of American friends	190	7.0 (10.2)	0-60	13.7
Number of Korean friends	190	11.6 (12.4)	0-80	2.6
Number of Non-co.* friends	190	3.0 (5.2)	0-40	36.3
Received Emotional Support	N	Mean (SD)	Actual Range	Possible Range
Total emotional support	190	3.1 (0.8)	1.1-5	1-5
Emotional support from Americans	190	3.0 (1.2)	1-5	1-5
Emotional support from Koreans	189	3.8 (1.0)	1-5	1-5
Emotional support from non-conational immigrants	186	2.4 (1.2)	1-5	1-5
Received Instrumental Support	N	Mean (SD)	Actual Range	Possible Range
Total instrumental support	190	2.9 (0.8)	1.2-5	1-5
Instrumental support from Americans	190	2.8 (1.2)	1-5	1-5
Instrumental support from Koreans	189	3.5 (1.0)	1-5	1-5
Instrumental support from Non-co.*	186	2.2 (1.1)	1-5	2-5

* Non-co. : Non-conational immigrant

5.1.4 Egocentric social network

Similar patterns of social ties and social support were observed using the social network measures (Table 7). On average the size of non-familial Korean social networks was 5.7 (*SD* = 3.5), the size of non-familial American social networks was 3.2 (*SD* = 3.1), and the size of non-conational immigrant social networks was 0.7 (*SD* = 1.3). On average participants reported the most support from Korean ties (*M(SD)* = 2.8(0.8)), the second most from American ties (*M(SD)* = 2.3(2.3)) and the least from non-conational immigrants (*M(SD)* = 0.9(1.4)). This was also observed

for perceived closeness, with participants reporting they were closest to Korean ties (*M(SD)* = 3.5(1.0)), the second closest to American ties (*M(SD)* = 2.8(1.5)) and the least to non-conational immigrants (*M(SD)* = 1.3(.8)). Detailed scores per item of each social network variable presented in Table 8.

In terms of structural social network indicators, the total degree of ego-centrality was 0.63 (*SD* = 0.16), centrality betweenness was 0.07 (*SD* = 0.04) and (weighted) density was 0.33 (*SD* = 0.15) (Table 9).

Table 7. Egocentric social network variables

Size of Social Network	N	Mean (S.D)	Actual Range	Possible Range
Total size of social network	166	12.2 (4.0)	1-15	1-15
Total size of network except family ties	166	9.5 (4.0)	1-15	0-15
Size of American network except family	166	3.2 (3.1)	0-14	0-15
Size of Korean network except family	166	5.7 (3.5)	0-15	0-15
Size of Non-co. network except family	166	0.7 (1.3)	0-9	0-15
Expected Support (Averaging three kinds of support)	N	Mean (S.D)	Actual Range	Possible Range
Total non-familial expected support	166	2.0 (0.8)	0.3-3.6	0-4
Expected support from American ties	166	2.3 (1.2)	0-4	0-4
Expected support from Korean ties	166	2.8 (0.8)	0-4	0-4
Expected support from non-conational ties	166	0.9 (1.4)	0-4	0-4
Perceived Closeness	N	Mean (S.D)	Range	Possible Range
Total perceived closeness	166	2.5 (1.0)	0.3-4.6	0-5
Closeness to American ties	166	2.8 (1.5)	0-5	0-5
Closeness to Korean ties	166	3.5 (1.0)	0-5	0-5
Closeness to Non-co. ties	166	1.3 (1.8)	0-5	0-5

Table 8. Egocentric social network expected support per group

Expected Support from American Ties	N	Mean	SD	Range
Emotional support from American ties	166	2.1	1.2	0-4
Instrumental support from American ties	166	2.3	1.2	0-4
Informational support from American ties	166	2.4	1.3	0-4
Expected Support from Korean Ties	N	Mean	SD	Range
Emotional support from Korean ties	166	2.7	0.8	0-4
Instrumental support from Korean ties	166	2.7	0.9	0-4
Informational support from Korean ties	166	2.9	0.9	0-4
Expected Support from Other Ties	N	Mean	SD	Range
Emotional support from Non-co. ties	166	0.9	1.3	0-4
Instrumental support from Non-co. ties	166	1.0	1.4	0-4
Informational support from Non-co. ties	166	1.0	1.4	0-4

Table 9. Egocentric social network structural index

	N	Mean	SD	Range
Ego centrality (total degree)	161	.63	.16	.22-1.00
(Centrality) Betweenness	161	.07	.04	.00-.25
(Weighted) Density	161	.33	.15	.07-.89

To test the mean differences of the groups depending on global social support and egocentric social network components, Hotelling's T-Squared was used (Table 10). All six pairs of test variables were found that there were significant mean differences at least between two mean values among the three means. Overall, participants had less friends from non-conational immigrant group, lower level of the emotional, instrumental supports received from non-conational immigrant friends than Korean, American friends. This pattern was repeatedly found in the ego-centric social network questions, that is, the size of social network, the expected support, the perceived closeness.

Table 10. Hotelling T2 of multivariate mean test

Test variables	American Mean(SD)	Korean Mean(SD)	Non-conational Mean(SD)	Hotelling F(2,184) for global social support Hotelling F(2, 164) for egocentric SN	*p*
Number of friends	7.0 (10.2)	11.6 (12.4)	3.0 (5.2)	69.94	.000
Emotional Support	3.0 (1.2)	3.8 (1.0)	2.4 (1.2)	102.4	.000
Instrumental support	2.8 (1.2)	3.5 (1.0)	2.2 (1.1)	92.0	.000
Size of social network	3.2 (3.1)	5.7 (3.5)	0.7 (1.3)	217.5	.000
Expected support	2.3 (1.2)	2.8 (0.8)	0.9 (1.4)	118.8	.000
Perceived closeness	2.8 (1.5)	3.5 (1.0)	1.3 (1.8)	112.14	.000

5.2 Bivariate Associations

5.2.1 Correlations between global social supports and demographics/major constructs

When bivariate correlations were estimated, higher income (r = -.14, p <.05), English proficiency (r = -.20, p < .05) were inversely correlated with depressive symptoms while no other demographic variables were significantly correlated with depressive symptoms (See Table 11). A respondent's number of American friends (r = -.21, p < .05), Korean friends (r = -.16, p < .05) were inversely correlated with the depressive symptoms while no significant correlation was found between the number of non-conational immigrant friends and depressive symptoms (r = -.14, n.s.). Emotional support from all three groups were significantly and inversely correlated with the depressive symptoms (American r = -.23, Korean r = -.20, non-conational r = -.27, all p <.05).

Similarly, instrumental support from Koreans (r = -.21, p < .05), Americans (r = -.16, p < .05), and non-conational immigrants (r = -.24, p < .05) inverse correlations with the depressive symptoms. Lastly, acculturative stress was positively correlated with the depressive symptoms (r = .22, p < .05).

Acculturative stress was positively correlations with age (r = .23, p < .05), being female (r = .19, p < .05), having a partner (r = .18, p < .05), and acculturation toward Korean culture (r = .23, p < .05). English proficiency (r = -.20, p < .05) were inversely correlated with the level of acculturative stress. Emotional support (r = -.17, p < .05), instrumental support (r = -.15, p < .05) from American friend and emotional support (r = -.19, p < .05), instrumental support (r = -.20, p < .05) from non-conational immigrant friends were inversely correlated with acculturative stress while no significant correlations were found between instrumental and emotional support from Koreans and the level of the acculturative stress (emotional support r = .03, n.s. ; instrumental support r = .05, n.s.).

Table 11. Correlations among demographics, major constructs and global social support variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Age																			
2. Female	-.03																		
3. Income	.33*	-.02																	
4. Education	-.06	-.13	.23*																
5. Partner	.24*	.03	.47*	-.01															
6. Length of stay	.50*	.03	.25*	-.11	.16*														
7. English prof.	-.21*	-.05	.07	.31*	-.07	-.06													
8. Accult ethnic	.05	.04	.03	-.03	.19*	.03	.20*												
9. Accult main	-.08	-.06	.06	-.01	.03	-.02	.62*	.35*											
10. # Americans	-.12	-.06	.14*	.20*	-.10	.07	.26*	-.04	.27*										
11. # Koreans	.05	-.02	.13	.14	.00	.06	-.01	.19*	.05	.41*									
12. # Non-co.	-.12	-.08	.07	.22*	-.11	.00	.06	-.05	.09	.63*	.45*								
13. ES Americans	-.12	.05	-.04	.21*	-.18*	.07	.36*	-.15*	.30*	.35*	-.02	.24*							
14. IS Americans	-.10	-.02	-.04	.17*	-.16*	.07	.24*	-.16*	.25*	.37*	-.05	.24*	.85*						
15. ES Koreans	.16*	.06	.10	.11	.03	.11	.03	.11	.05	.13	.33*	.17*	.23*	.17*					
16. IS Koreans	.16*	.03	.06	.02	.07	.05	-.14	.16*	-.07	.05	.29*	.12	.10	.21*	.78*				
17. ES Non-co.	-.13	.00	.07	.21*	-.06	-.01	.20*	-.19*	.21*	.29*	.04	.36*	.51*	.47*	.19*	.14*			
18. IS Non-co.	-.04	-.08	.08	.15*	-.02	.02	.16*	-.24*	.20*	.29*	.06	.36*	.43*	.51*	.14	.20*	.87*		
19. Accult. Stress	.23*	.19*	.13	-.03	.18*	.10	-.20*	.23*	-.12	-.16*	-.05	-.14	-.17*	-.15*	.03	.05	-.19*	-.20*	
20. Depressive Sym.	-.08	.06	-.14*	-.07	-.08	-.10	-.20*	-.06	-.08	-.21*	-.16*	-.14	-.23*	-.16*	-.20*	-.21*	-.27*	-.24*	.22*

* indicates significance at the 95% level.
# Americans: Number of American friends
ES: Emotional Support, IS: Instrumental Support
Accult. Stress: Acculturative Stress, Depressive Sym. : Depressive Symptoms

Acculturation toward Korean culture was positively correlated with acculturation toward American culture (r = .35, p < .05), the number of Korean friends (r = .19, p < .05) and instrumental support from Koreans (r = .16, p < .05) but not emotional support from Koreans (r = .11, n.s.). Acculturation toward Korean culture was inversely correlated with emotional (r = -.15, p < .05) and instrumental (r = -.16, p < .05) support from Americans. Lastly, acculturation toward Korean culture was correlated with the higher level of acculturative stress (r = .23, p < .05). Acculturation toward American culture was significantly correlated with supports from Americans (number r = .27, p < .05; emotional support r = .30, p < .05; instrumental support r = .25, p < .05) and supports from non-conational immigrant (emotional support r = .21, p < .05; instrumental support r = .20, p < .05).

Among the global social support measures, the number of friends of each group was highly correlated with the number of friends that the participant reported in every other group (See table 11). The correlation coefficient between the number of American friends and the number of non-conational immigrant friends was large (r = .63, p < .05). Overall, the emotional and instrumental support reported in each group was highly correlated with reports of emotional and instrumental support in other groups. Social supports from Americans were highly correlated with supports from non-conational immigrants (emotional support r = .51, p < .05; instrumental support r = .51, p < .05) while the correlations between social support from Americans and Koreans (emotional support r = .23, p < .05; instrumental support r = .21, p < .05), non-conational immigrants and Koreans (emotional support r = .19, p < .05; instrumental support r = .20, p < .05) were relatively weak.

5.2.2 Correlations between egocentric social network variables and major constructs

Unlike the global social support variables, there was no significant correlation between ego-centric social network variables and depressive symptoms. Only the size of the American social network was significantly (and inversely) correlated with the level of acculturative stress (r = -.25, p < .05) (see Table 12). None of the structural indicators of social network (e.g., ego-centrality, centrality betweenness, density) were significantly correlated with depressive symptoms or acculturative stress.

Age was significantly correlated with the size of social networks per group. Age was inversely correlated with the size of American social network (r = -.19, p < .05) and non-conational immigrant social network (r = -.22, p < .05) while it was positively correlated with the size of Korean social network (r = .24, p < .05). Age was also inversely correlated with expected support from non-conational immigrants (r = -.28, p < .05) and perceived closeness to non-conational immigrants (r = -.26, p < .05). Age was also inversely correlated with perceived closeness to Americans (r = -.16, p < .05). To summarize, younger age was a significant factor in social networks with non-conational immigrants and Americans. Identifying as female was positively correlated with the expected support from Korean (r = .22, p < .05) and perceived closeness to Korean (r = .19, p < .05) while it had no significant correlation with American or non-conational immigrant social ties. Income was positively correlated with high betweenness (r = .16, p < .05) but was not significantly correlated with any other ego-centric social network variables.

Education was correlated with several ego-centric social network variables. Education was inversely correlated with the size of Korean social network (r = -.17, p < .05) but positively correlated with the expected support from Korean ties (r = .22, p < .05) and perceived closeness

to Korean ties (r = .21, p < .05). Education was also positively correlated with both American and non-conational immigrant ties. Specifically, it was highly correlated with the expected support from American ties (r = .29, r<.05) and the perceived closeness to American ties (r = .31, r<.05). Education was also significantly correlated with a participant's expected support from non-conational immigrant ties (r = .18, p < .05) and the perceived closeness to non-conational immigrant ties (r = .17, p < .05). Also, education showed a significant correlation with high betweenness (r = .17, p < .05) and a significant correlation with low density (r = -.23, p < .05).

Having a partner was negatively correlated with all network components of non-conational immigrant ties. Having a partner was inversely correlated with the size of non-conational social network (r = -.24, p < .05), the expected support from non-conational immigrant ties (r = -.26, p < .05) and the perceived closeness to non-conational immigrant ties (r = -.28, p < .05). Similar to the partner status, length of stay was inversely correlated with the number of non-conational immigrant ties (r = -.25, r<.05), the expected support from non-conational immigrant ties (r = -25, p < .05), the perceived closeness to non-conational immigrant ties (r = -.25, p < .05). English proficiency was strongly correlated with all network components of American ties (the size of American network r = .25, p < .05; support r = .36, p < .05; closeness r = .40, p < .05). However, it was not significantly correlated with any network components of non-conational immigrant ties. English proficiency was significantly correlated with high ego-centrality (r = .21, p < .05) and with high betweenness (r = 17, p < .05).

Acculturation toward Korean culture was positively correlated with the size of Korean network (r = 26, p < .05) but not with the support from Korean ties (r = .11, n.s.) nor closeness to Korean ties (r = .08, n.s.). Interestingly, it was inversely correlated with all network components of non-conational immigrant ties (size r = -.29; support -.33; closeness -.32, all p < .05).

Acculturation toward Korean culture was inversely correlated with the size of the American network (r = .-31, p < .05). However, there was no significant correlation between acculturation toward Korean culture and other ego-centric Korean and American social network components. Acculturation toward American culture was positively correlated with all social network components from American ties (size r = .39, p < .05; support r = .26, p < .05; closeness r = .29, p < .05) but was not correlated with any other social network component from Korean and non-conational immigrant ties.

Table 12. Correlations among ego-centric social network variables and primary variables of interest

	Depression	Accult. stress	Age	Female	Income	Edu.	Partner	Length	English	Accult. ethnic	Accult. main
Size of Amer. SN	-.05	-.25*	-.19*	-.05	.05	.09	-.11	-.02	.25*	-.31*	.39*
Size of Kor. SN	-.03	.06	.24*	.11	-.05	-.17*	.07	.02	-.36*	.26*	-.07
Size of Non-co. SN	.05	-.12	-.22*	-.07	-.04	.10	-.24*	-.25*	.13	-.29*	.03
Support Americans	-.10	-.06	-.15	-.05	.08	.29*	-.08	-.07	.36*	-.10	.26*
Support Koreans	-.08	.11	.14	.22*	.10	.22*	.01	-.07	.05	.11	-.02
Support Non-co.	.01	-.10	-.28*	.03	-.04	.18*	-.26*	-.25*	.09	-.33*	.11
Closeness to Ameri.	-.13	-.09	-.16*	-.08	.05	.31*	-.10	-.07	.40*	-.10	.29*
Closeness to Kor.	-.05	.06	.13	.19*	.02	.21*	-.09	-.10	.06	.08	-.06
Closeness to Non-co.	.00	-.13	-.26*	.01	-.06	.17*	-.28*	-.25*	.10	-.32*	.12
Ego-Centrality	-.07	.05	-.04	.04	-.03	.15	.12	-.03	.21*	-.03	.05
Betweenness	-.04	-.10	-.08	-.04	.16*	.17*	-.07	-.11	.17*	.02	-.11
Density	.07	.05	.03	-.13	-.08	-.23*	-.14	.15	-.14	.10	.08

* indicates significance at the 95% level.
Amer. SN: American Social Network; Kor. SN: Korean Social Network; Non-co. SN: Non-conational Social Network
Accult. Stress: Acculturative Stress; Accult. Ethnic: Acculturation toward Ethnic Culture; Accult. Main: Acculturation toward Main Culture

5.2.3 Correlations between global social support and ego-centric social network

Overall, significant correlations were found between two sets of similar measures. First, the number of friends per each group was generally correlated with the size of the network per each group in the ego-centric questions (American $r = .34$, $p < .05$, Korean $r = .36$, $p < .05$, non-conational immigrants $r = .18$, $p < .05$) (see Table 13). The global support measures of each group were correlated with the expected support measure from the ego-centric social network partners (Americans emotional $r = .48$, $p < .05$, instrumental $r = .44$, $p < .05$, Korean emotional $r = .40$, $p < .05$, instrumental $r = .33$, $p < .05$, non-conational immigrant emotional $r = .39$, $p < .05$, instrumental $r = .32$, $p < .05$). Perceived closeness from the ego-centric questions were correlated with the emotional support from the global social support (American $r = .56$, Korean $r = .36$, non-conational immigrant $r = .38$, all $p < .05$) and instrumental support (American $r = .45$, Korean $r = .27$, non-conational immigrant $r = .30$, all $p < .05$).

In terms of network structural indicators of the ego-centric social network, ego-centrality was positively correlation with the number of non-conational friends ($r = .16$, $p < .05$) while no significant correlations were found between ego-centrality and the number of friends that the participants reported in the other two group. Also, ego-centrality was positively correlated with reported emotional support ($r = .20$, $p < .05$) and instrumental support ($r = .16$, $p < .05$) from Korean friends and emotional support ($r = 21$, $p < .05$) from non-conational friends. Betweenness showed generally inverse correlations with all of the global social support components. There were no significant correlations between density index and global social support components.

Unlike the correlation patterns among the global social support measures, ego-centric social network components presented a relatively clear differentiated pattern depending on the groups, especially, between Korean ties and American ties. The number of friends reported in each

group in the global social support measure was correlated with each other (American-Korean r = .41; American- non-conational immigrants r = .63; Korean- non-conational immigrants r = .45, all $p < .05$) (see Table 12). However, the size of Korean network and American network showed a clear inverse correlation (r = -.31, $p < .05$) while the size of non-conational network did not present any significant correlations with the size of Korean or American network. The amount of support that participants expected to receive from each group was, however, correlated. Expected support from non-conational ties and from American ties were positively and strongly correlated (r = .66, $p < .05$) while the expected support from Korean ties and from American ties were positively but weakly correlated (r = .18, $p < .05$). Even for the perceived closeness to non-conational ties was positively correlated with the perceived closeness to American ties (r = .23, $p < .05$), however, there were no significant correlations between the expected support from Korean ties and from non-conational ties (r = .10, n.s.) nor between perceived closeness to Korean ties and to non-conational ties (r = .13, n.s.).

Table 13. Correlations between global social support and egocentric social network variables

Global Social Network	# American	# Korean	# Non-co.	ES Americans	ES Koreans	ES Non-co.	IS Americans	IS Koreans	IS Non-co.
Ego-centric Social Network									
Size of Amer. SN	.34*	-.07	.16*	.48*	-.05	.23*	.47*	-.11	.27*
Size of Kor. SN	-.11	.36*	.03	-.21*	.31*	-.14	-.18*	.33*	-.10
Size of Non-co. SN	.12	-.08	.18*	.13	.02	.30*	.13	-.03	.27*
Support Americans	.21*	-.02	.07	.55*	.17*	.39*	.44*	.04	.32*
Support Koreans	.00	.12	.11	.10	.40*	.16*	.03	.33*	.12
Support Non-co.	.16*	-.04	.23*	.24*	-.01	.39*	.25*	-.01	.32*
Closeness to Americans	.21*	.01	.11	.56*	.22*	.42*	.45*	.04	.35*
Closeness to Koreans	.00	.12	.13	.10	.36*	.12	.04	.27*	.06
Closeness to Non-co.	.18*	-.02	.24*	.26*	-.01	.38*	.26*	-.02	.30*
Ego-Centrality	.10	-.01	.16*	.13	.20*	.21*	.08	.16*	.15
Betweenness	-.15	-.15	-.15	-.13	-.18*	-.07	-.17*	-.15	-.16*
Density	-.03	-.06	.02	-.14	-.08	-.04	-.10	.01	-.02

* indicates significance at the 95% level.
# American: Number of American friends: response from open-ended question such that “how many American friends do you have?”
ES: Emotional Support, IS: Instrumental Support
Ameri. SN: American Social Network: summing up the number of alters whose nationality is American in the ego-centric social network questions
Non-co. : Non-conational immigrants

Table 14. Correlations among egocentric social network variables

	1	2	3	4	5	6	7	8	9	10	11
1. Size of Amer. SN											
2. Size of Kor. SN	-.31*										
3. Size of Non-co. SN	.06	-.09									
4. Support Americans	.48*	-.21*	.15								
5. Support Koreans	-.14	.26*	.08	.18*							
6. Support Non-co.	.10	-.12	.66*	.23*	.10						
7. Closeness to Ameri.	.45*	-.20*	.17*	.94*	.16*	.24*					
8. Closeness to Kor.	-.16	.21*	.11	.10	.86*	.11	.16*				
9. Closeness to Non-co.	.09	-.10	.68*	.21*	.08	.97*	.23*	.13			
10. Ego-Centrality	-.16*	-.25*	-.03	.03	.32*	.05	.11	.44*	.05		
11. Betweenness	-.18*	-.28*	.04	.01	.11	.10	.03	.15	.07	.15	
12. Density	-.23*	-.23*	-.27*	-.25*	-.15	-.26*	-.27*	-.11	-.26*	.34*	-.12

* indicates significance at the 95% level.
Ameri. SN: American Social Network, Kor. SN: Korean Social Network, Non-co.SN: Non-conational Social Network

5.3 Characteristics of the "Non-conational Immigrant" Social Ties

As reviewed in the above descriptive and bivariate statistics and additional information collected from the survey, some unique characteristics of the non-conational immigrant social ties were found. Overall, participants had the fewest friends of non-conational immigrant, lowest level of the emotional, instrumental support received from non-conational immigrant friends among the three groups (Korean, American, non-conational friends).

In relation to the demographics, the correlation analysis revealed that the people who had social ties from non-conational immigrant group tended to be younger (r = -.22, p < .05), more educated (r = .22, p < .05), single (r = .24, p < .05), and shorter length of stay in the U.S. (r = .25, p < .05). Generally, the social network components from non-conational immigrant ties were highly correlated with American ties. For instance, the higher significant correlations were found in the correlation coefficients, that is, the number of non-conational immigrant friends and American friends (r = .63, p < .05), the level of emotional support (r = .46, p < .05) and instrumental support (r = .49, p < .05). The people who had more American friends also tend to be younger (r = .19, p < .05) and more educated (r = .20, p < .05). However, only people who had more American friends were significantly associated with the higher level of English proficiency (r = .26, p < .05), and the lower level of acculturative stress (r = -.16, p < .05). These correlations indicate that participants having friends or social ties from non-conational immigrants are more likely to be graduate students who are not yet married and have lived in the U.S. for a shorter length of time. Table 15 shows the detailed nationality composition of this non-conational immigrant group. Somewhat expectedly, the most frequently mentioned nationality of the non-

conational immigrant group was “Chinese” (n=24, 21.4%). And the next nationality is “Asian Indian” (n=17, 15.2%). Including “Japanese” (n=10, 8.9%), and “Other Asian” (n=6, 5.4%), Asian group consists of over 66% of the non-conational immigrant group friends. Except for the Asian group, “European” (n=17, 15.2%), “Latin American including Mexican” (n=11, 9.8%) made up the non-conational immigrant group friends.

Table 15. Nationality of non-conational immigrant group friends

Nationality	*N*	%
Chinese	24	21.4
Asian Indian	17	15.2
European	17	15.2
Japanese	10	8.9
Other Latin American	8	7.1
Other Asian	6	5.4
African	6	5.4
Filipino	5	4.5
Canadian	5	4.5
Middle Asian	5	4.5
Vietnamese	3	2.7
Mexican	3	2.7
Other	3	2.7
Total	112	100

In terms of the mode of acculturation, participants who have more global social support and social network ties with non-conational immigrants were more likely to acculturate into the American culture than the Korean culture. To focus on this feature, the correlation table to pick up this part was repeated in Table 16.

Table 16. Correlations between social network and the mode of acculturation

		Acculturation toward Korean culture	Acculturation toward American culture
Global Social Support	# American friends	-.04	**.27***
	# Korean friends	**.19***	.05
	# Non-co. friends	-.05	.09
	ES Americans	**-.15***	**.30***
	IS Americans	**-.15***	**.25***
	ES Koreans	**.19***	.13
	IS Koreans	**.23***	.00
	ES Non-co.	-.06	**.28***
	IS Non-co.	-.09	**.28***
Ego-centric Social Network	Size of American SN	**-.31***	**.39***
	Size of Korean SN	**.26***	-.07
	Size of Non-co. SN	**-.29***	.03
	E. Support Americans	-.10	**.26***
	E. Support Koreans	.11	-.02
	E. Support Non-co.	**-.33***	.11
	Closeness to Americans	-.10	**.29***
	Closeness to Koreans	.08	-.06
	Closeness to Non-co.	**-.32***	.12

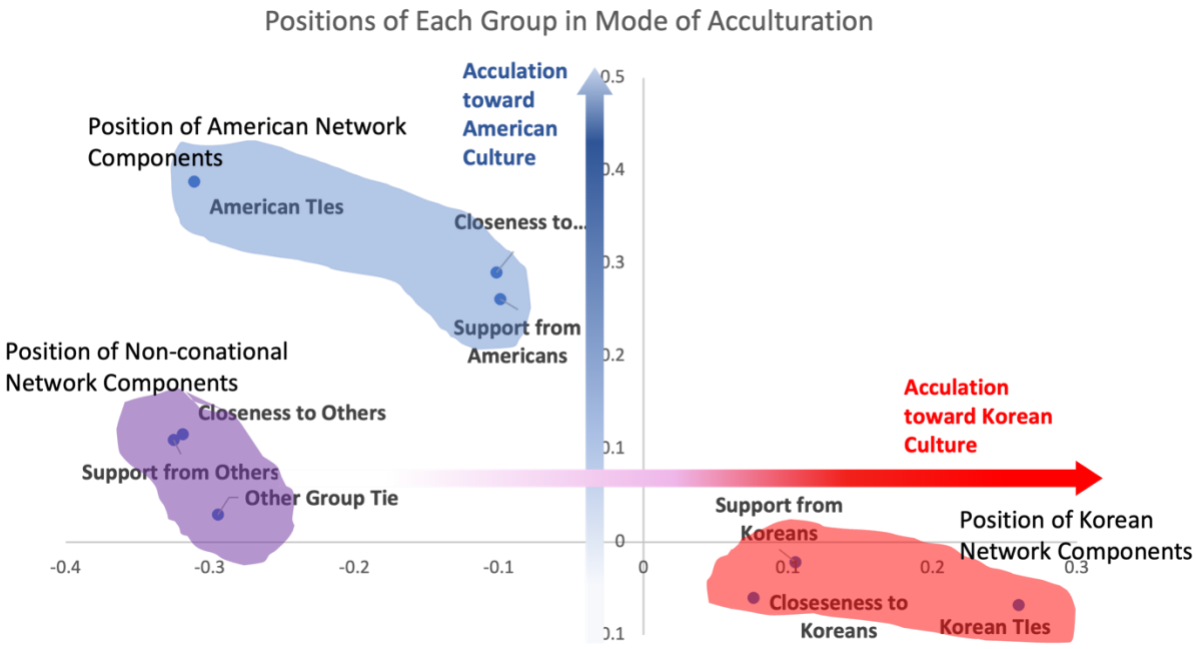
* indicates significance at the 95% level.
# American: Number of American friends, # Korean: Number of Korean friends, # Non-co.: Number of Non-conational friends
ES: Emotional Support, IS: Instrumental Support
E. Support: Expected Support
Ameri. SN: American Social Network; Kor. SN: Korean Social Network; Non-co.SN; Non-conational Social Network

As expected, the number of American friends was positively correlated with the acculturation toward American culture (r = .27, p < .05) while the number of Korean friends was positively correlated with the acculturation toward Korean culture (r = .19, p < .05). However, the number of non-conational immigrant friends did not show any significant correlation with any mode of acculturation (see table 11.). Received emotional support (r = .28, p < .05) and

instrumental support ($r = .28$, $p < .05$) from non-conational immigrants were positively correlated with the acculturation into American culture but not with the acculturation into Korean culture. The correlations between received support from non-conational immigrants and the acculturation toward Korean culture were not significant.

Compared to the global social network questions, the ego-centric social network questions were more precise, allowing us to see a clearer depiction of the characteristics of non-conational immigrants' social network. The number of non-conational immigrant social ties listed by participants was inversely correlated with the acculturation toward Korean culture ($r = -.29$, $p < .05$) although it was not significantly correlated with the acculturation toward American culture ($r = .03$, n.s.). Both reported support from non-conational immigrant ties ($r = -.33$, $p < .05$) and the perceived closeness to non-conational immigrant ties ($r = -.32$, $p < .05$) were inversely correlated with the acculturation toward Korean culture. When placed on a two-dimensional graph, it is clear to see that Korean social ties are related to more acculturation into Korean culture, more American social ties are related to more acculturation into American culture. In the case of more non-conational immigrant ties, it is related to less identification with American culture but the least identification with Korean culture (see Figure 9).

Figure 9. Relative position of each group in relation to the mode of acculturation



Red, blue, and purple indicates approximate positions (correlation coefficients) of Korean, American and non-conational immigrant network, respectively with the two modes of acculturation.

To summarize, the people who had more and close social ties with non-conational immigrants were positioned somewhere in the middle point in terms of the acculturation toward American culture between the people who had more and close Korean social ties and the people who had more and close American social ties. In terms of the acculturation toward Korean culture, people who had more and close non-conational immigrant ties stand on the more distant position from the acculturation toward Korean culture than the people who had more and close American social ties.

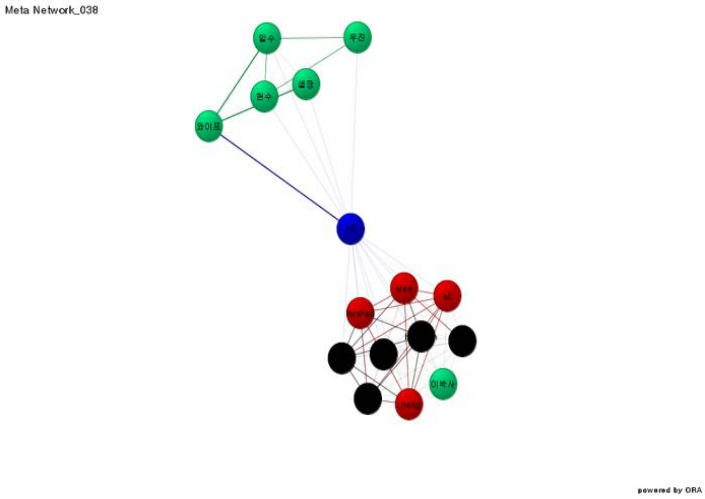
Additionally, actual social network maps of non-conational captured by ORA are presented to visualize the shape and structure of participants' social networks in figure 2. Sixty five percent of the sample reported no ties with non-conational immigrants while 21% reported one and 13.8% reported two or more (see Table 17). Four kinds of patterns of social ties with non-conational

immigrants were observed. In the first pattern, non-conational ties were tightly related to American ties with a clear separation from Korean ties (Figure 10). Second, the non-conational ties were mainly related with American ties, however, they are also somewhat related with the Korean ties (Figure 11). Third, the non-conational ties were evenly related with American and Korean ties (Figure 12). Lastly, most commonly, the non-conational social ties were sporadically or solely positioned without any interconnectedness with other American or Korean ties (Figure 13). As reviewed above, unlike the structural characteristics of the American and Korean social network, no correlations were found between the size of non-conational network and ego-centrality (total degree) and (centrality) betweenness while the size of non-conational network was inversely correlated with the density.

Table 17. Distribution of size of non-conational social network

Size	*N*	%
0	108	65.1
1	35	21.1
2	12	7.2
3	4	2.4
4	2	1.2
5	3	1.8
6	1	0.6
9	1	0.6
Total	166	100

Figure 10. Pattern 1 of non-conational social network



Size of non-conational network : 4

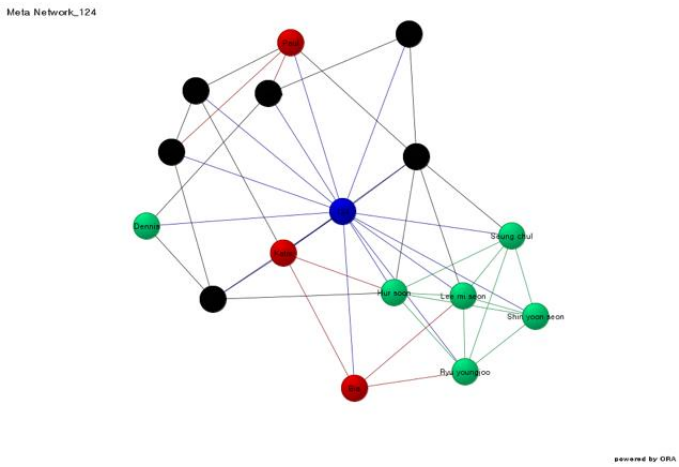
Density: 0.269

Ego-Centrality: 0.378

Betweenness: 0.042

Red: non-conational alter
Green: Korean alter
Black: American alter

Figure 11. Pattern 2 of non-conational social network



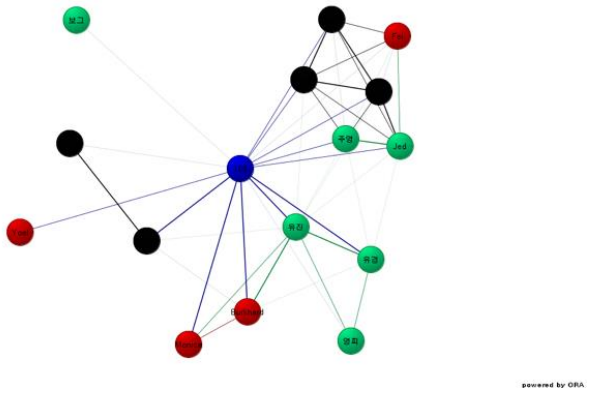
Size of non-conational network : 3

Density: 0.183

Ego-Centrality: 0.444

Betweenness: 0.205

Figure 12. Pattern 3 of non-conational social network



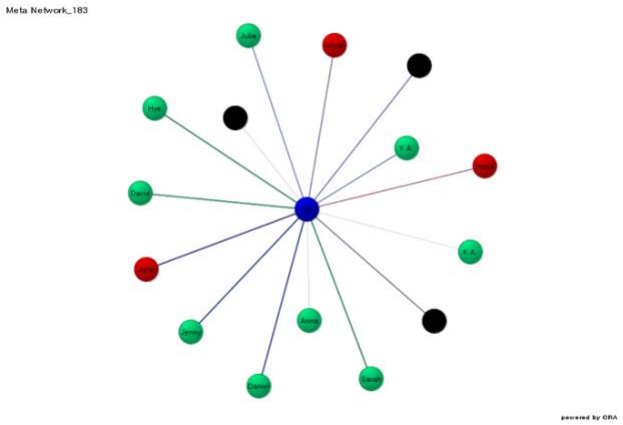
Size of non-conational network : 4

Density: 0.247

Ego-Centrality: 0.689

Betweenness: 0.063

Figure 13. Pattern 4 of non-conational social network

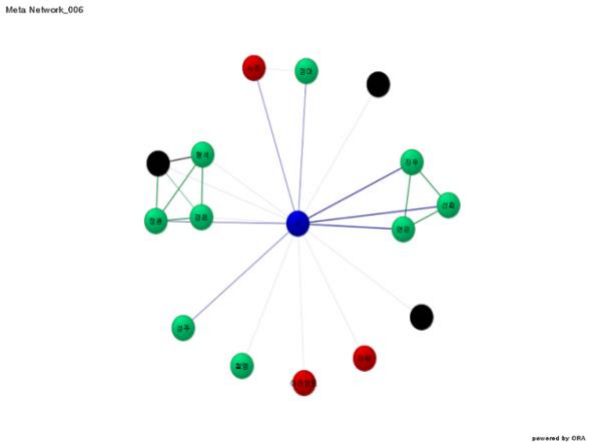


Size of non-conational network : 3

Density: 0.092

Ego-Centrality: 0.733

Betweenness: 0.063



Size of non-conational network : 3

Density: 0.478

Ego-Centrality: 0.778

Betweenness: 0.024

5.4 Hypothesis Testing – Regression Model

5.4.1 Hypothesis 1: Main effect of acculturative stress on depressive symptoms

Acculturative stress is associated with a higher level of depression among Korean first-generation immigrants in the U.S. controlling for demographic or immigration context.

To test the first hypothesis, Model one was estimated to examine the relationship of acculturative stress on depressive symptoms controlling for demographic and immigrant contexts (see Table 18). Model 1 was statistically significant ($F(10, 179) = 2.65$, $R^2 = .129$, $p < .01$) and accounted for 13% of the variance in depression in the sample. According to this model, acculturative stress was significantly and positively associated with the level of the depressive symptoms (*B(SE)* = .11(.03), $p < .01$) such that when the acculturative stress increased by 1 point, the average scores of the depressive symptoms increased by .11 point. The standardized beta coefficient ($\beta = .26$) implies that with an increase of one standard deviation in the level of acculturative stress, the depressive symptoms increased by .26 standard deviations of the depressive symptoms. Along with the acculturative stress, English proficiency (*B(SE)* = -.14(.04), $\beta = -.23$, $p < .05$) was significantly and inversely associated with the level of the depressive symptoms in this model. No other control variables were related to depression in the model. Based on the results, hypothesis 1 was supported.

Table 18. Model 1 - Prediction of depressive symptoms – acculturative stress – main effect

	Model 1	
	B(S.E.)	β
Constant	3.91(2.9)	
1.Control variables		
Age (Category)	-.37(.40)	-.08
Female	.09(.58)	.01
Education	.08(.29)	.02
Income	-.18(.14)	-.11
Partnered	-.48(.80)	-.05
Length of Stay	-.03(.04)	-.06
English Proficiency	-.14(.06)*	-.23*
Acculturation Ethnic	-.05(.04)	-.10
Acculturation Main	.07(.06)	.12
2.Acculturative Stress		
Acculturative stress	.11(.03)**	.26**
N	190	
F	2.65**	
R^2	.129	

*, ** indicates significance at the 95%, 99% level, respectively.

5.4.2 Hypothesis 2: Main effect of global social supports on depressive symptoms

Global social support components (e.g., the number of friends, received emotional support, received instrumental supports) are associated with a lower level of depression controlling for acculturative stress, demographic and immigration context.

Hypothesis 2a: The number of friends is associated with a lower level of depression

Hypothesis 2b: Received emotional support is associated with a lower level of depression

Hypothesis 2c: Received instrumental support is associated with a lower level of depression.

Model two was estimated to test the relationship between global social support and depressive symptoms (H2) (see Table 19). In the Model 2, the reported total number of friends, received emotional support, and received instrumental support were separately entered. When the total number of friends was entered into the model, it slightly increased the amount of variance in depression explained from the Model 1 (R^2 change .024, $p < .05$). The total number of friends was significantly inversely associated with the depressive symptoms (*B(SE)* = -.03(.01), $p < .05$, β = -.17), such that one additional friend was associated with a .03 decrease in depressive symptoms. When the mean of emotional supports from all groups was entered into the model ($F(11, 178) = 4.58$, $R^2 = .221$, $p < .001$), it was significantly associated with depressive symptoms (*B(SE)* = -1.5(.33), $p < .001$, β = -.34). Next, the mean effect of the instrumental supports from all groups ($F(11,178) = 3.94$, $R^2 = .196$, $p < .001$) was examined. Similar with the emotional supports, the total of the instrumental supports was also significantly associated with the lower level of depressive symptom (*B(SE)* = -1.25(.32), $p < .001$, β = -.27). Lastly, when all three variables were entered together ($F(13, 176) = 4.01$, $R^2 = .23$, $p < .001$), only emotional support was significant (*B(SE)*= -1.3(.57), β = -.29, $p < .05$) controlling for the number of friends, instrumental supports, acculturative stress, demographic, and immigration context. These results suggest that there is a relationship between global social support and depression supporting hypothesis two.

Table 19. Model 2 - Prediction of depressive symptoms – global social supports- main effect

Model 2	Number of Friends		Emotional Support		Instrumental Support		*Multiple*	
	B (S.E.)	β	*B* (S.E.)	β	*B* (S.E.)	β	*B* (S.E.)	β
Constant	3.2(2.9)		7.65(2.42)**		7.68(2.49)**		7.47(2.47)*	
1.Control variables								
Age (Category)	-.45(.40)	-.10	-.41(.38)	-.09	-.37(.39)	-.08	-.45(.38)	-.10
Female	.08(.57)	.01	.42(.56)	.05	.17(.56)	.02	.37(.56)	.05
Education	.22(.29)	.06	.39(.28)	.11	.28(.28)	.08	.45(.29)	.12
Income	-.13(.14)	-.08	-.18(.13)	-.11	-.18(.14)	-.11	-.15(.14)	-.09
Partnered	-.77(.80)	-.08	-.76(.76)	-.08	-.59(.77)	-.06	-.90(.77)	-.09
Length of Stay	-.02(.04)	-.04	.00(.04)	-.01	-.01(.04)	-.03	.00(.04)	.00
English Proficiency	-.15(.06)*	-.26*	-.13(.06)*	-.21*	-.15(.06)*	-.25*	-.14(.06)*	-.23*
Acculturation Ethnic	-.04(.04)	-.08	-.09(.04)*	-.17†	-.08(.04)†	-.15†	-.08(.04)†	-.15†
Acculturation Main	.10(.06)	.16	.13(.06)*	.21*	.12(.06)*	.19*	.14(.06)*	.23*
2.Acculturative Stress								
Acculturative stress	.10(.03)**	.23**	.10(.03)**	.23**	.10(.03)**	.23**	.09(.03)**	.22**
3.Global SN								
Total # of Friends	-.03(.01)*	-.17*					-.02(.01)	-.10
Total E. Support			-1.50(.33)***	-.34***			-1.30(.57)*	-.29*
Total I. Support					-1.25(.32)***	-.27***	-.12(.55)	.03
N	190		190		190		190	
F	2.92**		4.58***		3.94***		4.01***	
R^2	.153		.221		.196		.229	

†, *, **, *** indicates significance at the 90%, 95%, 99%, 99.9% level, respectively.

# of Friends: Number of Friends, E. Support: Emotional Support, I. Support: Instrumental Support

Multiple model includes all global social network components, that is, total # of friends, total emotional support, total instrumental support

5.4.3 Hypothesis 3: Main effects of ego-centric social network on depressive symptoms

Ego-centric social network components (e.g., network size, expected support from alters, perceived closeness to alters) are associated with a lower level of depression controlling for acculturative stress, demographic and immigration context and associations remain after accounting for and network structure (e.g., ego-centrality, betweenness, density).

Hypothesis 3a: The network size is associated with a lower level of depression

Hypothesis 3b: Expected support from alters is associated with a lower level of depression

Hypothesis 3c: Perceived closeness to alters is associated with a lower level of depression

Hypothesis 3d: The network size is associated with a lower level of depression accounting for structural components (e.g., ego-centrality, betweenness, density).

Hypothesis 3e: Expected support from alters is associated with a lower level of depression accounting for structural components (e.g., ego-centrality, betweenness, density).

Hypothesis 3f: Perceived closeness to alters is associated with a lower level of depression accounting for structural components (e.g., ego-centrality, betweenness, density).

Model three was estimated to examine the main effects of the ego-centric social network components on depressive symptoms (see Table 20). In the Model 3, the ego-centric social network questions including the number of non-familial social ties, expected support from non-familial alters, perceived closeness to non-familial alters were entered separately and then simultaneously. None of the ego-centric social network variables were significantly associated with the depressive symptoms when controlling for the acculturative stress, demographic variables, and each other. The relationship between ego-centric social network variables and the

depressive symptoms remained not significantly after accounting for network structure indicators (e.g., ego-centrality, betweenness, density) (see Table 21). Adding the network structural indicators did not increase the model's adjusted R^2 in each model testing the main effects of ego-centric network on depressive symptoms so that these indicators were omitted in following Model 5 testing the main effects of each group's egocentric network component on depressive symptoms. Overall, no support was found for this study's third hypothesis that social network components are negatively related to depressive symptoms.

Table 20. Model 3-Prediction of depressive symptoms – egocentric social network - main effect

Model 3	Size of Social Ties		Expected Support		Perceived Closeness		*Multiple*	
	B (S.E.)	β	*B (S.E.)*	β	*B (S.E.)*	β	*B (S.E.)*	β
Constant	8.19(3.54)*		7.25(3.88)†		7.23(3.9)†		7.55(3.95)†	
1.Control variables								
Age (Category)	-.29(.41)	-.06	-.33(.41)	.42	-.31(.41)	-.07	-.30(.42)	-.07
Female	-.08(.60)	-.01	-.02(.60)	.97	-.04(.60)	-.01	-.01(.60)	.00
Education	-.11(.30)	-.03	-.01(.31)	.96	-.02(.31)	-.01	-.02(.32)	-.01
Income	-.13(.14)	-.08	-.12(.14)	.39	-.13(.14)	-.08	-.12(.14)	-.08
Partnered	-.17(.82)	-.02	-.29(.83)	.72	-.34(.83)	-.04	-.35(.84)	-.04
Length of Stay	-.03(.04)†	-.07†	-.04(.04)	.38	-.04(.04)	-.08	-.04(.04)	-.09
English Proficiency	-.12(.07)	-.18	-.11(.07)	.12	-.10(.07)	-.15	-.11(.07)	-.16
Acculturation Ethnic	-.14(.05)**	-.21**	-.15(.05)**	.01**	-.15(.05)**	-.22**	-.15(.05)**	-.22**
Acculturation Main	.06(.07)	.07	.05(.07)	.43	.05(.07)	.07	.06(.07)	.08
2.Acculturative Stress								
Acculturative stress	.12(.04)**	.28**	.12(.03)**	.30**	.12(.03)***	.30***	.12(.04)**	.29**
4. Ego-Centric SN								
Total Size of Social Network	-.06(.07)	-.07					-.04(.07)	-.05
Total Expected Support			-.52(.39)	-.11			-.19(.95)	-.04
Total Perceived Closeness					-.42(.31)	-.12	-.24(.75)	-.07
N	164		164		164		164	
F	2.53**		2.98**		2.98**		2.53**	
R^2	.180		.177		.178		.180	

†, *, ** indicates significance at the 90%, 95%, 99% level, respectively.

Multiple model includes all ego-centric social network components simultaneously, that is total size of social network, total expected support, total perceived closeness.

Table 21. Model 3 -Prediction of depressive symptoms – egocentric social network - main effect, NSI Control

Model 3 controlling for NSI	Size of Social Ties		Expected Support		Perceived Closeness	
	B (S.E.)	β	*B (S.E.)*	β	*B (S.E.)*	β
Constant	8.28(3.74)†		6.68(4.25)		6.6(4.3)*	
1.Control variables						
Age (Category)	-.26(.42)	-.06	-.29(.42)	-.07	-.27(.42)	-.07
Female	-.06(.63)	-.01	.13(.63)	.02	.10(.63)	.01
Education	-.03(.32)	-.01	.05(.33)	.01	.03(.33)	.01
Income	-.14(.15)	-.10	-.15(.15)	-.09	-.15(.15)	-.09
Partnered	-.38(.87)	.04	-.47(.88)	-.05	-.48(.88)	.05
Length of Stay	-.03(.04)	-.08	-.04(.04)	-.09	-.04(.04)	-.09
English Proficiency	-.10(.07)	-.15	-.09(.07)	-.12	-.08(.07)	-.12
Acculturation Ethnic	-.15(.05)**	-.22**	-.15(.05)**	-.23**	-.15(.05)**	-.23**
Acculturation Main	.06(.08)	.07	.05(.07)	.06	.05(.07)	.06
2.Acculturative Stress						
Acculturative stress	.12(.04)**	.29**	.13(.05)***	.32***	.13(.04)***	.31***
4. Ego-Centric SN						
Total Size of Social Network	-.09(.10)	-.10				
Total Expected Support			-.49(.43)	-.10		
Total Perceived Closeness					-.36(.35)	-.10
7. Structural Network Index						
Ego-centrality	-3.21(2.0)	-.14	-2.61(2.02)	-.12	-2.44(2.07)	-.11
Betweenness	2.63(9.5)	.03	6.79(8.35)	.07	6.73(8.36)	.07
Density	1.57(2.6)	.07	2.04(2.26)	.09	2.01(2.29)	.09
N	159		159		159	
F	2.38**		2.42**		2.40**	
R^2	.188		.191		.189	

†, *, **,*** indicates significance at the 90%, 95%, 99%, 99.9% level, respectively.

NSI: Network Structural Index (e.g., ego-centrality, betweenness, density)

5.4.4 Hypothesis 4: Main effect of the global social supports from 'non-conational immigrant group' on depressive symptoms

Global social support components (e.g., the number of friends, received emotional support, received instrumental supports) from non-conational immigrants are associated with a lower level of depression controlling for acculturative stress, demographic or immigration context.

Hypothesis 4a: The number of non-conational immigrant friends is associated with a lower level of depression.

Hypothesis 4b: Received emotional support from non-conational immigrants is associated with a lower level of depression.

Hypothesis 4c: Received instrumental support from non-conational immigrants is associated with a lower level of depression.

Model four was estimated to examine the relationship between global social support received from non-conational immigrants on depressive symptoms (see Table 22). The association between the number of non-conational immigrant friends a participant reported and depressive symptoms was marginally significant (*B(SE)* = -.09, p = .074, β=-.13) (F(11, 178) = 2.74, p < .01, R^2 =.145). When the number of friends the participants reported in all groups, American and Korean, were entered into the model, the number of non-conational immigrants was not significantly related to depressive symptoms (*B(SE)* = -.02 (.07), p = .72) (F(13, 176) = 2.54, p < .01, R^2 = .158). Emotional supports from non-conational immigrant friends were significantly and inversely associated with the level of the depressive symptoms (*B(SE)* = -.85(.23), p < .001, β = -

.28) ($F(11, 174) = 3.61$, $p < .001$, $R^2 = .186$) and remained significantly related (*B(SE)* = -.63(.25), $p < .05$, $\beta = -.21$) when the emotional supports from Korean friends and American friends were included in the model. Instrumental supports from non-conational immigrant friends were significantly and inversely associated with the level of the depressive symptoms (*B(SE)* = -.80(.26), $p < .05$, $\beta = -.24$) ($F(11, 174) = 3.21$, $p < .001$, $R^2 = .169$) and also remained significantly related (*B(SE)* = -.09(.27), $p < .05$, $\beta = -.17$) when instrumental supports from Korean and American friends were included. The relationship between instrumental support from Korean friends and the level of depressive symptoms was also statistically significant (*B(SE)* = -.56(.27), $p < .05$, $\beta = -.16$). Hypothesis 4, therefore, was partially supported.

Table 22. Model 4- Prediction of depressive symptoms – global social network model from non-conational - main effect

Model 4	Number of Friend -Only Non-co.		Number of Friend -Multiple		Emotional Support -Only Non-co.		Emotional Support -Multiple		Instrumental Support - Only Non-co.		Instrumental Support -Multiple	
	B (S.E.)	β	*B (S.E.)*	β	*B (S.E.)*	β	*B (S.E.)*	β	*B (S.E.)*	β	*B (S.E.)*	β
Constant	4.99(2.5)*		3.18(2.89)		4.8(2.96)*		5.3(3.0)†		5.17(3.0)*		6.23(3.04)*	
1.Control variables												
Age (Category)	-.47(.40)	-.10	-.52(.41)	-.11	-.44(.40)	-.10	-.38(.39)	-.08	-.34(.39)	-.08	-.26(.40)	-.06
Female	.06(.58)	.01	.07(.58)	.01	.32(.57)	.04	.47(.57)	.06	.16(.57)	.02	.21(.57)	.03
Education	.20(.30)	.06	.22(.30)	.06	.32(.29)	.09	.41(.28)	.12	.25(.28)	.07	.29(.29)	.08
Income	-.16(.14)	-.10	-.12(.14)	-.08	-.13(.14)	-.05	-.16(.14)	-.10	-.15(.14)	-.09	-.16(.14)	-.10
Partnered	-.67(.80)	-.07	-.79(.80)	-.08	-.53(.78)	-.01	-.63(.77)	-.06	-.39(.79)	-.04	-.38(.78)	-.04
Length of Stay	-.02(.04)	-.04	-.01(.04)	-.03	-.01(.04)	-.04	.00(.04)	-.01	-.01(.04)	-.02	-.01(.04)	-.02
English Proficiency	-.16(.06)*	-.26*	-.15(.06)*	-.25*	-.12(.06)*	-.19*	-.11(.06)*	-.18†	-.12(.06)*	-.20*	-.14(.06)*	-.22*
Acculturation Ethnic	-.05(.04)	-.10	-.05(.04)	-.10	-.10(.04)	-.16*	-.09(.05)†	-.16*	-.10(.05)*	-.17*	-.07(.05)	-.12
Acculturation Main	.09(.06)	.15	.10(.06)†	.17†	.13(.06)	.15†	.12(.06)*	.18*	.10(.06)	.15	.10(.06)	.14
2.Acculturative Stress												
Acculturative stress	.10(.03)**	.24**	.10(.03)**	.23**	.10(.03)**	.24**	.10(.03)**	.25**	.10(.03)**	.25**	.10(.03)**	.25**
5.Global SN per group												
# American Friends			-.05(.04)	-.13								
# Korean Friends			-.02(.03)	-.05								
# Non-co. Friends	-.09(.05)†	-.13†	-.02(.07)	-.03								
E. Support American							-.35(.28)	-.12				
E. Support Koreans							-.43(.27)	-.12				
E. Support Non-co.					-.85(.23)***	-.28***	-.63(.25)*	-.21*				
I. Support American											-.09(.27)	-.03
I. Support Koreans											-.56(.28)*	-.16*
I. Support Non-co.									-.80(.26)**	-.24*	-.59(.29)*	-.17*
N	190		190		186		186		186		186	
F	2.74**		2.54**		3.61***		3.50***		3.21***		3.13**	
R^2	.145		.158		.186		.209		.169		.191	

†, *, ** indicates significance at the 90%, 95%, 99% level, respectively. # of Friends: Number of Friends; E. Support: Emotional Support; I. Support: Instrumental Support

5.4.5 Hypothesis 5: Main effect of egocentric social networks from 'non-conational immigrant group' on depressive symptoms

Egocentric social network components (e.g., network size, expected support, perceived closeness) from non-conational alters are associated with a lower level of depression controlling for acculturative stress, demographic or immigration context.

Hypothesis 5a: The network size of non-conational alters is associated with a lower level of depression.

Hypothesis 5b: Expected support from non-conational alters is associated with a lower level of depression.

Hypothesis 5c: Perceived closeness to non-conational immigrants is associated with a lower level of depression .

Model five was estimated to test the main effects of each egocentric social network component (e.g., size of non-conational network, expected support from non-conational social ties, perceived closeness to non-conational social ties) on the depressive symptoms controlling for the acculturative stress and other demographic variables. None of the egocentric social network components from non-conational social ties was significantly associated with the depressive symptoms (see Table 23). The size of non-conational social ties (*B(SE)* = -.07(.09), p = .97), Korean social ties (*B(SE)* = .06(.10), p = .41) and American social ties (*B(SE)*=-.07(.09), p = .54) were not significantly related to depressive symptoms. The expected support from non-conational social ties (*B(SE)* = -.17(.23), p = .44), Korean social ties (*B(SE)* = -.15(.25), p = .55), and American social ties (*B(SE)* = -.22(.36), p = .54) were not significantly associated with the

depressive symptoms. Lastly, the perceived closeness to non-conational social ties (*B(SE)* = -.13(.17), *p* = .46), Korean social ties (*B(SE)* = -.05(.29), *p* = .88), and American social ties (*B(SE)* = -.21(.20), *p* = .31) were not significantly associated with the depressive symptoms. Hypothesis 5, therefore, was not supported.

Table 23. Model 5- Prediction of depressive symptoms – ego-centric social network model, per Group - main effect

Model 5	Size of Social Ties - Only Non-co.		Size of Social Ties -Multiple		Expected Support - Only Non-co.		Expected Support -Multiple		Perceived Closeness - Only Non-co.		Perceived Closeness -Multiple	
	B (S.E.)	β	*B (S.E.)*	β	*B (S.E.)*	β	*B (S.E.)*	β	*B (S.E.)*	β	*B (S.E.)*	β
Constant	7.84(3.94†		7.7(4.0)†		7.62(3.9)†		7.3(3.9)†		7.6(3.9)†		7.09(3.94)†	
1.Control variables												
Age (Category)	-.31(.41)	-.07	-.26(.44)	-.06	-.36(.41)	-.08	-.32(.43)	-.07	-.34(.41)	-.08	-.35(.43)	-.08
Female	-.14(.60)	-.02	-.06(.61)	-.01	-.10(.60)	-.01	-.00(.62)	-.00	-.11(.60)	-.01	-.10(.62)	-.01
Education	-.12(.31)	-.04	-.11(.31)	-.03	-.08(.31)	-.02	-.01(.32)	-.00	-.08(.31)	-.02	.02(.32)	.01
Income	-.13(.14)	-.09	-.13(.14)	-.09	-.12(.14)	-.08	-.12(.14)	-.08	-.12(.14)	-.08	-.13(.14)	-.08
Partnered	-.09(.83)	-.01	-.13(.84)	-.01	-.26(.83)	-.03	-.29(.84)	-.03	-.26(.83)	.03	-.31(.84)	-.03
Length of Stay	-.03(.04)	-.06	-.03(.04)	-.07	-.03(.04)	-.07	-.04(.04)	-.08	-.03(.04)	-.07	-.04(.04)	-.08
English Proficiency	-.11(.07)	-.16	-.13(.07)†	-.18†	-.12(.07)†	-.17†	-.11(.07)	-.15	-.12(.07)†	-.17†	-.10(.07)	-.14
Acculturation Ethnic	-.14(.05)*	-.21*	-.14(.06)*	-.21*	-.15(.05)*	-.23*	-.15(.05)**	-.22**	-.15(.05)**	-.23*	-.15(.04)**	-.22
Acculturation Main	.04(.07)	.05	.06(.07)	.07	.04(.07)	.06	.05(.07)	.07	.04(.07)	.06	.06(.07)	.07
2.Acculturative Stress												
Acculturative stress	.12(.03)**	.29**	.12(.04)**	.28*	.12(.03)*	.29**	.13(.04)**	.30**	.12(.03)**	.29**	.12(.04)***	.30***
6. Ego-Centric SN per group												
Size of Ameri. SN			.01(.23)	.00								
Size of Kor. SN			-.06(.10)	-.06								
Size of Non-co. SN	.01(.23)	.00	-.07(.09)	-.07								
E. Support American							-.15(.25)	-.05				
E. Support Korean							-.22(.36)	-.05				
E. Support Non-co.					-.21(.22)	-.08	-.17(.23)	-.07				
Closeness American											-.21(.20)	-.09
Closeness Korean											-.05(.29)	-.01
Closeness Non-co.									-.16(.17)	-.08	-.13(.17)	-.06
N	164		164		164		164		164		164	
F	2.79**		2.41**		2.88**		2.49**		2.88**		2.51**	
R^2	.168		.173		.173		.177		.173		.179	

†, *, ** indicates significance at the 90%, 95%, 99% level, respectively.

# of Friends: Number of Friends; E. Support: Emotional Support; I. Support: Instrumental Support

5.4.6 Hypothesis 6: Buffering effect of the global social supports from non-conational immigrants between acculturative stress and depressive symptoms

Global social support components (e.g., the number of friends, emotional support, instrumental support) from non-conational immigrants buffer the effects of the acculturative stress on depressive symptoms among Korean first-generation immigrants in the U.S. controlling for acculturative stress, demographic or immigration context.

Hypothesis 6a: The number of non-conational immigrant friends buffers the effects of the acculturative stress on depressive symptoms.

Hypothesis 6b: Received emotional support from non-conational immigrants buffers the effects of the acculturative stress on depressive symptoms.

Hypothesis 6c: Received instrumental support from non-conational immigrants buffers the effects of the acculturative stress on depressive symptoms.

Hypothesis six examined the buffering effect of the global social supports from the focal group, non-conational immigrants between acculturative stress and depressive symptoms. (Table 24). A marginally significant interaction was found between acculturative stress and the number of non-conational immigrant friend on depressive symptoms (*B(SE)* =.01(.01), p = .08) such that more of non-conational friends increases depressive symptoms particularly when the acculturative stress is high. In this model, a significant interaction was also found between American friends and acculturative stress (*B(SE)* = -.01(.0), p = .03). Emotional support/instrumental support from non-conational friends and acculturative stress were not statistically significant. Therefore, no support was found for hypothesis 6. Even if we consider the marginally significant interaction

effect between the number of non-conational friends and acculturative stress controlling for other two groups' interaction effect, the number of non-conational immigrant ties amplified the relationship between acculturative stress and depressive symptoms rather than diminished it.

5.4.7 Hypothesis 7: Buffering effect of the ego-centric social network from non-conational immigrants between acculturative stress and depressive symptoms

Hypothesis 7a: The network size of non-conational alters buffers the effects of the acculturative stress on depressive symptoms.

Hypothesis 7b: Expected support from non-conational alters buffers the effects of the acculturative stress on depressive symptoms.

Hypothesis 7c: Perceived closeness to non-conational alters buffers the effects of the acculturative stress on depressive symptoms.

Hypothesis 7 tested the buffering effect of the ego-centric social network components from non-conational immigrants between acculturative stress and depressive symptoms.

Similar with Hypothesis 6, to test Hypothesis 7, interaction terms between the ego-centric social network components (e.g., the size of non-conational network, expected support from non-conational alters, perceived closeness to non-conational alters) and acculturative stress were created and entered into the model (see Table 25). When the interaction terms between the egocentric social network components from non-conational alters and acculturative stress were entered solely without the other two groups' interaction terms, none of the interaction terms were significant (size of network *B(SE)* = -.03(.03), p = .30; expected support *B(SE)* = -.02(.02), p = .44;

perceived closeness *B(SE)* = -.03(.03), *p* = .25). Controlling for the other two groups' network size, the size of non-conational network was not significant (*B(SE)* = -.03(.03), *p* = .33). Also, controlling for other two groups' expected support, the expected support from non-conational social ties was not significant (*B(SE)* = -.03(.02), *p* = .26). Lastly, controlling for other two groups' perceived closeness, the perceived closeness to non-conational social ties was not significant (*B(SE)* = -.02(.02), *p* = .26). Based on these results, Hypothesis 7 was not supported.

Table 24. Model 6- Prediction of depressive symptoms – regression models (global social support model)- interaction effect

Model 6	Number of Friend -Only Non-co.		Number of Friend -Multiple		Emotional Support -Only Non-co.		Emotional Support -Multiple		Instrumental Support - Only Non-co.		Instrumental Support -Multiple	
	B (S.E.)	β	*B (S.E.)*	β	*B (S.E.)*	β	*B (S.E.)*	β	*B (S.E.)*	β	*B (S.E.)*	β
Constant	6.23(2.7)*		4.22(3.48)		2..45(4.22)		2.00(6.55)		1.56(4.35)		2.64(6.5)	
1.Control variables												
Age (Category)	-.45(.40)	-.10	-.56(.41)	-.12	-.47(.39)	-.10	-.41(.40)	-.09	-.34(.39)	-.08	-.26(.40)	-.06
Female	.05(.58)	.01	-.08(.58)	-.01	.34(.57)	.04	.52(.57)	.07	.18(.57)	.02	.24(.58)	.03
Education	.21(.30)	.06	.28(.30)	.08	.33(.28)	.09	.39(.29)	.11	.26(.28)	.07	.29(.29)	.08
Income	-.18(.14)	-.11	-.12(.14)	-.07	-.13(.14)	-.08	-.15(.14)	-.09	-.14(.14)	-.09	-.15(.14)	-.09
Partnered	-.50(.82)	-.05	.54(.81)	.06	.56(.78)	.06	.69(.79)	.07	.45(.79)	.05	.44(.80)	.04
Length of Stay	-.02(.04)	-.04	.00(.04)	-.01	.00(.04)	.00	.01(.04)	.02	.00(.04)	-.01	-.01(.04)	-.01
English Proficiency	-.16(.06)*	-.27*	-.16(.06)*	-.26*	-.12(.06)†	-.19†	-.10(.06)	-.16	-.12(.06)	-.18†	-.13(.06)*	-.21*
Acculturation Ethnic	-.06(.04)	-.10	-.07(.05)	-.13	-.10(.04)*	-.17*	-.09(.05)†	-.15†	-.10(.05)	-.17*	-.08(.05)	-.13
Acculturation Main	.09(.06)	.14	.09(.06)	.15	.10(.06)	.15	.12(.06)†	.19†	.10(.06)	.14	.09(.06)	.14
2.Acculturative Stress												
Acculturative stress	.10(.04)*	.19*	.10(.05)*	.24*	.10(.07)*	.36*	.17(.13)	.41	.18(.07)*	.42*	.18(.13)	.42
5.Global SN per group												
# American Friends			.03(.18)†	.88†								
# Korean Friends			-.04(.17)	-.13								
# Non-co. Friends	-.36(.27)	-.51	-.57(.34)†	-.81†								
E. Support American							-1.26(1.34)	-.41				
E. Support Koreans							.25(1.33)	.07				
E. Support Non-co.					-.02(1.1)	-.01	.45(1.28)	.15				
I. Support American											-.17(1.36)	-.05

Table 24 (continued)

I. Support Koreans											-.39(1.38)	-.11
I. Support Non-co.									-.59(1.23)	.17	.66(1.41)	.19
7.Global SN x AC												
American # x AC			-.01(.0)*	-1.1*								
Korean # x AC			.0(.0)	.11								
Non-co. # x AC	.01(.01)	.38	.01(.01)†	.85†								
American ES x AC							.02(.03)	.32				
Korean ES x AC							-.02(.03)	-.25				
Non-co. ES x AC					-.02(.02)	-.28	-.03(.03)	-.37				
American IS x AC											.00(.03)	.03
Korean IS x AC											.00(.03)	-.05
Non-co. IS x AC									-.03(.03)	-.42	-.03(.03)	-.38
N	190		190		186		186		186		186	
F	2.46**		2.48**		3.35***		2.88***		3.06***		2.58**	
R^2	.165		.187		.189		.215		.175		.196	

†, *, ** indicates significance at the 90%, 95%, 99% level, respectively.

# of Friends: Number of Friends; E. Support: Emotional Support; I. Support: Instrumental Support

American # x AC: interaction term between number of American friends and acculturative stress

Table 25. Model 7- Prediction of depressive symptoms – egocentric social network model- interaction effect

Model 7	Size of SN -Only Non-co.		Size of SN - Multiple		Expected Support -Only Non-co.		Expected Support -Multiple		Perceived Closeness - Only Non-co.		Perceived Closeness -Multiple	
	B (S.E.)	β	*B (S.E.)*	β	*B (S.E.)*	β	*B (S.E.)*	β	*B (S.E.)*	β	*B (S.E.)*	β
Constant	6.48(4.03)		5.18(5.2)		6.71(4.09)		13.12(6.64)		6.45(4.1)		9.82(6.79)	
1.Control variables												
Age (Category)	-.36(.42)	-.08	-.56(.41)	-.12	-.39(.42)	-.09	-.27(.44)	-.06	-.38(.41)	-.09	-.33(.44)	-.07
Female	-.15(.60)	-.02	-.08(.58)	-.01	-.10(.60)	-.01	.07(.62)	.01	-.09(.60)	-.01	-.08(.62)	-.01
Education	-.08(.31)	-.02	.28(.30)	.08	-.08(.31)	-.02	-.03(.32)	-.01	-.08(.31)	-.02	-.04(.32)	-.01
Income	-.12(.14)	-.08	-.12(.14)	-.07	-.11(.14)	-.07	-.10(.14)	-.07	-.11(.14)	-.07	-.10(.14)	-.06
Partnered	.09(.83)	.01	.54(.81)	.06	.22(.84)	.02	.17(.85)	.02	.20(.84)	.02	.26(.85)	.03
Length of Stay	-.03(.04)	-.06	.00(.04)	-.01	-.03(.04)	-.07	-.05(.04)	-.11	-.03(.04)	-.07	-.05(.05)	-.10
English Proficiency	-.12(.07)†	-.17†	-.16(.06)*	-.26†	-.12(.07)†	-.17†	-.09(.07)	-.13	-.11(.07)	-.16	-.09(.07)	-.12
Acculturation Ethnic	-.14(.05)*	-.22*	-.07(.05)	-.13*	-.15(.05)*	-.23*	-.13(.06)*	-.20*	-.15(.05)*	-.23*	-.14(.06)*	-.21*
Acculturation Main	.04(.07)	.05	.09(.06)	.15	.04(.07)	.06	.05(.07)	.06	.04(.07)	.06	.05(.07)	.06
2.Acculturative Stress												
Acculturative stress	.14(.04)**	.47**	.10(.05)*	.24*	.14(.04)**	.34**	-.02(.13)	-.04	.15(.04)**	.35**	.06(.14)	.13
6. Ego-Centric SN per group												
Size of Ameri. SN			.39(.49)	.34								
Size of Kor. SN			.06(.49)	.05								
Size of Non-co. SN	1.3(1.26)	.47	1.25(1.3)	.45								
E. Support American							-1.45(1.25)	-.49				
E. Support Korean							-1.96(1.84)	-.45				
E. Support Non-co.					.52(.99)	.20	.99(1.03)	.38				
Closeness American											-.91(1.03)	-.39
Closeness Korean											-.78(1.45)	-.22
Closeness Non-co.									.52(.75)	.26	.76(.79)	.38

Table 25 (continued)

8.Egocentric SN x AC												
Size of Ameri. x AC			-.01(.01)	-.38								
Size of Kor. x AC			.0(.01)	-.11								
Size of Non. x AC	-.03(.03)	-.47	-.03(.03)	-.45								
American ES x AC							.03(.03)	.45				
Korean ES x AC							.04(.04)	.50				
Non-co. ES x AC					-.02(.02)	-.28	-.03(.02)	-.44				
American C x AC											.02(.02)	.03
Korean C x AC											.02(.03)	.25
Non-co. C x AC									-.02(.02)	-.35	-.02(.02)	-.44
N	164		164		164		164		164		164	
F	2.65**		2.06*		2.68**		2.19**		2.71**		2.12*	
R^2	.174		.183		.176		.193		.177		.188	

†, *, ** indicates significance at the 90%, 95%, 99% level, respectively.

Size of Ameri. SN: Size of American social network; E. Support American: expected support from American social network

Size of Ameri. x AC: interaction term between size of American social network and acculturative stress

American ES: Expected support from American social network; American C: Closeness to American social network

6.0 Chapter 6. Discussion

This study sought to understand the role of non-conational immigrants in buffering the relationship between acculturative stress and depression among Korean immigrants. This study found significant associations between the global emotional and instrumental social support from non-conational immigrants and the lower level of depressive symptoms accounting for the support from Korean and Americans. However, this study did not find the buffering effect of global social support nor egocentric social network between acculturative stress and depressive symptoms among the immigrant population. In general, this study found support for the positive associations between global social support and the lower level of depressive symptoms regardless of the source group category.

6.1 Summary of the Sample Characteristics

6.1.1 Characteristics of the Participants

In this study, rates of acculturative stress and depression were considerably higher than those reported in other immigrant groups or the general population. More specifically, study participants reported an average high acculturative stress level of 45.4 than other immigrant populations such as 38.4 for migrant care workers in Australia (Adebayo et al., 2021), 39.3 for Hispanic immigrants in the U.S. (Cariello et al., 2020). The average scores of depressive symptoms were 4.8 (*SD* = 3.7, score ranged 0-20) and the prevalence of the depressive disorder is 14.1%

based on the cutoff score of 10. This level is considerably higher than the levels (4.6% (Gjerdingen et al., 2009) ; 3.6% (Sidebottom et al., 2012)) of the general community populations in the U.S. Considering the survey period (2020.9~2020.11), the relatively higher level of psychological distress can be explained by the heightened anti-Asian sentiment resulting from Covid 19. Recent studies have reported that the mental health status of Asian Americans was more negatively affected by the pandemic than white Americans (Wu et al., 2021) while the overall rate of depression regardless of race has dramatically risen over the last year (Aschwanden et al., 2020).

Participants in the study consistently reported more social support among the conational groups (i.e., Koreans) when compared to Americans or non-conational immigrants. Participants also reported fewer interactions with non-conational immigrants overall. Despite less frequent interaction and less social support experienced in these relationships, when participants reported social support among non-conational friends, it was related to fewer depressive symptoms when accounting for other demographic and immigration context. These findings indicate that while frequently overlooked, the role of non-conational friends in an immigrant's mental health may be important. It is also interesting to note demographic characteristics that are related to more ties and more social support in their non-conational friendships, as participants with more non-conational ties were more likely to be younger and have a higher level of education. Despite the smallest number of friends and size of network among the three groups suggested, the proportion of non-conational friends compared to the total number of friends is 14.3%, which is a similar proportion to the previous study reported (12%; Bolibar et al., 2015) targeting Ecuadorian and Moroccan immigrants living in Catalonia, Spain in 2010. This is a sizable portion of the social interaction, especially considering the important role of social networks for immigrant populations to succeed in a host country.

6.1.2 Depressive symptom and acculturative stress

Overall, the correlation patterns among major variables of this sample are consistent with those found in previous studies. For example, as Brody, Pratt, & Hughes (2018) showed, a higher income presented an inverse correlation with depressive symptoms. As cumulative studies (Joiner & Walker, 2002; Park & Rubin, 2012; Roley et al., 2014) have shown, acculturative stress was significantly correlated with the higher level of depressive symptoms. Other well-known associations between demographics and depression such as gender (Van de Velde et al., 2010) and age (Ronald C. Kessler et al., 2010) were not found in this sample. Consistent with previous literature, this study also found positive associations between acculturative stress and being female (Ra, 2016, Sirin et al., 2013), older age (Hovey & King, 1996; Ra, 2016), and English proficiency (Alexis O. Miranda & Matheny, 2000; Poyrazli et al., 2004; Yeh & Inose, 2003). Also, a relationship was observed between global social support measures and depressive symptoms (Henderson, 1992; Riahi et al., 2011). For example, all the emotional and instrumental support were significantly correlated with the lower level of depressive symptoms regardless of the nationality of the friends.

6.1.3 Characteristics of Korean, American, and non-conational networks

Although the non-conational immigrant group was the group of interest in this study, summarizing the characteristics of the Korean or American groups in this sample along with the non-conational group can help us understand the comparable nature of the non-conational social network. As demonstrated in the bivariate associations, participants with higher levels of education, English proficiency, and income reported receiving more social support from

Americans. More social support from Americans was positively correlated with acculturation toward American culture and inversely correlated with acculturation toward Korean culture as expected based on the theoretical framework of Berry (1997). On the other hand, Korean support components did not show any notable significant correlations with demographic variables except for the positive correlation with age, however, in the egocentric network component, the size of the Korean network was inversely correlated with the level of education, and English proficiency. Also, having more Koreans in their social network was positively correlated with acculturation into Korean culture and inversely correlated with the acculturation into American culture, which was in line with the prediction of the acculturation theory (Berry, 1997).

Previous studies examining the non-conational immigrant social ties had mostly used college student samples (Geeraert et al., 2014; Kashima & Loh, 2006; Pho & Schartner, 2019), in which the non-conational immigrant social ties might be more noticeable. The present dissertation partially supports these demographic characteristics, with participants with more non-conational ties being younger, single, and in the US for less time. However, this study sample excluded college students, and only included three participants in their early 20's. Non-conational social ties were also correlated with higher levels of education, indicating participants reporting more non-conational social ties and support, maybe graduate students or post-doctoral workers. Unlike the Korean or American support/ social network, participants with non-conational support/social networks were not clearly acculturated into Korean or American culture. The number of non-conational friends was, however, highly correlated both with the number of Korean and American friends. The global support from non-conational immigrants was positively correlated with the acculturation into American culture while the egocentric social support and perceived closeness

were inversely correlated with the acculturation into Korean culture. These patterns have theoretical implications regarding the categorization of immigrants' social ties.

The egocentric social network measures yielded multiple network structural indexes regarding the network such as ego-centrality, betweenness, and density. As reviewed in the method section, each index provides specific insights regarding the network characteristics and other variables of this study. For instance, high brokerage measured by the betweenness index suggests a stronger influence of an alter (or ego) in terms of transmission of communicable elements within a network (Burgette et al., 2021). This study found that income, education, and English proficiency were positively correlated with betweenness, suggesting high SES is closely associated with brokerage power. In this study, people with high brokerage might have multiple solid social network clusters consisting of Koreans, Americans, and non-conational, respectively, and may play a gatekeeper via communicating information or influence between these clusters. Contrary to this, density was inversely correlated with the level of education. Network structural indexes also provide some insights to understand the characteristics of each group network. For example, Korean support or network components were significantly correlated with high ego-centrality. While ego-centrality showed a positive correlation with high density, density presented significant inverse correlations only with American and non-conational social ties but not with Korean ties. Taken together, these results imply that people who have more supportive Korean networks tend to have relatively more direct links from the egos with high activity and relatively more interconnected networks. People who have more supportive American or non-conational networks tend to have relatively less interconnected networks. It is difficult to directly compare this result with the previous study's (Vacca et al., 2018) finding such that the cohesion of Origin Co-nationals' network was about twice or three times stronger than the cohesion of Natives' network

because the group categorization was different from this study (i.e., the Origin Co-nationals only include co-nationals living in the origin country). However, the direction is consistent such that the non-conational network is less likely interconnected compared to the conational network of immigrants. Considering the larger influence by the nature of the tightly interconnected network (Burgette, et al., 2021), if a first-generation Korean immigrant had a similar portion between Korean and American support networks, she/he might be more influenced by the Korean network than the American network since the interconnectedness of conational social network is tighter than others. Tight interconnectedness could be helpful if the main subjects of the circulation were beneficial resources or support within the web of the network, however, it could turn harmful if the communicated subjects were misinformation or any risky belief (e.g., anti-vaccination).

6.2 Summary of the Findings

6.2.1 Association between acculturative stress and depressive symptoms

In the bivariate associations, significant associations between acculturative stress and the higher level of depressive symptoms were confirmed. This significant association remained after controlling for demographic variables (e.g., gender, age, education, income, partnered) and immigration contexts (e.g., length of stay, English proficiency) in Model 1, supporting Hypothesis 1. Even in the following models (Model 2~7), adding the global support variables and egocentric social network variables, the significant associations between the acculturative stress and depressive symptom were robust. These results suggest that acculturative stress is a salient factor of depression. Indeed, there is a substantial body of literature to report significant associations

between acculturative stress and depressive symptoms among immigrant populations as reviewed in the literature review section.

Regarding this association between acculturative stress and psychological outcomes, Rudmin (2009) has criticized the operationalization of acculturative stress measures because 1) the acculturative stress measures are overlapped conceptually with the outcome measures consisting of mainly mental health outcomes and 2), acculturative stress was framed to cause mental illness, however, mental illness can also cause heightened acculturative stress. Interestingly, few cross-cultural scholars have responded to this critique directly, however, some theoretical and empirical study results provide counterarguments with his claims. First, acculturative stress conceptually stemmed from the stress and coping theory (Berry, 2006; Lazarus & Folkman, 1984) as a kind of stress response. According to the theory, as a predictor of psychological outcomes, stress can play a stimulus to potentially develop mental illness depending on an individual's susceptibility toward stress. As 'acculturative' stress, the measures include immigrant/refugee specific experiences or stressors (e.g., language acquisition, cultural conflict). Contrary to this, mental health measures generally pursue universal applicability. Moreover, there is plenty of evidence to show the causal relationship between acculturative stress (Cheung et al., 2020; Sirin et al., 2013) or acculturation related stress (e.g., cultural stress, (Cano et al., 2015), discrimination stress, (Torres & Ong, 2010) and negative mental health outcomes with a longitudinal design. The two structures might not be fully separated as Rudmin pointed out because there can exist some feedback loops influencing each other's status. However, the existence of a feedback loop cannot rule out the causal inferences between two constructs. Unfortunately, this study was not designed for a longitudinal survey so that it might be impossible to claim a causal relationship between acculturative stress and the depressive symptoms based on the significant

associations found in Model 1. Nevertheless, under cautions, relying on the theoretical frameworks and longitudinal studies to show the causal relationship, Model 1 suggests that the significant effect of acculturative stress on the higher level of depressive symptoms.

6.2.2 Association between social support and depressive symptoms

In the bivariate associations, the global social support components (e.g., number of friends, emotional/instrumental support) were significantly associated with the depressive symptoms. Even after controlling for acculturative stress, demographic, and immigration context, all three global social support components were significantly related to depressive symptoms in the hypothesized direction, supporting Hypothesis 2. However, when all social support components were included in the model, only emotional support remained significant, implying the important role of emotional support regarding psychological outcomes. These results support the findings that previous social support literature has established (Jessor, 2013; James S. House, 1981) such that (perceived) emotional support is the most essential source of social support over the tangible support or structural component of social network in terms of the protective role against psychological distress. No significant relationship was found between social network size, social support given in social networks, and the closeness reported in social networks, failing to support Hypothesis 3. Given the insignificant results, it is difficult to claim its role in the depressive symptoms, however, we can observe that the overall directions of the regression coefficients were consistent with the significant results from the global social support measures. This tendency suggests that a larger sample size might detect the associations with the depressive symptoms of the social network components similar to the global social support components in future studies.

6.2.3 The role of the social support from the non-conational immigrants

Since the main interest of the present study is the role of social interaction with non-conational groups of the immigrant population in the depressive symptoms, this study has specifically examined the main and comparable effects of social support and social networks among non-conational immigrants. In the bivariate associations, most of the global social support components from each group (i.e., American, Korean, and non-conational) were significantly associated with the depressive symptom except for the number of non-conational friends. Controlling for the demographic and contextual variables and acculturative stress, the number of non-conational friends was marginally significantly associated with the depressive symptoms, however, the significance disappeared when the other two groups' numbers of friends were added. Moreover, neither the numbers of Korean friends nor American friends were significant when they were considered in the model together. These results imply that there is no outstanding effect generated by more networks (i.e., number of friends) from a specific group.

While there appeared to be no difference in the number of friends in each group, emotional support from non-conational immigrant friends was significantly associated with the lower level of depressive symptoms, even after controlling for emotional support from the other two groups (i.e., American, Korean). Interestingly, when being tested together with the other two groups, the levels of emotional support from Korean friends or American friends were not significant. This result was similarly repeated even in the instrumental support, such that the level of instrumental support from non-conational immigrants was significantly associated with the lower level of depressive symptoms and remained significant even controlling for the other two groups' level of instrumental support.

These findings suggest the importance of non-conational friends in immigrants' mental health. High correlations between the number of friends and emotional/instrumental support in each group indicate that participants who actively interact with non-conational friends are more likely to actively socialize with the other two groups. Despite the high correlation in the socialization activity across three groups, regression analysis demonstrates that the contact with non-conational is related to less depression symptoms even after controlling contact with the other two groups. This result implies that the conventional theoretical explanation of immigrant adaptation based on two dimensions (i.e., interaction with heritage society and interaction with host society; Berry, 1997) might not be sufficient in understanding the entire phenomenon of immigrants' cultural adaptation to a host society.

We found higher correlations between the size of the non-conational network and expected support/perceived closeness than other groups. As reviewed so far, the absolute level of support received as well as the network size of non-conational friends were much smaller than the ones of Korean or American friends. Nevertheless, once someone has a friend from a non-conational group, the emotional/instrumental support from the friend can play a more meaningful role than the emotional support from Korean or American friends.

The study findings did not support the buffering role of the social interactions with the non-conational network between acculturative stress and depressive symptoms. Although the number of non-conational friends showed a marginally significant interaction effect with acculturative stress on the depressive symptom controlling for the other two groups' interactions, it is not robust enough to support the overall buffering role of the social support/social network components from non-conational social ties between acculturative stress and depressive symptom.

There has been a longstanding controversy over the buffering role of social support in the relationship between stress and psychological outcomes as reviewed in the literature section (S. Cohen & Wills, 1985; Henderson, 1992; R. Jay Turner, 1981; R. Jay Turner & Turner, 1999). Some of the studies (e.g., Henderson, 1992) have argued that social support can play a role regardless of stressful conditions, the so-called main effect model. Multiple studies focusing on the immigrant population (Chae et al., 2012; S. Lee & Waters, 2021; Raffaelli et al., 2013; M. Thomas & Baek Choi, 2006) have reported the significant buffering effects of social supports between diverse immigrant specific stresses and psychological outcomes including depression. Given the significant main effects of the global social support on the depressive symptom and insignificant buffering effects of the global social supports between the acculturative stress and depression, this study might be more supportive to the main effect model than the buffering model. However, there is a possibility of failing to detect significant interaction effects due to insufficient statistical power to the conclusion regarding this matter should be postponed in future studies through increasing sample size or improving survey design. In addition to this, this study was not able to test the mediating role of social support. Cohen and Wills (1985) mainly emphasized the buffering role or main effect of social support, however, they also opened the possibility of social support as playing a mediator between stressors and health outcomes. As hinted by the stress and coping model of Lazarus and Folkman (1984), they suggested that social support can play a mediating role between stressors and health outcomes potentially by increasing the chance to choose the problem-solving coping strategy among people under stress.

6.3 Implications

6.3.1 Theoretical implications

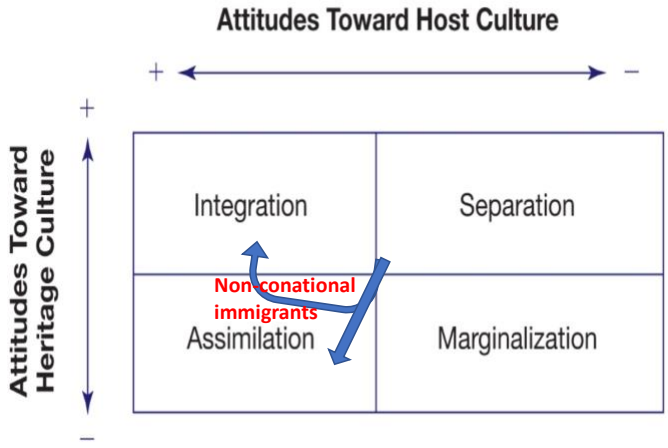
The current study expands the scope of the modern acculturation theory, by moving beyond simply considering the psychological outcomes within the binary framework, conational culture/network versus host culture/network, and investigating the distinct role of the third group, non-conational immigrants. This study provides empirical findings to support the unique role of this group in the diverse domains of immigrants such as support network components, demographic nature, and comparative nature in the mode of acculturation.

First, we confirm that the relative network size of this group is small, thus, the average support resources possibly obtained from this group is smaller than the conational or host group. However, this dissertation found that only support from non-conational immigrants was associated with less depressive symptoms, suggesting the notable role of this group. This study suggests that the participants who have more non-conational support networks tend to be younger and newly arrived. Their education level is high; however, English proficiency is not comparable with the individuals whose main interaction group is American.

Second, in terms of acculturation, this study found that non-conational social ties might play a role that cannot be categorized by the preexisting two-dimensional model (acculturation into the American culture vs. acculturation into the Korean culture). These findings can be discussed in light of existing theoretical frameworks that account for the role of these social ties in acculturation. The non-conational social ties might play a bridging role for immigrants, allowing them to move from the separation strategy (i.e., only interacting with the conational network) to the assimilation strategy (i.e., only interacting with host network) or the integration strategy (i.e.,

interacting both networks) (Figure 15). Immigrants who have more non-conational social ties are more likely to be highly educated, young, and newcomers in the U.S. Searching for a way to successfully adjust to the host country, they might look for a way to expand their social network beyond Korean social network. Yet they do not have enough resources to actively interact with Americans because they are neither fluent in English nor have sufficient experience in the U.S. Given this condition, non-conational social ties may be a more accessible option to begin to go outside their own conational network. The distance from the acculturation into Korean culture might present their intentional effort to adjust themselves in the U.S. society. However, they are also reserved even in the acculturation into American culture than people who have more American social ties. As they stay longer in the U.S., they might find another way of acculturation and it can lead them to be more assimilated or integrated depending on their situations and experiences. In this perspective, having more non-conational social ties could be seen as the first step towards building social network ties with Americans, a critical piece of the assimilation or integration strategy (Figure 14).

Figure 14. Incorporation of the Non-conational Social Ties



Third, the other way to incorporate the findings of this study is to develop a new alternative theoretical model. Contrary to the approach above, this study proposes an alternative model of

immigrant acculturation emphasizing the role of non-conational social ties, an emerging phenomenon known as multiculturalism, departing from the traditional acculturation strategy (Figure 16). Multiculturalism has been commonly discussed in the immigration policy area in the receiving countries (Bloemraad & Wright, 2014; Dustmann et al., 2013). However, this approach gains attention from cross-cultural scholarship (e.g., (Sam & Berry, 2016). Sam and Berry (2016) broadly defines psychological multiculturalism as a confluence of intercultural interactions and perceptions influencing acculturation, adaptation, and intercultural relations. Multiculturalism can be compared with integration strategy (i.e., actively participating in host culture while retaining ethnic culture), which has a comparable term, biculturalism (Benet-Martínez & Haritatos, 2005). Cross-cultural scholars have reported that integration or biculturalism is the most desirable strategy for immigrants' socioeconomic adjustment (Nguyen & Benet-Martínez, 2013) and psychological well-being (Berry et al., 2006). However, Sam and Berry (2016) suggests that multiculturalism must be understood as a broader concept than biculturalism.

Actively interacting with non-conational social ties would be an advanced version of the integration strategy because they are even open to people with diverse nationalities beyond conational and host nationality. As reviewed in bivariate results, participants having more non-conational friends have many Korean and American friends as well. Participants reporting more support from non-conational friends are also reporting higher support both from Korean and American friends. The significant relationship between support from non-conational immigrants and depressive symptoms controlling for the other two groups can stem from their higher level of social activity and openness to diverse cultures and social ties. This socializing pattern cannot be conveniently included as a traditional integration strategy assuming the two-dimensional framework. Sam and Berry (2016) argued that their original model already takes account of other

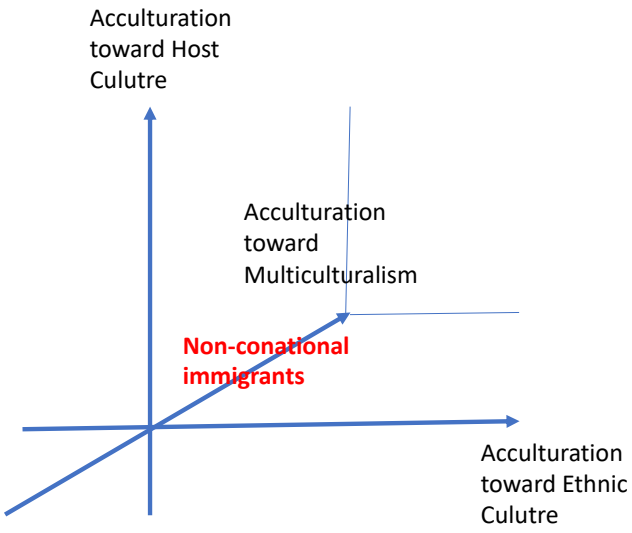
ethnic groups by incorporating these other immigrant groups into the host (mainstream) group. In other words, they indicate that the "non-conational immigrant group" is one sub-category of a host group as an out-group. One of the critical challenges with their argument is that most existing acculturation measures operationalize the host culture dimension as "main-culture" (e.g., ARSMA-II; (Cuellar et al., 1995) or using a specific receiving country name, such as "American culture" (e.g., The Suinn-Lew Asian Self Identity Acculturation; (Suinn et al., 1992) or "Canadian culture" (e.g., Vancouver Index of Acculturation; Ryder et al., 2000). These measures do not allow any room for considering the "other ethnicity" dimension. The "out-group" category for immigrant populations also does not have academic consensus in cross-cultural research. For example, there are a number of studies (Poyrazli et al., 2004; Rostila, 2010) that treated non-conational immigrants as an in-group category unlike the argument of Sam and Berry.

Furthermore, among immigrants who have more non-conational ties their pattern of acultuation (or identification with American or Korean culture) did fit in the traditional two-dimensional framework. The number of non-conational friends was not significantly correlated with both acculturation into Korean culture nor American culture. Support from non-conationals was positively correlated with acculturation into American culture, and inversely correlated to acculturation into Korean culture. Although this patern may look like an assimilation strategy (i.e., mainly interacting with American culture/network), it is not clear because these participants also have many Korean friends, suggesting active engagement with conational network. As reviewed in the social network structures (Figure 11~14), the non-conational social network was shaped by diverse network patterns. The non-conational social ties were part of the American or Korean network while these ties independently existed. These patterns might imply that the non-conational

social ties cannot be conveniently categorized between host versus ethnic or in-group versus out-group.

As such, this study suggests that the traditional two-dimensional model is not adequate to incorporate the role of non-conational social networks into the theoretical framework. I propose that the definition of multiculturalism should be modified as "actively participating in diverse non-conational cultures and networks in addition to their conational and host culture and network." This definition is in line with the one of Sam and Berry (2016) above with more specificity. To actualize this definition, we might need a three-dimensional theoretical framework to newly create the acculturation into multi-culturalism (Figure 15) instead of the traditional two-dimensional model.

Figure 15. Creating New Theoretical Framework with the Non-conational Social Ties



The two-dimension-centered discussion or empirical tests to explain immigrant social interaction has been dominant in the field for a long time. There have been multiple critiques regarding this academic trend, for instance, Rudmin (2003) and Schwartz, Unger, Zamboanga, & Szapocznik (2010). A common point that these criticisms contain is that immigrants' social

interaction and following adaptation process cannot be measured by 'one size fits all' measure because immigrants' cultural variations in the major receiving countries are much larger than before. To extend this discussion, the three-dimensional framework can be more useful to apply to other ethnic groups than Korean such as Hispanic immigrants in the U.S. Unlike the Korean immigrant who should primarily use English to communicate with non-conational friends in the U.S., we can expect that Hispanic immigrants can have a much higher proportion of non-conational social ties because a majority of them share a same native language, for instance, Spanish. As a result, for the Hispanic immigrant in the U.S., social interaction with non-conational can play a longer-term and versatile role in their adaptation.

This possibility can lead researchers in cross-cultural studies to flexibly approach all of the categorizations of group, culture, and even mode of acculturation. Also, the findings of this study suggest that acknowledging the significantly different patterns of social interaction depending on the immigrant population or context would be necessary. The call for building knowledge regarding cultural variation might not be a new claim in this field, however, the present study specifically proposes the academic interests in the potential role of the third group in terms of immigrant social interaction and its outcomes.

6.3.2 Practical implications

Immigrants have traditionally relied on their conational social networks to provide support as they settle in a new environment. While the role of conational ties is certainly important, this dissertation suggests that building social support networks among immigrants from diverse nationalities may also support immigrants' mental health. Younger and more recent immigrants may feel more comfortable interacting with non-conational immigrants than Americans because

they share the experience of being an immigrant in the host country. This hypothetical discussion might be true for this population since their levels of English proficiency or cultural experience do not seem higher or ample enough to build a stable social network with the host population. Moreover, as newly arrived immigrants, they can share some emotional struggles to cope with diverse challenges as a minority. Indeed, they were relating their non-conational social ties more strongly to expected support resources with psychological intimacy than their conational or host social ties. Based on these results, social workers especially those working with young immigrants need to pay more attention to these advantages that non-conational social networks can provide with the psychological benefits. As hinted from the detailed nationality of the non-conational friends in this study, networking based on cultural similarity (e.g., people from East Asian countries for Koreans) might be a more approachable strategy.

More broadly, these findings recommend social work practitioners expand their perspective from the two-dimensional model consisting of conational cultural orientation and host cultural orientation regarding immigrants' wellbeing. Since the melting pot model was criticized, more pluralistic models have been emerging, mainly focusing on retaining ethnic tradition or identity. The bi-dimensional model is an advanced one than the previous unidirectional, that is, the assimilation model. However, as society gets more diverse, we realize that the binary-centered models cannot sufficiently explain or predict the outcomes of social interaction among the immigrant population than they did before. For instance, beyond the conational or host members, the actual chances that immigrants encounter members from a non-conational community increase greatly because the degree of diversity rises among the immigrant population. However, the previous model cannot categorize this kind of social interaction accurately. For instance, according to my findings, younger and newly arriving immigrants try to keep some distance from the

conational culture/network but not yet enthusiastically approach the host culture/network as much as the participants who mainly interact with Americans. This portion of the population cannot be easily explained by the previous models, simply considering this quality of interaction pattern is categorized into ‘assimilation’ or ‘marginalization’. However, this study proposes that this portion of interaction is multiculturalism. Since this multiculturalism was significantly related to a better health outcome (i.e., lower level of depressive symptoms) of immigrants, it may be helpful for practitioners to motivate immigrants to actively socialize with non-conational immigrants. In terms of the practice for immigrants, thinking outside the box might be indispensable more than before.

6.4 Limitations and Future Research

The findings of this study need to be interpreted considering several limitations. Due to this study's cross-sectional design, the direction of the observed relationship cannot be determined. The cross-sectional nature of the current study cannot directly address the direction. This study found a significant association between the level of emotional or instrumental support from non-conational social networks and the depressive symptom, however, such findings cannot rule out the possibility that less depressed people actively interact with non-conational immigrants. Despite the limitation in the research design, however, this study posits a hypothetical framework suggesting the link between social support from non-conational networks and mental health outcomes of Korean immigrants based on conceptual models developed in stress and acculturation literature. To better show the causal link between social support and depressive symptoms as well as to better understand the real-world social interaction pattern and its consequent outcomes of immigrants, both longitudinal study and quasi-experimental studies are encouraged.

Because of the unique research context of the present study, the generalizability of my findings to other populations should be carefully evaluated. As discussed in the Methods chapter, the sampling method of the present study is convenience sampling with a non-probability assumption. As a result, this sample is characterized as female dominant, having relatively high SES. Specifically, composing 70% of the sample was female, and the level of education was considerably higher than the average education level of Korean immigrants in the U.S. For instance, according to 2017 statistics (Connor & Batalova, 2019), approximately 20% of Korean immigrants in the U.S. had graduate or professional degrees, however, among this sample, 54% had graduate or professional degrees. The income level was also high so that about 27% of the sample had more than $150,000 income on average. The mean age of this sample (41 years old) was relatively younger than the average age of Korean immigrants (48 years old) in the U.S. (Connor & Batalova, 2019).

Since high SES has been significantly associated with the social interaction pattern and mental health outcomes, the findings of this study might not be applied to other immigrant population studies having different demographic or cultural contexts. To establish the generalizability of the current findings, more extensive studies targeting diverse immigrant populations should be conducted and validate these findings including the nature of non-conational social networks, the protective role of the social support from non-conational support networks, and the meaning of multicultural social interactions.

This study was also limited by the measurement issue. This study designed respondents to assess the level of support per each group by suggesting aggregated categories such as American, Korean, and non-conational. Specifically, for measuring the level of emotional and instrumental support, the brief 2-Way SSS measure was used. The measure was initially designed to assess the

subjective experience of the multiple aspects of social support from a person who belonged to a specific community or group (e.g., family) (Shakespeare-Finch & Obst, 2011). Thus, this measure can present support from an individual of each group rather than a collective level of support per group. Moreover, this study repeated the same set of questions three times per group and these aggregated questions might not exactly capture the actual level of support of the members belonging to each group. The egocentric social network measure can be an alternative to resolve this drawback. Because the egocentric social network questions make the respondent specifically recall the individual information per alter. Indeed, this study implemented the social network questions simultaneously and confirmed the similar directions between the two measures.

The egocentric social network measures did not show any statistically significant correlation coefficients in the Pearson correlation tests nor the regression coefficients in the Linear Regression models. In relation to the level of depression, there might be three reasons to explain this tendency. First, as aforementioned, since the questions regarding the number of friends per group were open-ended, the variations of the number of friends were much larger (range 0-80) than the size of social network per group (range 0-15). Second, compared to the analytic base for the global social support measures (n = 190), the base for the egocentric social network measures (n = 166) was small because 12.6 % (n = 24) of the total respondents were dropped out before, or in the middle of the ego-centric social network questions. Lastly, in the ego-centric social network questions, family ties were included among the total of 15 social ties so that the actual mean size of social network reduced from 12.2 to 9.5 when family ties were excluded. To summarize, this reduced analytic base can affect the statistical power to detect the effects of egocentric social network elements on the outcome variable as well as the associations with other major demographic variables or constructs. For these reasons, this study was not able to observe any

significant findings via the egocentric social network questions. Larger sample size might be necessary for detecting any associations in social network analysis.

This study has also several limitations in the empirical model testing the role of social support in relation to acculturative stress and depressive symptoms. While it is theoretically defensible to test the buffering role of social support (Cohen & Wills, 1985), the theory of stress and coping suggests that social support mediates the relationship between stress and depression. It is, therefore, possible the role of social support in the relationship between acculturative stress and depression is as mediator rather than a moderator. This modeling choice may be limiting our understanding of these relationships. Future research might be able to examine the mediating role of social support along with the moderating role between stress and depressive symptoms. Second, focusing on understanding the effect of acculturative stress, this study did not include other significant stressors such as financial difficulties and family conflicts in the model. These stressors might also influence the relationship between acculturative stress and depressive symptoms. Future research should be able to address the potential influence of other stressors by incorporating a variety of sources of stress among immigrants into the model.

6.5 Conclusion

The present dissertation explores the descriptive characteristics and its psychological effects of the social interaction with non-conational immigrants compared to the social interactions with Koreans and Americans on depression for Korean first-generation immigrants in the U.S. Since this type of interaction has been long neglected in the cross-culture studies as well as immigration studies, this study sheds light on the role of this type of network as well as the exploratory information. This study found that the size of the non-conational network was smaller than the Korean and American network, however, the perceived support resources can be more significant than the one from the Korean or American network. Specifically, for newly arriving and younger immigrants, this type of social interaction was a salient social resource. Although this study cannot find the buffering effects of the social interaction of this group as well as the other two groups between acculturative stress and depressive symptoms, the significant main effects of the emotional and instrumental support from non-conational friends on depression were strong even controlling for other two groups' level of supports. These results lend support to the argument that the preexisting acculturation models, mainly focusing on the two-dimension, need to be reconsidered with more flexible and culturally delicate models. Based on the findings of this study, I propose a three-dimensional model including multiculturalism presenting the non-conational network and culture. Although this study has several methodological limitations, this study is one of the novel studies to uncover the unique characteristics and role of the non-conational social network in the context of immigrants' psychological wellbeing. This finding can provide social work practitioners with more culturally competent knowledge to effectively deal with the issues of the immigrant population in the U.S.

Appendix A Demographics

Table 26. Residential states of respondents

State	Observation	Percent
CA	45	23.68
PA	29	15.26
AL	15	7.89
MD	14	7.37
IN	11	5.79
FL	9	4.74
GA	9	4.74
NJ	8	4.21
AZ	7	3.68
NC	7	3.68
NY	6	3.16
VA	6	3.16
TX	5	2.63
IL	3	1.58
CO	2	1.05
ID	2	1.05
MA	2	1.05
TN	2	1.05
WA	2	1.05
HI	1	0.53
MI	1	0.53
MN	1	0.53
OH	1	0.53
OR	1	0.53
WI	1	0.53
Total	190	100

Appendix B Items per construct

Table 27. Items of depressive symptoms

Item	Observation	Mean	S.D.	Min	Max
Little interest or pleasure in doing things	190	0.86	0.75	0	3
Feeling down, depressed, or hopeless	188	0.56	0.67	0	3
Trouble falling or staying asleep, or sleeping too much	189	0.64	0.79	0	3
Feeling tired or having little energy	189	0.92	0.78	0	3
Poor appetite or overeating	190	0.70	0.80	0	3
Feeling bad about yourself	189	0.56	0.71	0	3
Trouble concentrating on things, such as reading the newspaper or watching television	188	0.42	0.65	0	3
Moving or speaking so slowly that other people could have noticed	189	0.07	0.28	0	2
Thoughts that you would be better off dead or of hurting yourself in some way	190	0.11	0.32	0	2

Table 28. Items of acculturative stress

Item	Observation	Mean	S.D.	Min	Max
Because of my Korean background, I have to work harder than most Americans	190	3.73	0.98	1	5
I feel the pressure that what "I" do will be seen as representative of Korean people's abilities	189	3.34	1.04	1	5
In looking for a job, I sometimes feel that my Korean background is a limitation.	188	3.43	1.11	1	5
It's hard for me to perform well at work because of my English skills	190	3.48	1.18	1	5
I often feel misunderstood or limited in daily situations because of my English skills	189	3.33	1.16	1	5
It bothers me that I have an accent in English.	190	3.48	1.24	1	5
I have had disagreements with other Koreans (e.g., friends or family) for liking American customs or ways of doing things	189	2.66	1.09	1	5
I have had disagreements with Americans for liking Korean customs or ways of doing things	189	2.35	1.00	1	5
I feel that my particular practices as Korean have caused conflict in my relationships.	189	2.30	1.03	1	4
I feel that there are not enough Korean people in my living environment	190	2.88	1.29	1	5
When I am in a place or room where I am the only Korean person, I often feel different or isolated	190	3.01	1.18	1	5
I feel that the environment where I live is not multicultural enough; it does not have enough cultural richness	188	2.93	1.31	1	5
I have been treated rudely or unfairly because of my Korean background	189	2.89	1.12	1	5
I have felt discriminated against by Americans because of my Korean background	190	3.03	1.12	1	5
I feel that people very often interpret my behavior based on their stereotypes of what Koreans are like	190	2.74	1.03	1	5

Table 29. Items of English Proficiency

Item	Observation	Mean	S.D.	Min	Max
How well do you speak English at school or work?	185	2.66	0.72	1	4
How well do you speak English with American friends?	185	2.59	0.69	1	4
How well do you speak on the phone?	185	2.57	0.74	1	4
How well do you speak in general?	185	2.63	0.67	1	4
How well do you understand English on television or in movies?	181	2.43	0.75	1	4
How well do you understand English in newpapers and magazines?	182	2.57	0.76	1	4
How well do you understand English at school or work?	180	2.80	0.72	1	4
How well do you understand English in general?	181	2.65	0.70	1	4

Table 30. Items of acculturation toward ethnic culture

Item	Observation	Mean	S.D.	Min	Max
I often participate in my native cultural traditions	186	2.56	0.87	1	4
I would be willing to marry a person from my native culture	185	2.98	0.83	1	4
I enjoy social activities with people from the same native culture as myself	185	3.28	0.72	1	4
I am comfortable working with people of the same native culture as myself	186	2.84	0.90	1	4
I enjoy entertainment (e.g. movies, music) from my native culture	186	3.45	0.71	1	4
I often behave in ways that are typical of my native culture	186	2.80	0.82	1	4
It is important for me to maintain or develop the cultural practices of my native culture	185	2.85	0.87	1	4
I believe in the values of my native culture	185	3.22	0.70	1	4
I enjoy the jokes and humour of my native culture	186	3.11	0.79	1	4
I am interested in having friends from my native culture	186	2.83	0.80	1	4

Table 31. Items of acculturation toward main culture

Item	Observation	Mean	S.D.	Min	Max
I often participate in mainstream American cultural traditions	183	3.01	0.72	1	4
I would be willing to marry a typical American person (I would be willing to let my children marry a typical American person)	184	2.85	0.72	1	4
I enjoy social activities with typical American people	185	2.64	0.69	1	4
I am comfortable working with typical American people	185	2.74	0.69	1	4
I enjoy American entertainment (e.g. movies, music)	183	2.79	0.66	1	4
I often behave in ways that are typically American	183	2.55	0.76	1	4
It is important for me to maintain or develop American cultural practices	183	2.40	0.76	1	4
I believe in mainstream American values	184	2.45	0.71	1	4
I enjoy typical American jokes and sense of humour	185	2.26	0.75	1	4
I am interested in having typical American friends	180	2.79	0.63	1	4

Table 32. Items of received support from global social support

Received Emotional Support from Americans	Obs	Mean	S.D.	Min	Max
There is at least one person that I can share most things with	190	3.1	1.2	1	5
When I am feeling down there is someone I can lean on	190	2.7	1.3	1	5
There is someone in my life I can get emotional support from	189	3.0	1.3	1	5
Received Instrumental Support from Americans					
If stranded somewhere there is someone who would get me	190	3.2	1.3	1	5
I have someone to help me if I am physically unwell	189	2.8	1.4	1	5
There is someone who can help me fulfil my responsibilities when I am unable	186	2.6	1.3	1	5
Received Emotional Support from Koreans					
There is at least one person that I can share most things with	189	4.0	0.9	1	5
When I am feeling down there is someone I can lean on	189	3.7	1.1	1	5
There is someone in my life I can get emotional support from	188	3.8	1.1	1	5
Received Instrumental Support from Koreans					
If stranded somewhere there is someone who would get me	189	3.8	1.0	1	5
I have someone to help me if I am physically unwell	188	3.6	1.1	1	5
There is someone who can help me fulfil my responsibilities when I am unable	187	3.1	1.3	1	5
Received Emotional Support from others					
There is at least one person that I can share most things with	186	2.5	1.2	1	5
When I am feeling down there is someone I can lean on	185	2.3	1.2	1	5
There is someone in my life I can get emotional support from	186	2.4	1.2	1	5
Received Instrumental Support from others					
If stranded somewhere there is someone who would get me	186	2.4	1.2	1	5
I have someone to help me if I am physically unwell	186	2.2	1.1	1	5
There is someone who can help me fulfil my responsibilities when I am unable	186	2.1	1.1	1	5

Table 33. Items of expected support from egocentric questions

Expected Support from American Ties					
Emotional support from American ties	166	2.1	1.2	0	4
Instrumental support from American ties	166	2.3	1.2	0	4
Informational support from American ties	166	2.4	1.3	0	4
Expected Support from Korean Ties					
Emotional support from Korean ties	166	2.7	0.8	0	4
Instrumental support from Korean ties	166	2.7	0.9	0	4
Informational support from Korean ties	166	2.9	0.9	0	4
Expected Support from Other Ties					
Emotional support from Other ties	166	0.9	1.3	0	4
Instrumental support from Other ties	166	1.0	1.4	0	4
Informational support from Other ties	166	1.0	1.4	0	4
Expected Support from Family Ties					
Emotional support from family ties	166	2.7	1.5	0	4
Instrumental support from family ties	166	2.8	1.5	0	4
Informational support from family ties	166	2.8	1.5	0	4

Appendix C Recruitment Letter

Are you Korean or was-Korean living in the U.S.?

Participants Needed for Immigrants Interaction Study

We are conducting a research study to examine the effects of social interactions among Korean immigrants, sojourners or students living in the U.S. on their adaptation and life satisfaction.

Who can join this study?

- Korean immigrants living in the U.S.
- Korean students or expatriates currently living in the U.S. and having a long-term plan residing in the U.S.
- Aged more than 18 years old
- Having lived in the U.S. at least for 1 year
-

Reward for the participation?

- $10 online credit for using in Starbucks stores across all the U.S.
- Should opt for choosing the reward via completing the whole questionnaire
-

What is involved?

- Answer a 30-minute online survey questionnaire through the link :

To learn more about the study, please contact Haeran Song
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