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International Students' Social Factors And Acculturative Stress

Xiaohui Yang

ACCEPTANCE

This dissertation, INTERNATIONAL STUDENTS' SOCIAL FACTORS AND ACCULTURATIVE STRESS, by XIAOHUI YANG, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree, Doctor of Philosophy, in the College of Education & Human Development, Georgia State University.

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INTERNATIONAL STUDENTS' SOCIAL FACTORS AND ACCULTURATIVE STRESS

by

XIAOHUI YANG

Under the Direction of Dr. Don Davis

ABSTRACT

Each year, many international students come to the United States from all over the world to further their education, and they have contributed a significant part to the economy. Adapting to a new culture can be challenging and that puts international students at a greater risk for experiencing mental health issues than students in general. Thus, the need for understanding cross-cultural adaptation for international students is becoming increasingly important. Social factors are one of the coping resources that have been suggested to benefit international student cross-cultural adaptation. Studying aboard causes disruption in international students' social relationships that is compounded by a change in culture, where language, social norms, values may make it more difficult to form strong social bonds in a new environment. One social construct that may help explain why international students can deal with the increased stress and risk of changing cultural environments is social connectedness (Lee & Robins, 1995). Therefore,

in Chapter 1, I conducted a narrative review of 15 studies of international students exploring associations of social connectedness with psychological adaptation and sociocultural adaptation drawing from a cross-culture adaptation model (Searle & Ward, 1990). The review highlighted social connection effects on various predictors in psychological and sociocultural domains to understand social connectedness effects on the international student cross-cultural adaptation process. In Chapter 2, I examined the effects of social factors (e.g., social support and social connectedness) on international students' acculturative stress from a bilinear perspective that was proposed by Berry et al.'s (1987) bi-dimensional model. A sample of 206 international students in the U.S. was collected from various resources. Hierarchical linear regression revealed that various types of social support and social connectedness are important predictors for acculturative stress as predicted. Specifically, social connectedness is the strongest predictor of acculturative stress. Also, I conducted a moderation analysis using the PROCESS Macro developed for SPSS to test the moderation effects proposed in Berry et al.'s (1987) theoretical work. I predicted that social connectedness would moderate the relationship between other social factors and acculturative stress. The results of moderation analysis were partially supported. Implications and recommendations are discussed.

INDEX WORDS: International Student, Cross-Cultural Adaptation, Acculturative Stress, Social Connectedness, Social Support

INTERNATIONAL STUDENTS' SOCIAL FACTORS AND ACCULTURATIVE STRESS

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DEDICATION

I dedicate this to my parents, Yuzhong Yang and Yuexian Liu. From the first day I left home and came to the U.S. for education, you two have never doubted my ability and always trusted in me. Without you two, I would not be able to get to this point and achieve my dream. It is because of your unconditional support and love for me, I can chase my dream without any hesitation. I cannot use words to express my gratitude I have for you two, and I will continue being the daughter for whom you feel proud.

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1 A NARRATIVE REVIEW OF STUDIES ON SOCIAL CONNECTEDNESS IN INTERNATIONAL STUDENTS

International students are a major part of the economy for higher education in the United States. There are currently about 1.2 million international students studying in the United States (the United States Immigration and Customs Enforcement Agency; ICE, 2018). Among those students, roughly 85 percent of them were enrolled in associate's (7.1%), bachelor's (33.5%), master's (31.9%), or doctoral (12.4%) programs, and the international student population has increased by 0.8 percent since March 2017. International students came from more than 229 different countries and territories from all over the world.

International students encounter a variety of challenges and stressors when adapting to new cultural environments that may put them at a greater risk than students in general. Relative to American White students, Asian international students are at higher risk for psychosocial adjustment difficulties, psychological distress, sociocultural difficulties, and social stress (Cheng et al., 1993; Poyrazli et al., 2004; Zhang &Goodson, 2011). Studies also identified that international students have more adjustment problems than their domestic counterparts, but also have limited resources to deal with cross-cultural adjustment (Lee et al., 2004). Therefore, international students appeared to face more challenges than domestic students, which requires a better understanding of these students' unique experiences.

In light of the adjustment difficulties reported by international students, social factors (e.g., maintaining relationships from home and developing new social relationships) have been found to be the key coping recourse of adaptation that affect the psychological well-being of international students (Sandu, 1995; Zhang & Goodsoon, 2011). When international students left home to study aboard, they often left their essential support in their home country. Without

strong support in the new environment, Mallinckrodt and Leong (1992) pointed out that social support is not only important for positive well-being, but also for providing coping resources for people who are experiencing stressful life changes. Mallinckrodt and Leong (1992) highlighted that social support has a greater impact at high levels of stress, and the presence of support moderates or buffers the otherwise harmful impact of life stress. If international students cannot receive adequate social support, the stress of adjusting to the unfamiliar environment may result in symptoms of distress.

Bowlby's (1988) attachment theory also emphasized the need to form and maintain interpersonal relationships for international students in order to promote adaptation. He suggests the idea of a "secure base" in which secure attachment to caregivers (as well as temporarily absent loved ones' mental representations) offers a reassuring presence that lessens anxiety and encourages feelings of security in novel situations. This concept has been applied to adult attachment theory. He indicated that adults who lack a sense of attachment tend to have a limited ability to regulate their feelings and explore their unfamiliar environment. In contrast, securely attached individuals can access comforting mental representations of attachment figures in the absence of a loved one (Bowlby, 1988).

From an attachment perspective, international students separate from significant others in their home countries and come to an unfamiliar environment to study. International students that have secure attachments more often develop the internalized belief of felt security, which may prepare them to cope with various stressors, explore new social environments and begin new relationships. In contrast, international students who developed higher attachment anxiety and high avoidance were likely to experience interpersonal problems with having sociocultural adjustment difficulty and psychological distress (Wang & Mallinckrodt, 2006).

Overall, social factors appear to play a critical role in international students' cross-cultural adaptation. Several theories have sought to understand the nature of social factors in international students and their influence on their adaptation. The purpose of the current review was to examine the role of social factors (e.g., social connectedness) in international students. First, I reviewed the theoretical framework and key definitions in the literature. Second, I conducted a systematic search of empirical studies on social connectedness in international students. Third, I identified the existing gaps in this literature that need to be addressed in future studies and also clarify important directions for social connectedness in international students.

International Students and Social Connectedness

One of the critical reasons that international students may do poorly, then, is that changing cultural environments disrupts people's core relationships. Although true for all college students, the disruption for an international student is compounded by a change in culture, because differences in language, social norms, values may make it more difficult to form strong social bonds. One social factor that may help explain why international students can deal with the increased stress and risk of changing cultural environments is social connectedness. This is a personality disposition that is influenced by a person's history within interpersonal relationships.

Lee and Robins (1998) defined social connectedness as a cognitive representation of the "self-in-relation-to-other" that involves "the subjective awareness of being in close relationship with the social world" (p. 338). Their conceptualization drew heavily from psychodynamic theory and self-psychology theory (Kohut, 1984), which positions belongingness as one of three basic needs in addition to idealization and grandiosity (Kohut, 1984). According to Kohut's (1984) original theorizing, social connectedness functions to help bridge people between familiar social spaces and new social environments. People who had caring and responsive relationships

with family and friends during formative years have grounds for expecting similar treatment in new social contexts, so they can essentially borrow on those earlier experiences to maintain a sense of equanimity and well-being, even in new social environments. Thus, people with higher social connectedness leverage their experience in prior relationships. They tend to feel more comfortable and confident when forming new relationships and can more easily connect with others that may be viewed as different from themselves. Therefore, people's level of social connectedness depends on an accumulation of all of a person's social experiences—including proximal and distal relationships with family, friends, peers, acquaintances, strangers, community, and society. People internalize positive experiences and use them as a secure base for anticipating the potential for bondedness within various social environments (Lee & Robbins, 1998).

Social connectedness is distinct from some related constructs. For example, social connectedness is different from broader connectedness that Baumeister and Leary (1995) proposed that belonging is a basic human need, which individuals have an innately prepared need to form and maintain at least a minimum quantity of close interpersonal relationships. They suggested that this need is similar to other fundamental needs; once their current relationship satisfies this need, the motivation decreases and that forming additional bonds beyond those few is less impactful. In contrast, Lee and Robbins (1995) believed that there is a continuous need that motivates individuals for connectedness that does not diminish when met. Regardless of the quality or quantity of relationships, people with a high sense of social connectedness would continue to look for connectedness to strengthen and maintain their internal sense of belonging with the social world. This sense of connectedness is enduring and extends throughout a person's life. In addition, Baumeister and Leary (1995) focused on the general needs of belonging and

neglected the importance of a subjective sense of connectedness that Lee and Robbins (1995) suggested.

Similarly, social connectedness differs from social support and attachment because social connectedness is associated with an internal focus of a view of an individual's self in regards to the world around whereas social support emphases the presence or lack of a proper social environment externally, and attachment deals with the direct relationship and the external behavioral pattern changes (Lee & Robbins, 1995). Additionally, social connectedness is dissimilar to attachment because it focuses on a sense of connectedness across relationships, whereas attachment focuses on specific relationship bonds (e.g., with a caregiver or romantic partner). Also, social connectedness may serve as ongoing perceptions of the social environment, while attachment theory emphasized that child attachment experience constructs a working model that guides the formation of internal cognitive perception in adults (Bretherton, 1985; Lee & Robbins, 1995).

Therefore, based on Lee and Robin's (1995;1998) theory, the properties of social connectedness may apply to international students as they adapt to life in a foreign country. International students with a lower sense of social connectedness may add on additional challenges and distress in the new environment. They may have a hard time managing their needs and feelings while facing and dealing with uncertainty. In addition, they may not be able to establish new and meaningful relationships in the new social environment due to a lower level of interpersonal trust. On the other hand, international students with greater social connectedness feel more comfortable and open to the new culture, which could bring potential positive outcomes in the cross-cultural adaptation process in international students. They can draw on the

trust established with parents or other close relationships to deal with the ambiguity and forming relationships in the new environment.

Thus, social connectedness seemed to be a protective factor for international students. It provides a secure sense for international students that continues to promote their psychological well-being and social function in the new environment. However, it is unclear how social connectedness functions in this process, especially how social connectedness relates to the principal aspects of psychological and social adaptation and potentially facilitate international students' adaptation to the new culture. Thus, this paper attempted to clarify the role of social connectedness in international students' cross-cultural adaption process and understand its protective effects on them.

International Students and Cross-Cultural Adaptation

In order to understand how social connectedness plays a role in the cross-cultural adaption process in international students, it is helpful to have a theoretical framework to describe how cross-cultural adaption functions in international students. Researchers have attempted to develop various theoretical frameworks to investigate the nature of international student adaptation and variables that predict their effective adaptation. Ward and colleagues' model (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999) is one of the comprehensive models that can help to understand this process. They proposed two distinctive constructs in their model, including psychological adaptation and sociocultural adaptation to describe the key factors impacting the cross-cultural adaptation process. Psychological adaptation refers to "psychological well-being or satisfaction" within the new culture, and sociocultural adaptation implies "the ability to fit in and to negotiate interactive aspects of the new culture" (Searle & Ward, 1990, p. 450).

These two constructs are related, but they are conceptually and empirically distinct that should be understood in different theoretical frameworks. Psychological adjustment is framed within a stress and coping framework and is best predicted by personality variables, such as social support, contact with fellow nationals and hosts, life changes, and attitudes towards the hosts. Sociocultural adjustment is framed within social skills or culture learning paradigm and is influenced by language proficiency, cross-cultural contact, cultural distance, cross-cultural training, acculturation strategies, previous cross-cultural experiences, and length of residence in the new culture (Searle & Ward, 1990; Ward & Kennedy, 1999). This model took both psychological and sociocultural adaptation into account, which allows for a more complete and unique review of cross-culture adaptation outcomes. In addition, this model explained that specific predictors could affect the psychological and sociocultural adaptation that may help us understand how social connectedness takes a part in the adaptation process in international students. I organized the present review based on Ward and colleagues' conceptual framework. (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999).

Purpose of Present Review

The concept of social connectedness seemed to effectively help international students to cope with challenges in the new environment. Social connectedness has been found to be related to various mental health outcomes (e.g., anxiety) and bring positive effects (e.g., life satisfaction) to individuals (e.g., Lee & Robbins, 1998). There are an increasing number of social connectedness studies in cross-cultural transitions that have been found to be related to it. However, there is still an unknown puzzle about how social connectedness affects international students' adaptation process; because existing theories have not specifically shown how social

connectedness influences psychological and sociocultural adaptation that impacts the cross-cultural process as a whole.

Therefore, based on a cross-cultural adaptation framework (Searle & Ward; 1990; Ward & Kennedy,1999), the purpose of this study was to examine the role of social connectedness in the cross-cultural adaptation as it is seen and applied in previous research. I reviewed research in international students that include social connectedness and understand how social connectedness could impact international students' adaptation psychologically and sociocultural. I utilized the guidance of the framework to understand and examine the relationship between social connectedness and various factors in the culture adaptation process of international students to understand the mechanics of cross-cultural adaptation. This study aims to describe the effects of social connectedness in international students' cross-cultural adaptation process and attempt to illuminate select mechanisms through which social connectedness affects international students' various effects.

Method

Inclusion criteria for the present review were that the study (a) included international students, (b) used the Social Connectedness Scale (Lee et al., 1995; Lee et al., 2001), and (c) was reported in English. I used three methods to locate studies for the current systematic literature review. First, I identified studies by conducting searches on PsycINFO and Google Scholar through January 30, 2018. I used the search terms 'social connectedness' and 'college or university.' Second, I used Google Scholar to find articles that cited a measure of social connectedness (i.e., Lee et al., 1995; Lee et al., 2001) through March 16, 2018. Third, I examined the cited references in identified articles. The initial search located 650 articles that cited Lee et al. (1995) and another 426 articles cited the measure of Lee et al. (2001). I reviewed the title and

abstract of articles based on inclusion criteria. If potentially relevant, I obtained the full-text article to confirm eligibility. Altogether, I located 15 studies that met the inclusion criteria. An overview of the method and results of studies are included in Table 1.

Results

Overview of Participants

The studies in this review include a variety of international student samples holding a valid student visa in their host country. Of the fifteen studies, only three used a longitudinal design (Du, 2012; Du & Wei, 2015; Wang et al., 2015). Four of studies on social connectedness included students from a variety of countries (Hendrickson et al., 2011; Jackson et al., 2013; Kegel, 2015; Yeh &Inose, 2003). The remaining studies targeted international students from a specific country (e.g., Turkish international students, Duru & Poyrazli, 2007; Duru & Poyrazli, 2011). Also, some studies were conducted outside the U.S. and included international students studying in their countries (e.g., international students in France et al., 2018).

Overview of Measures

Although this review only included studies that used the original (N = 8) Social Connectedness Scale-Original (Lee & Robbins, 1995) or its revision (N = 3; the Social Connectedness Scale-Revised; SCS-R; Lee et al., 2001) to assess social connectedness, it is important to note that some of the studies made slight alterations to one of these two scales to meet their purpose of the study. For example, one study selected eight items with high pattern coefficients in Lee et al. (2001) study and tailored them to their participants (e.g., replacing "people" with "Americans") (Zhang & Goodson, 2011). Some of the studies translated their scale into other languages to help international students understand the scale better. For instance, one study translated the scale in the Chinese version (Du & Wei, 2015). Those studies that

altered the original scale could help to meet their purpose of the study and fit their population better, but most of the authors did not report tests of measurement invariance for the scales, so there was limited evidence for the validity of the scales used after translation or alternation.

Primary Findings

This section is organized into two sections, which are divided into psychological adaptation and sociocultural adaptation that is based on Ward and colleagues' model (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999). In each section, I describe the relationship with social connectedness and various predictors that Ward and colleagues proposed in their model (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999) and explain how social connectedness is related to those predictors that impact the cross-cultural adaptation process in international students.

Social Connectedness and Psychological Adaptation

Ward and colleagues' model (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999) proposed that one type of cross-cultural adaptation is psychological adaptation, which is affected by personality, life changes (e.g., stress), coping style and social support. This section illustrated how each psychological predictor (e.g., life change, personality, social support, and coping) is associated with social connectedness. Overall, twelve studies reported an association between social connectedness and numerous predictors of psychological adaptation.

Constructs associated with life change tend to influence psychological adaptation (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999). Ten studies found that higher social connectedness related to lower culture stressors (e.g., perceived prejudice, Cao et al., 2018) and effect sizes ranged from small to large. However, one study found that homesickness was not

related to social connectedness in their sample of 86 international students from a University in Hawai'i. The possible explanation for this null relationship could be the uniqueness of the Hawai'i environment meets the criteria of a pluralistic sociocultural region, and there is no evident dominant culture in their culture (Hendrickson et al., 2011). Because of this reason, international students might not feel psychological distress and that social connectedness might not impact this process.

Personality is suggested to predict psychological adaptation (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999). Some personality dimensions might serve as a positive force in the cross-cultural adjustment process. Three studies reported an association between personality traits and social connectedness. Duru and Poyrazli (2007) surveyed 229 Turkish international students studying found that social connectedness was negatively and moderately correlated with neuroticism and positively correlated with openness. However, they only studied these two big five personality traits and did not investigate other personality traits (e.g., agreeableness). Similarly, Jackson et al. (2013) examined the influence of personality on social connectedness and found that social connectedness was positively and moderately correlated with self-esteem, optimism, and hope in a sample of 70 adult international students in the U.S. Their results showed that how social connectedness is related to positive personality traits that may be more generally effective in psychological adaptation.

In addition, Cooper (2015) found evidence between social connectedness and personality qualities. A total of 39 Indian students, who were studying at Waiariki Institute of Technology in New Zealand, completed an online survey. The result showed a moderate and positive correlation between social connectedness and horizontal relational self-construal, and horizontal collective self-construal. However, they found a non-significant relationship between social

connectedness and independent self-construal, vertical-collective self-construal and vertical-relational self-construal. It seemed that personality qualities that tended to value interdependent relationships with others would be associated with social connectedness. Although this study offered evidence between social connectedness and personality, this study included a very small sample size (N = 39), and they reported a low response rate that could potentially have impacted the data analysis process and result. Thus, due to the small sample size, the findings from their study might have limited generalizability.

Social support is another important factor in psychological adaptation (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999). Three studies reported a positive correlation between social support and social connectedness, and the effect size ranged from medium to large (Cao et al., 2018; Mak & Kim, 2011; Yeh & Inose, 2013). This result illustrated that an increased sense of social connectedness could help international students have an easier time connecting with others, which increases their opportunity to receive support.

Coping also plays an important role in psychological adaptation (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999). Two studies examined the relationship between social connectedness and coping. One study reported a positive and moderate correlation between social connectedness and coping strategies (e.g., mental health help-seeking for attitudes, help-seeking behavior for stress, and help-seeking behavior for missing family members) in the sample of 48 African international students in the U.S. (Chebbet, 2012). However, this study included a relatively small number of participants (N =48) that their result may not be an accurate representation of the overall population of African students studying in the U.S. The other study found no relationship between adaptive coping and maladaptive coping with social connectedness in the sample of 70 participants (Jackson et al., 2013). The possible

explanation could be a measurement issue that the authors split the original coping scale into adaptive and maladaptive subscales, and these two subscales have questionable reliability (α =.78 and α = .64, respectively) that diminished the probability of finding significant results. In addition, these two studies examined different types of copings and found dissimilar results, revealing that types of coping may play a different role in social connectedness. Overall, the evidence of social connectedness and coping is limited, and how social connectedness impacts international students' coping during psychological adaptation is questionable.

Social Connectedness and Sociocultural Adaptation

Ward and colleagues' model (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999) suggested that sociocultural is another component in cross-culture adaptation that focuses on behavioral competence and is different from psychological adaptation. Sociocultural adaptation is influenced by culture experience and knowledge, length of residence in the new culture, amount of interaction, and identification with host nationals, language competence, and acculturation strategies. This section described the relationship between social connectedness and predictors (e.g., interaction with the host nationals, language, length of stay, culture experience, knowledge, and acculturation strategies) of sociocultural adaptation. Overall, eleven studies found evidence of an association between social connectedness and various predictors.

Interaction with the host nationals is an important factor for sociocultural adaptation for international students (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999), and two studies in the review discussed its association with social connectedness. Cao et al. (2018) provided evidence between social connectedness and social interaction with host members in a group of 211 Chinese students in France. The result showed that social connectedness was

positively correlated with face to face contact and online contact with host members. Hendrickson et al. (2011) also found similar results in their study that they surveyed 86 international students from a University in Hawai'i and found that international students who have more social connectedness had a higher variability of host-nation friends. Their results confirmed that social connectedness could help international students connect with host nationals, which may impact their adaptation to the new environment.

However, Hendrickson et al. (2011)'s results revealed no significant relationship between social connectedness and host nation strength, indicating the levels of friendship strength with domestic individuals. The possible explanation of this finding could be that social connectedness does not impact the quality of the relationship with host nationals, which aligns with the conceptualization from Lee and Robbins (1998). However, higher social connectedness could lead to more interactions with host nationals, which may impact adaptation.

Ward and colleagues' model (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999) suggested that language is one of the factors that could contribute to the international student acculturation process. Five studies reported English language competency was positively, ranged small to moderate, related to social connectedness (Duru & Poyrazli, 2007; Mak & Kim, 2011; Meng et al., 2018; Yeh &Inose, 2003). Additionally, Meng et al. (2018) found a positive but weak relationship between social connectedness and local language proficiency (e.g., French and Dutch) in a sample of 206 Chinese students in Belgium.

Notably, one study found that English was not correlated with social connectedness in their central/Latin American and African sample (Yet & Inose, 2003). Although these two groups came from cultures that strongly emphasize interdependence and close connections with others, English fluency appears not to affect their social experience, contributing to their sense of

social connectedness. There are a few possible factors that may explain these findings. The samples were small (i.e., 40 Central or Latin Americans and 29 Africans). Also, these samples tended to be older and graduate students. Moreover, their English fluency was based on the composite score from three self-reported items, which may be an untrustworthy measure. Accordingly, it is possible that higher levels of English language fluency did not lead to greater feelings of social connectedness. Therefore, there were no strong associations reported between language proficiency and social connectedness in this sample. It appears that adequate social connectedness promotes adequate language skills, which in turn leads to higher adaptation in the unfamiliar environment. However, some differences exist in each geographic region or ethnic group that requires additional research.

Length of stay in the host nation is another variable that may influence international students' sociocultural adaption. (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999). In these studies, social connectedness was defined as a stable self-construct that might not change over time (Lee & Robbins, 1998). Therefore, it seems that social connectedness may not relate to the length of international students stay in their culture adaptation progress. Five studies confirmed that length of stay in the host country was not related to international students' sense of connectedness (Duru & Poyrazli, 2011; Duru & Poyrazli, 2007; Du & Wei, 2015; Cao et al., 2018; Chebbet, 2012).

However, one study from Yeh and Inose (2003), found a positive correlation between social connectedness and years of study (r =.12, p < .05) in 359 international students who studied in the U.S. Additionally, they also found this positive correlation in their Asian sample (N =227), but not in the sample of European (N = 63), Central/Latin American (N = 40), or African (N = 29). The possible reason for the different correlation result found it in this study

could be cultural values and experiences play a different role in their sense of connectedness with others. For example, people from an Asian culture strongly emphasize interdependence and close relatedness to each other and that the feelings and reactions of others close to them are pivotal to their actual conception of self (Markus & Kitayama, 1991). Therefore, the longer they stay, it might help them establish stronger social support and relationships with others that influence their sense of connection with others, leading them to feel more social connectedness.

Hence, the finding of social connectedness and length of stay appears to be consistent and does not seem relate to each other. Social connectedness seems to be relatively stable, as conceptualized by Lee and Robbins (1998). However, potential factors, such as cultural values, might influence social connectedness over time and impact the individual experience of adaptation.

Cultural experience, knowledge, and acculturation strategies are also important factors during the process of international students' sociocultural adaptation (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999). Of nine studies, seven reported a positive association between social connectedness and variables associated with cultural experience, knowledge, or acculturation strategy (e.g., host culture adaptation, Cao et al., 2018). Two of them reported social connectedness negatively correlated with cultural experience (e.g., sociocultural adjustment difficulties; Jackson et al., 2013; Zhang & Goodson, 2011). Their results showed that higher social connectedness could enhance the international students experience with various cultures that potentially increase their ability to adapt to transitions and decrease their adjustment difficulties. Their result could be because social connectedness provided a sense of relatedness to the world that encourages individuals to learn and explore different cultures.

Concluding Results

Overall, the primary finding organized the outcome variables by adopting Ward and colleagues' conceptual distinction of psychological and sociocultural adaptation, the two inter-related yet distinct domains of intercultural adaptation (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999). Most studies found that social connectedness was associated with predictors in both psychological and sociocultural adaptation. Some studies reported unassociated relationships that could possibly be due to various factors, such as cultural values.

Discussion

International students who come to a brand-new environment to purse education and leave their connection at home undergo a stressful and challenging experience. One of the factors that could help them cope with these difficulties is social connectedness, which Lee and Robbins (1995, 1998) defined as a subjective awareness of closeness with others that could guide individual feelings, thoughts and behaviors that affect the individual's social life and psychological wellness. Social connectedness may provide a secure and stable sense of relatedness to the social world that they develop in their home country and continue guiding their life in an unfamiliar environment in international students. Additionally, prior findings have documented a clear association of social connectedness and college students' well-being and found higher social connectedness is related to higher well-being (Armstrong & Oomen-Early, 2009; Lee et al., 2001; Williams & Galliher, 2006). Therefore, there are reasons to believe that social connectedness plays a critical role in international student cross-cultural adaptation. However, researchers do not know how social connectedness influences the cross-cultural adaptation process in international students is unclear. Thus, this review used Ward and colleagues' model (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999) as a

framework to examine the relationship between social connectedness and psychological and sociocultural adaptation in international students.

Ward and colleagues' model (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999) suggested that personality, life changes (e.g., stress), coping style, and social support are important predictors of psychological adaptation. This review found a robust link between social connectedness and those psychological adaptation predictors. Specifically, higher social connectedness related to lower negative psychological adaption predictors (e.g., perceive prejudice). Also, higher social connectedness related to higher positive psychological adaption predictors (e.g., social support and adaptive coping). These findings confirmed with the Lee and Robins (1995; 1998) theory that social connectedness helps individuals to regulate their emotions and psychological needs. Moreover, this review suggested that social connectedness could continue serving as a strong foundation and protective factor for international students in the new environment.

Although I found that social connectedness was related to psychological adaptation, some findings need to be further examined. For example, social connectedness was unrelated to homesickness in a sample of international students in Hawaii. It is possible that the unique cultural environment in Hawaii impacts this this finding. Perhaps further research can look at contextual factors, such as the individual connectedness with domestic culture. Similarly, the evidence between social connectedness and some of the psychological adaption predictors are limited. Only three of fifteen studies reported an association between social connectedness and personality. One study reported that social connectedness was moderately related to horizontal relational self-construal. This finding suggests that social connectedness is a trait-like construct that reflects interpersonal closeness with others.

The other component in Ward and colleagues' model (Searle & Ward, 1990; Ward et al., 2001; Ward & Kennedy, 1999) is sociocultural adaptation, which is influenced by culture experience and knowledge, length of residence in the new culture, amount of interaction and identification with host nationals, language competence, and acculturation strategies. I also found a robust association between social connectedness and these predictors. Namely, I found consistent results that higher social connectedness was associated with stronger social adaptive factors (e.g., higher language competency and host cultural adaption). In addition, higher social connectedness was shown to relate to lower social adaptive factors (e.g., sociocultural adjustment difficulties. Moreover, Lee and Robbins (1995;1998) proposed that social connectedness is a stable and enduring self-construct that would not change over time. I found five studies are consistent with their theory that social connectedness is not related to length of time in international students. However, one study found a positive relationship between social connectedness and years of study in a sample of international students in the U.S. One possible explanation is that their sample consisted of a larger number of Asian international students, who tend to value interpersonal closeness that possibly leads them to be related to social connectedness. It could be helpful for future research in this area to explore medicating effects such as cultural factors that can change the relationship between them.

Limitations

Additionally, there are several limitations in the current review that warrant discussion. First, some of the studies limited their sample in certain respects (e.g., Chinese international students and small sample size). Second, only two studies used a longitudinal study design, and the rest of the studies used correlational, cross-sectional designs that could not determine cause and effect relationships. Also, in one of the longitudinal studies, general social connectedness

was treated as a covariate in the study (Du & Wei, 2015). The other longitudinal studies only measured general social connectedness at Time 1, so we are unable to consider how social connectedness may have changed over time (Du, 2012). Third, one of the studies (Jackson et al., 2013) did not clearly distinguish social connectedness from social support. They used the social connectedness scale (Lee & Robbins, 1995) to measure social support and defined this construct as social support. Fourth, although, this review only included Social Connectedness Scale-Original (Lee & Robbins, 1995) and the Social Connectedness Scale-Revised (SCS-R; Lee et al., 2001), some studies adapted or modified those scales to fit their studies better that might bring inconsistency in measuring social connectedness. Fifth, three studies (Cao et al., 2018; Du & Wei, 2015; Mak & Kim, 2011) translated their measures into Chinese, but the authors did not report tests of measurement invariance for the scales, so there was limited evidence for the validity of the scales used after translation.

Conclusion

Given the gap in work in social connectedness in international students, a clear need exists to uncover and inform our understanding of social connectedness in international students. First, most of the studies could not provide a causal relationship in social connectedness in international students. Different research designs are needed to examine stronger causal influences of social connectedness and other constructs. Second, one study discovered a difference among several geographic regions in international students. It indicated that although most international students may share similar experiences with each other, their unique cultural values or other factors could affect them differently. Future studies should explore and compare the experiences of international students from different geographic locations or ethnic groups. Third, most studies have positioned social connectedness as an intervening variable (e.g.,

mediator or moderator) in international students, but few studies have examined the potential predictor factor for social connectedness. Future studies should explore related factors that could impact social connectedness or uncovered the possible effects of social connectedness in international students. This understanding could help to develop possible prevention strategies to promote social connectedness in international students.

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Tables

Table 1

Overview of Method and Results of Studies included in Narrative Review

Author	Sample	Measure of SC	Other Measures	Primary Findings (SC)	Other Findings
Yeh &Inose (2003).	372 international undergraduate and graduate students	Social Connectedness Scale (Lee and Robbins, 1995)	Demographic questionnaire, the Acculturative Stress Scale for International Students (Sandhu and Asrabadi, 1994), and the Social Support Questionnaire-Short Form (Sarason et al., 1987). Participants reported their English fluency based on a 5-point Likert scale.	Social connectedness was positively correlated with social support (r = .35), years in the US (r = .12), English (r = .26) and negatively correlated with acculturative stress (r = -.48). Social connectedness and social support network satisfaction contributed to 18.3% of the variance demonstrating that international students who felt more socially connected and were more satisfied with their social networks experienced less acculturative stress.	Geographic region, English language fluency, and social support network satisfaction all had significant unique contributions to the acculturative stress but age and gender were not significant predictors of acculturative stress. Specifically, region accounted for 11.4% of the variance and significantly predicted acculturative stress; Europeans were less likely to experience acculturative stress than were non-European participants. English language fluency was responsible for 5.2% of the variance providing evidence that participants who are more fluent in English experience less

					acculturative stress. Social connectedness and social support network satisfaction contributed to 18.3% of the variance, demonstrating that international students who felt more socially connected and were more satisfied with their social networks experienced less acculturative stress.
Duru & Poyrazli (2011).	229 Turkish international students	Social Connectedness Scale (SCS) (Lee & Robbins, 1995)	Demographic questionnaire, the adjustment difficulties scale (Stroebe, Van Vliet, Hewstone, & Willis, 2002), and the Perceived Discrimination Scale (Sandhu & Asrabadi, 1998).	Social connectedness is positively correlated with English language competency (r = .18). Social connectedness is negative correlated with perceived discrimination (r = -.16) and adjustment difficulties (r = -.40). The regression model showed that the overall model explained 22% of the variance in adjustment difficulties and did significantly predict adjustment difficulties.	The level of adjustment difficulties was positively correlated with the level of perceived discrimination, and negatively correlated with years of study in the US, and English language competency level. Additional results indicated that the level of years of study in the U.S. was negatively associated with levels of adjustment difficulties and perceived discrimination, positively correlated with English language competency.

	Specifically, social connectedness and perceived discrimination significantly contributed to the variance in the adjustment difficulties.	Age did not correlate with adjustment difficulties, perceived discrimination. GPA positively correlated with age and years of study in the U.S., years of study in the U.S. positively correlated with English language competency, and GPA. Group difference result indicated no significant group differences between male and female however, result showed that student who interacted with coculture members had high levels of adjustment difficulties that who interacted more with members from the U.S. The regression model showed that the overall model explained 22% of the variance in adjustment difficulties and did significantly predict adjustment difficulties. Specifically, social connectedness, and perceived discrimination significantly contributed to

					the variance in the adjustment difficulties.
Hendrickson et al. (2011).	86 international students	Social connectedness scale (Lee & Robbins, 1995)	Homesickness and contentment scale (Shin &Abel, 1999), the temporal satisfaction with life scale (TSWLS) (Pavot, Diener, & Suh, 1998), an extensive friendship network grid (Hendrickson & Rosen, 2009) and a demographics section that included several items concerning English language skills.	Social connectedness was negatively correlated with conational ratio friends (r = -.29). Social connectedness was positively correlated with satisfaction (r = .34), contentment (r = .63), and host nation variability (r= .33).	International students with a higher ratio of individuals from the host country in their network reported more satisfaction and less homesick. Participants who reported more friendship variability with host country individuals reported more satisfaction and social connection.
Duru & Poyrazli (2007).	229 Turkish international students	Social Connectedness Scale (SCS; Lee & Robbins, 1995)	Demographic questionnaire, the Adjustment Difficulties subscale of the Utrecht Homesickness Scale (Van Vliet,	Social connectedness was negatively correlated with adjustment difficulties (r = -.40), neuroticism (r = -.31) and acculturative stress (r = -.27)	There were no significant group differences between female and male students but there were significant group differences between single and married students that married students showed higher levels of

			Heustone, & Willis, 2002), the Acculturative Stress Scale for International Students (ASSIS) (Sandhu & Asrabadi, 1998), and two subscales (Neuroticism and Openness to Experience) of the Big Five Inventory (John, Donohue, & Kentle, 1991)	Social connectedness positively correlated with openness (r = .19) and English language competence (r= .18). Age and years of study did not correlate with social connectedness.	acculturative stress than single students. There were no interaction effects between marital status and gender. Marital status, English competency, social connectedness, adjustment difficulties, neuroticism, and openness to experience significantly contributed to the variance in acculturative stress. (r square = .36) Acculturative stress was positively correlated with adjustment difficulties and was negatively correlated with social connectedness.
Jackson et al. (2013).	70 international students	Social Connectedness Scale-Original (Lee & Robbins, 1995), This study used social connectedness	Demographic questionnaire, the Acculturative Stress Scale (Sandhu & Asrabadi, 1994), the Sociocultural Adaptation Scale (SCAS) (Ward & Kennedy, 1999), the Center for	Social support (social connectedness) is positively correlated with self-esteem (r = .36), optimism (r = .30), hope (r = .28) Social support (social connectedness) is negatively correlated with acculturative stress (r = -.44), depressive	Depressive symptoms were significantly negatively related to self-esteem, optimism, hope, and social support. Maladaptive coping strategies and acculturative stress were positively associated with depressive symptoms and

to measure social support.	Epidemiological Studies Depression Scale (Radloff, 1977), the Rosenberg Self- Esteem Scale (Rosenberg, 1965), the Brief COPE Inventory (Carver, 1997), the Life Orientation Test-Revised (LOT-R) (Scheier, Carver, & Bridges, 1994), the Hope scale (Snyder, Harris, and Anderson et al., 1994).	symptoms (r = -.46), sociocultural adjustment (r =. -28). Social support acted as a mediator between acculturative stress and depressive symptoms.	sociocultural adjustment difficulty. The use of adaptive coping strategies was positively significantly associated with depressive symptoms and difficulty with sociocultural adjustment. Self-esteem, optimism, and hope were not significantly related to difficulty with sociocultural adjustment difficulties. The overall model for predicting depressive symptoms was significant. Lower levels of self-esteem and greater use of coping techniques, with social support affecting how acculturative stress impacts depressive symptoms are the predictors for depressive symptoms. The overall model for predicting acculturative stress was no longer significant when social support was entered in the last step.

					The overall predictor model for difficulty with sociocultural adjustment was also significant, with acculturative stress and coping contributing to this significance.
Cao et al. (2018).	211 mainland Chinese students in a French university	Social connectedness was measured by selecting and adapting four items that matched with international students from social connectedness scale (Lee & Robbins, 1995).	The whole questionnaire was translated into Chinese. The intensity of Chinese students' face-to-face contact with host members was assessed by three items on a scale of 1 (not at all) to 5 (a lot), which were selected from the original four-item scale in previous studies (Rosenthal & Levy, 2016; Schmid, Hewstone, Tausch, Cairns, & Hughes, 2009). Online host-national contact	Social connectedness is positively face to face contact (r = .299), online contact (r = .543), host culture adoption (r = .297), perceive social support (r = .653). Social connected is negatively correlated with perceived prejudice (r = -. 649) Host culture adoption was fully mediated between face-to-face contact and social connectedness. Online contact and host culture adoption, taken together, accounted for 38% of the variance in social connectedness.	Host culture adoption was fully mediated between face to face contact and social connectedness. Host culture adoption was fully mediated between face to face contact and perceived social support. Host culture adoption was fully mediated between face to face contact and perceived prejudice. Face-to-face contact accounted for 49% of the variance in host culture adoption. Online contact and host culture adoption, taken together 41% in perceived social support and 38% in perceived prejudice. Online host-national contact and the interaction

			was assessed by three items, which are the frequency (item 1) and duration (items 2 and 3) of online communication. These three items were adapted from previous studies (Bonetti, Campbell, & Gilmore, 2010; Valkenburg & Peter, 2007).		term did not significantly predict host culture adoption. However, online contact was found to have strong direct influences on social connectedness, perceived social support, and prejudice.
Zhang & Goodson (2011).	508 Chinese international students	Social Connectedness Scale-Revised (SCS-R; Lee et al., 2001) They selected eight items with high pattern coefficients in Lee et al. (2001) study and tailored them to their participants (e.g., replacing	Vancouver Index of Acculturation (VIA; Ryder, Alden, & Paulhus, 2000) Social Support Questionnaire-Short Form (SSQSR, Sarason, Sarason, Shearin & Pierce, 1987) Acculturative Stress Scale for	Social connectedness with American is positively correlated with adherence to host culture (r = .520), social interaction with Americans (r = .640). Social connectedness with Americans is negatively correlated with depression (r = -.331) and sociocultural adjustment difficulties (r =-.480).	For the depression result, it showed that both host culture and home culture were negatively associated with depression. Also, the result indicated that social connectedness with Americans accounted for the largest percent of explained the variance in depression, then followed by adherence to the host culture, social interaction with Americans, and the predicted depression

“people” with “Americans”).	International Students (ASSIS, Sandhu & Asrabadi, 1994) Modified Adaptation Scale (SCAS; Ward & Kennedy, 1999)	Social connectedness with Americans is fully mediated between adherence to the host culture and depression Social connectedness with Americans accounted for the largest percent of explained the variance in depression. Social connectedness with Americans accounting for the largest percentage of explained variance in sociocultural adjustment difficulties Social connectedness with Americans also showed a partially mediation effect on the association between adherence to the host culture and sociocultural adjustment difficulties.	scores, adherence to the home culture. For the sociocultural adjustment difficulties result, host culture was negatively associated with sociocultural adjustment difficulties Also, the result indicated all three predictors were important for explaining sociocultural adjustment difficulties, with social connectedness with Americans accounting for the largest percentage of explained variance in sociocultural adjustment difficulties, followed by adherence to the host culture and social interaction with Americans. In the mediation result, social interaction with Americans partially mediates the association between adherence to the host culture and sociocultural adjustment difficulties.

					Social interaction with Americans moderates the associations between adherence to the home culture and depression.
Wang et al. (2015).	411 Chinese international students at Time 1 (pre-arrival), 366 students at Time 2 (first semester), 271 students at Time 3 (second semester), and 193 students Time 4 (third semester)	Social Connectedness Scale (SCS) (Lee & Robbins, 1995)	All the questionnaires translated into Chinese. Demographic questionnaire, the Positive and Negative Affect Scale (PANAS) (Watson, Clark, &Tellegen, 1988), the Satisfaction With Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985), the Social Connectedness in Mainstream Society (SCMN) and Social Connectedness in the Ethnic Community (SCETH)(Yoon,	Social connectedness at time 1 is positively correlated with negative affect at four times (r = .38, .30, .32, .29) and negatively correlated with positive affect at time 1, and time 2 (r = -.32, -.23), and satisfaction with life at time 1, time 2, and time 3 (r = -.36, -.26, -.29) At pre-arrival (i.e., Time 1), among the social factors, general social connectedness was a significant predictor of both NA and SWL trajectory classes.	Four distinct trajectory classes were identified for negative affect and satisfaction with life. The classes generally included individuals who had (a) consistently high well-being, (b) experienced some degree of culture shock, (c) enhanced well-being, and (d) low well-being. Social connection with mainstream society was a better predictor of satisfaction with life trajectories than social connection with one's ethnic community. Comfort with disclosing distress and self-perceived English proficiency were significant predictors only for the satisfaction with life trajectories. At pre-arrival (i.e., Time 1), among the social

2006), the Social Self-Efficacy (SSE) (Sherer et al., 1982), the Distress Disclosure Index (DDI) (Kahn & Hessling, 2001). The Perceived English Proficiency (PEP) was measured by asking participants to rate their levels of proficiency in the following areas: listening, speaking, reading, writing, and overall English on a 5-point scale ranging from 1 = very poor to 5 = very good.

factors, general social connectedness was a significant predictor of both NA and SWL trajectory classes. After students started their studies in the United States (first, second, and third semesters), social self-efficacy in the first semester was a significant predictor for NA trajectory classes. As for SWL trajectories, comfort disclosing distress was a significant predictor in all three semesters, and social connection with mainstream society was a significant predictor in the first two semesters. In terms of language factors, objective (i.e., self-report TOEFL scores) language proficiency was not a significant predictor for either NA or SWL trajectories. However, subjective (i.e., self-report perception) English proficiency scores at all time points were significant predictors of

					SWL trajectories but not for NA.
Du & Wei (2015).	213 Chinese international students	Social Connectedness Scale (SCS; Lee & Robbins, 1995) (time 1)	All scales translated in Chinese At time 1, scales included the Acculturation and Enculturation (VIA; Ryder et al., 2000), the Social Connectedness Scale (SCS; Lee & Robbins, 1995), the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985), and the Positive Affect and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988). At time 2, scales included the Social Connectedness in	Social connectedness is positively correlated with negative affect at time 1 and time 2 (r = .35, .25). Social connectedness is negatively correlated with life satisfaction at time 1 and 2 (r = -.40, -.20), positive affect at time 1 (r = -.23), acculturation at time 1 (r = -.21), enculturation (r = -.23), mainstream social connectedness (r = -.30), ethnic social connectedness (r = -. 34),	In the result for mainstream SC, mainstream SC at Time 2 did partially mediate the association between acculturation at Time 1 and life satisfaction and positive affect at Time 2, but did not mediate the association with negative affect at Time 2 after controlling for general SC at Time 1 and SWB at Time 1 (i.e., life satisfaction, positive affect, and negative affect). Also, mainstream SC at Time 2 did mediate the associations between enculturation at Time 1 and life satisfaction and positive affect at Time 2. In the result for ethnic SC, ethnic SC at Time 2 only mediated the associations between enculturation at Time 1 and negative affect at Time 2, but it did not mediate life satisfaction

Mainstream Society and Social Connectedness in the Ethnic Community (SCMN and SCETH; Yoon, 2006), the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) and the Positive Affect and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988).

and positive affect at Time 2.

There were no significant indirect effects of Ethnic SC that were found for the associations between acculturation at Time 1 and all components of SWB at Time 2. This indicated that ethnic SC at Time 2 would not mediate the association between acculturation at Time 1 and SWB at Time 2.

In the Post Hoc analyses result, it indicated that the indirect effect from acculturation (Time 1) through Mainstream SC (Time 2) to life satisfaction (Time 2) could apply to females and graduate students. The indirect effect from acculturation (Time 1) through Mainstream SC (Time 2) to positive affect (Time 2) could apply to either males or females and either undergraduate or graduate students.

Mak & Kim (2011).	185 Korean international students in Australia	Social Connectedness Scale (SCS; Lee & Robbins, 1995) Five items s were adapted from the scale. Participants were asked to indicate their degree of agreement with a sense of social connectedness (e. g., “I feel so distant from people”) on six rating scales from (1) “Strongly Disagree” to (6) “Strongly Agree”. All five items were reverse-scored and then	Demographics questions, a four-item measure of English proficiency (Mak, 2009), the Academic Self-efficacy (Majer, 2006), five items from the Social Connectedness Scale (Lee & Robbins, 1995), Depressive Symptoms (Israel et al., 1989) The items of social support from host nationals were adapted from Mak (2009), and the items of social support from non-host co-nationals were created for the present study by Mak (personal communication, March 27, 2010). Intercultural Social Self-efficacy was	Social connectedness is positively correlated with English proficiency (r = .16), social support (r = .26), social self – efficacy (r = .45), academic self-efficacy (r = .26) Social connectedness is negatively correlated with depressive symptoms (r = -.49). Social connectedness was fully mediated the relationship between social support and depressive symptoms. Social connectedness was also showed a fully mediation effects in the relationship between social self-efficacy and depressive symptoms. A low level of social connectedness was the most important predictor of depressive symptoms, exerting a medium effect size.	Depressive symptoms were significantly negatively correlated with social support, social self-efficacy, academic self-efficacy, and social connectedness. English proficiency was significantly positively related to social self-efficacy and academic self-efficacy and social connectedness. Social support, social connectedness and social self-efficacy were significantly positively correlated to each other and academic self-efficacy, at small to moderate effect sizes. The regression result showed that a low level of social connectedness was the most important predictor of depressive symptoms, exerting a medium effect size. Also, a low level of academic self-efficacy was the only other

		averaged, with higher scores implying a greater sense of social connectedness	measured by a 12-item measure, which had been abridged from a 20-item measure from Fan and Mak (1998).		significant predictor, exerting a small effect size. R square = .14
Meng et al. (2018).	206 Chinese students in Belgium	Social connectedness (Lee &Robbins, 1995; Rosenthal et al., 2007) Five items to measure connectedness in this community were developed based on Lee and Robbins's (1995) Social Connectedness Scale (SCS) and tailored to the international student context (e.g., replacing "people" with	English language proficiency (Barratt & Huba, 1994), Local language proficiency, Global Competence Checklist (Hunter, 2004), Student Adaptation to College Questionnaire (Baker & Siryk, 1999).	Social connectedness in international community is positively correlated with local language proficiency (r = .230), English proficiency (r = .416), attitudes (r = .391), knowledge (r = .311), skills (r= .512), social adaption (r = .584), academic adaption (r = .440) English proficiency and global competence explained 33% of the variance in social connectedness in the international community. Global competence partially mediated the relationship between English proficiency and social connectedness.	Results from structural equation modeling analysis indicated both English and local language proficiency were significant predictors of global competence, and global competence, in turn, influenced the participants' social connectedness, social and academic adaptation significantly. Specifically, English and local language proficiency is taken together explained 32% of the variance in global competence, and global competence explained 55% of the variance in social adaptation and 38% of the variance in academic adaptation, respectively. In addition, English proficiency and global

		"international students other than from my own country"). Three additional items adapted from Rosenthal et al. (2007) were added to this scale.			competence explained 33% of the variance in social connectedness in the international community. Bootstrapping methods were employed to examine the mediating roles of global competence. The results revealed that global competence partially mediated the relationship between English proficiency and social connectedness and fully mediated the relationships between foreign language proficiency (i.e., both English and the local language) and social and academic adaptation.
Chebbet (2012).	48 African international students	Social Connectedness Scales-Revised (SCS-R; Lee, Draper, & Lee, 2001)	Demographics questionnaire, Help-seeking behaviors checklist, the Attitudes Toward Seeking Professional Psychological Help-Short Form (ATSPPH-S; Fisher & Farina, 1995), and the	Social connectedness is positively correlated with attitudes toward seeking help (r = .37), help-seeking behaviors (stress) (r = .38), and help-seeking behaviors (missing family members) (r = .50). Among students who reported experiencing mental and physical health concerns, no	Acculturative stress and mental health help-seeking attitudes were not correlated with each other. Also, there is no difference in acculturative stress between individuals who experienced mental and physical health problems and sought help for those problems and those who did not seek help in this study.

Acculturative Stress Scale for International Students (ASSIS; Sandhu &Asrabadi, 1994). To measure the help-seeking behaviors in African international students' help-seeking behaviors, students were requested to indicate either 'Yes' (I have experienced this mental/physical health problem) or 'No' (I have not experienced this mental/physical health problem) for nine concerns in demographics section of the questionnaire.	relationship was found between social connectedness and help-seeking behaviors.	Length of stay and mental health help-seeking attitudes were not correlated. Also, there is no difference in length of stay between individuals who experienced mental and physical health problems and sought help for those problems and those who did not seek help in this study. Parallel exploratory analyses were conducted in order to determine if there was any relationship between social connectedness, acculturative stress, and length of stay in the U.S. and students subjective reports of whether or not they would seek for help (group 1) or not (group 2) if they were to experience mental and physical health concerns (i.e., depression, anxiety, stress, loneliness and isolation, missing family members, headaches, problems sleeping, loss of appetite, and feelings of

					guilt/worthlessness) in the future. The result showed that all analyses yielded insignificant results except for the following three concerns: problems sleeping, loss of appetite, and feelings of guilt/worthlessness.
Kegel (2015).	386 international students	Social Connectedness Scale (SC-15) (Lee et al., 2008) Social Connectedness Scale (SF-15) was adapted from the 20-item Social Connectedness Scale-Revised (SCS-R; Lee et al., 2001) to minimize overlap between the constructs of SC and extraversion and retained15	Homesickness subscale of the Acculturative Stress Scale for International Students (ASSIS; Sandhu & Asrabadi, 1994), the Homesickness subscale of the Homesickness and Contentment scale (HC; Shin & Abell, 1999), the Attachment to Home subscale of the Homesickness Questionnaire (HQ; Archer, Ireland, Amos, Broad, & Currid, 1998), Subscales of the Miville-	Social connectedness is positively correlated with diversity of contact (r = .29, .26, .28), relativistic appreciation (r = .17, .19, 13), comfort with differences (r = .35, .31, .34)。 Social connectedness is negatively correlated with depression (r = -.44, -.47, -.44), anxiety (r =-. 29, -.27, -30), somatization (r = -.20, -.20, -21), homesickness HC (r = -.14, -.12, -.14), attachment to home (r = -.17, -.18, -.20), acculturative stress (r= -. 18, -.17, -.19)	Two primaries and two alternative sequential mediational models were tested. Each model offered evidence supporting the position that, accounting for age, 1) homesickness, SC, UDO, and psychological distress are meaningfully connected in Asian international college students and 2) when arranged in a multiple mediation sequence, the first three of these variables help to explain score variance in the fourth. All four models were significant and showed similar results.

		items from that demonstrated conceptual distinctiveness from extraversion, strongly loaded on SC, and did not cross load on extraversion in exploratory factor analysis (Lee et al., 2008).	Guzman Universality-Diversity Scale, Short Form (M-GUDS-S; Fuertes et al., 2000a), and the Depression, Anxiety, and Somatization subscales from the Hopkins Symptom Checklist 58-item version (HSCL-58; Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974)	Accounting for age, SC was found to partially mediate the relationship between homesickness and psychological distress in both primary models	
Cooper (2015).	39 Indian students in New Zealand	Social Connectedness Scale-Revised (SCS-R; Lee et al., 2001)	Sixfold Self-Construal Scale (Harb & Smith, 2008) Revised Sociocultural Adaptation Scale (SCAS-R) (Wilson, 2013) Shortened Affectometer 2 Scale (Kammann & Flett, 1983)	Social connectedness is positively correlated with horizontal relational self-construal (r= .30), horizontal collective self-construal (r = .041). Social connectedness is partially mediate between the two collective dimensions (vertical-collective self-construal and horizontal-collective self-construal) of	The findings of this study show that in spite of India being described as a collectivist and traditional family-centered culture, Indian students adopt a bicultural approach as early as six months after their arrival in New Zealand. They show positive levels of adjustment, with social connectedness and English language fluency having a partial mediating effect on the relationship between

			English Language Confidence Scale (Clement & Baker, 2001) Standard English Score (IELTS) Demographics	interdependent self-construal and psychological adjustment.	the horizontal-relational dimension of self-construal and psychological adjustment.
Yoon et al. (2012).	134 Asian International students in Minnesota	20-item Social Connectedness Scale (SCS; Lee et al., 2001)	Social connectedness to mainstream ethnic communities (Yoon, 2006), the Abbreviated Multidimensional Acculturation Scale (AMAS-ZABB; Zea, Asner-Self, Birman, & Buki, 2003), The Multigroup Ethnic Identity Measure–Other-Group Orientation (MEIM-Other, Phinney, 1992), the Multigroup	Social connectedness is positively correlated with social Connectedness in Mainstream Society (r = .40), social Connectedness in the Ethnic Community (r = .38), acculturation (r = .30), group orientation (r = .35), multigroup ethnic identity (r =.23), Satisfaction With Life Scale (r =.37), and positive affect (r =.17) Social connectedness is negatively correlated with negative affect (r = -.42).	

Ethnic Identity Measure–

Revised (MEIM-R, Phinney & Ong, 2007), the Satisfaction With Life Scale

(SWLS; Diener, Emmons, Larsen, & Griffin, 1985), the

Positive and Negative Affect Schedule (PANAS; Watson, Clark,

& Tellegen, 1988)

2 INTERNATIONAL STUDENTS' SOCIAL FACTORS AND ACCULTURATIVE STRESS

Each year, many international students come to the United States (U.S.) from all over the world to further their education. Indeed, the U.S. is one of the most attractive destinations for international students (Zong & Batalova, 2018). In 2017-2018, there were over a million undergraduates and a quarter of a million graduate students (Institute of International Education, 2018), with many of these students coming from Asian countries. Despite being an attractive destination, we also know that international students coming to the U.S. face many challenges and often struggle socially and academically (Yeh & Inose, 2003).

To pursue studies in another country, students leave behind social bonds with friends and family and face the challenge of establishing a new social network, while getting used to the more strenuous demands of their schools. In this pursuit, they may encounter an array of challenges, including language barriers, academic struggles, culture shock, financial difficulties, interpersonal problems, racial/ethnic discrimination, lack of social support, alienation from domestic students, and homesickness (Mallinckrodt & Leong, 1992; Mori, 2000; Tas, 2013). Ample research has documented that, relative to domestic students, international students face increased risk for a variety of psychological, social, and academic difficulties (Fritz et al., 2008; Maffini, 2017; Mori, 2000; Van Horne et al., 2018). International students experience acculturative stress to the degree that they experience the changes in their social and cultural environment (e.g., physical, psychological, biological, cultural, relational, spiritual) as threatening (Berry et al., 1987).

International Students and Social Factors

Researchers interested in acculturative stress within international students have focused especially on social factors. Indeed, international students face a daunting challenge. Not only are they seeking to form an entirely new social network, but they are doing so in a cultural environment that may differ substantially from their country of origin. Accordingly, international students may face a variety of difficulties communicating and having their needs responded to by others, which may quickly lead to symptoms of anxiety or depression. For example, a leading theory of depression suggests that people experience feelings of helplessness and hopelessness when they have shifted in their interpersonal relationships and lose a sense of self-efficacy to address interpersonal problems and thus feel better (Cuijpers et al., 2016).

International students face a range of major disruptions to their interpersonal relationships. At home, they had established relationships with friends and family and could generally count on a match between their implicit and explicit ways of communicating their relational needs matching the cultural norms and cues for responsiveness within their social environment (Mallinckrodt & Leong, 1992; Yeh & Inose, 2003). However, what international students learned growing up may not hold for their new social and cultural environment. For example, Chinese international students learned to be compliant and humble to seniors, and they tended to withhold expressing their thoughts or asking questions until their teachers invited them to do it. However, in U.S. classrooms, teachers expected their students to take the initiative in asking questions and expressing their opinions in class. Therefore, to succeed in some relationships, international students may have to temporarily abandon familiar cultural norm adapt to the expectations of a valued relationship (Wang & Mallinckrodt, 2006). International students may feel disappointed and discouraged when encountering cultural differences or

difficulties (Mori, 2000). Thus, not only are they far from family and friends, but significant cultural differences may cause them to feel fundamentally misunderstood, which amplifies stress. Therefore, it is imperative to consider how social factors play a role in international student cross-culture experience.

International Students, Acculturation Framework and Acculturative Stress

The comprehensive model of the acculturation developed by Berry and colleagues has been widely used as a framework in international student's literature (Berry et al., 1987). In this model, acculturation is defined as a process of culture and psychological change that happens when two distinct cultural groups and their individual members repeatedly and directly interact with each other (Berry et al., 1987). Acculturative stress comes from stressors that originate from the process of acculturation. Acculturative stress should be linked in a systematic way to the established features of the acculturation process for the considered stress to be acculturative stress (Berry et al., 1987; Berry 2005). Therefore, they are related only if the source of the stress is from the acculturative process. Acculturation can have both positive and negative aspects on someone's experience and thus acculturative stress best conceptualized as matching the range of affect experienced during acculturation (Berry, 2005).

The model proposed five classes of factors moderating the relationship between acculturation experience and acculturative stress among minority populations: (1) nature of the larger society; (2) type of acculturating group; (3) modes of acculturation; (4) demographic and social characteristics of individual; and (5) psychological characteristics of individual (Berry et al., 1987, p. 493). We describe each of these moderators in turn.

First, the nature of the larger society may influence acculturative stress. For example, a society with a pluralist of multicultural ideology may treat immigrants differently than a society

with assimilationist ideology (Berry et al., 1987). There is evidence that immigrants in pluralist societies may have fewer mental health problems than assimilationist societies (Berry et al., 1987). Therefore, the University context may vary in the degree to which international students feel pressure to conform to a single cultural standard.

Second, the type of acculturating group may influence acculturative stress. Berry et al. (1987) described five types (e.g., immigrants, refugees, native people, ethnic groups, and sojourners), and later Wang and Mallinckrodt (2006) classified international students as sojourners. Sojourners, because they stay temporarily and may not necessarily have well-established social supports within a community, maybe at particular risk of acculturative stress and related mental health problems.

Third, the mode of acculturation may influence acculturative stress. Berry et al. (1987) proposed an orthogonal framework involving two primary orientations: (a) the desire for the maintenance of heritage culture and (b) the desire for interacting with the dominant group. Accordingly, the model specifies four acculturation strategies that combine high and low positions on each dimension: (a) integration, (b) assimilation, (c) separation, and (d) marginalization. In the integration strategy, students seek to align with and negotiate a balance between the host culture while also maintaining a sense of integrity to the home culture. In the assimilation strategy, students prioritize the norms and demands of the host culture, sacrificing alignment with their home culture. In the separation strategy, students preserve their loyalty to the home culture and avoid interactions with members of the host culture. In the marginalization strategy, students align with neither the host nor home culture, but rather seek to avoid interaction with others, often because of experiences of exclusion and discrimination. Research

based on this typology have found that integration is associated with the least acculturative stress; marginalization, the most (Berry et al., 1987, Wang & Mallinckrodt, 2006).

In addition to these four potential strategies, some recent research has also added the potential for international students to cultivate no-local relationships (Hendrickson et al., 2011; Ng et al., 2017). Non-local relationships include relationships with host compatriots from their own culture and multi-nationals from other cultures. An earlier theory of Bochner et al.,' (1977) proposed the functional model of friendship patterns of international students which emphasized the importance of international students experiencing the host culture within the context of a thriving community that is also seeking to maintain contact with their cultural heritage and develop companionship for recreation. Social interaction with non-locals reduces homesickness, loneliness, and disorientation and also provides a sense of commonality and emotional support (Bochner et al., 1977; Hendrickson et al., 2011; Ng et al., 2017).

Fourth, there are a variety of demographic factors and social characteristics that might influence acculturative stress. This includes variables such as age, gender, financial resources, education level, and intercultural experiences that individuals have had before entering the host country. For example, individuals who attend an international school in their home country may have more diverse experiences and are earlier to adapt to the new cultural environment than individuals who attend a local school. The availability of social support and contact experience are social variables under this domain that could impact acculturative stress (Berry et al., 1987). Increased supports from both their culture group and the dominant cultural group could lead to less acculturative stress (Berry et al., 1987).

Finally, the person's psychological characteristics, such as self-perception and self-identification may also influence acculturative stress. Zhang and Goodson (2011) categorized

social connectedness as under the fifth class because it refers to an attitude towards one's self. Therefore, the social connectedness examined in the present study fall under this domain. In addition to the loss and disruption of social connections, international students also have a more limited set of coping resources.

Social Support and Acculturative Stress

According to the acculturation model (Berry, 1997), international students should adopt more integrative strategies and experience less acculturative stress to the degree that they have sufficient social support. Social support is defined as "information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations" (Cobb, 1976, p. 300). Social support has been found to facilitate coping by strengthening people's ability to realistically appraise stressful events and develop alternative coping strategies (Pearson, 1986). Some initial work has supported this association. For example, several studies have linked social support to acculturative stress (Poyrazli et al. 2004; Ra & Trusty, 2015), even controlling for other predictors (Duru & Poyrazli, 2007; Yeh & Insoe, 2003).

The existing literature has several significant limitations. Many studies of acculturative stress that only focuses on relationship with the host culture, rather than providing an actual test of Berry's (1997) model, which posits four potential strategies. Likewise, many studies have not distinguished between different sources of social support (e.g., locals, non-locals, home country). Social support from locals refers to receiving support from people in the host nations, such as professors and domestic students who identify and are citizens of the host country. Social support from non-locals refers to receiving support from multi-national peers, such as other international students, and host compatriots, such as international students or peers from the home country, and who are also temporality staying in the host country. Social support from

home country refers to receiving support from family or friends who are currently living in their home country.

Bochner et al. (1977) pointed out that these three types of support serve different international students' function. Research friendship formation of international students stated that support from family takes a significant part in international students' life because it helps them to preserve their heritage, cultural identity and practices, and also reduces their homesickness and disorientation (Bochner et al. 1977; Ng et al., 2017). Support from locals, such as professors and classmates, can facilitate their academic learning and professional development. The relationships with non-locals, such as other international students, is an important component in international student social relationships as well because their relationship could "provide companionship for recreational, and non-task orientated activities" and also expand to "non-superficial learning of each other's culture" (Bochner et al.,1977, p 292). Thus, in the present study, we considered social support from three dimensions consistent with Berry's (1997) model.

Initial work suggests that social support from people in the host nation is generally associated with less acculturative stress (Hendrickson et al., 2011). Social support from one's home country also showed similar results. For example, Ng et al. (2017) found that higher social support from family and local friends was crucial for better cross-cultural adaptation in their sample of 188 Mainland Chinese sojourning university students in Hong Kong. Furthermore, social support from non-locals tends to be associated with less acculturative stress. For instance, Kashima and Loh (2006) found that stronger relationships with non-local friends, such as other international students, were associated with better psychological adjustment in international students as well as relationships with locals. The non-local friends helped international students

to identify more strongly with their heritage culture and as well as with their university. However, the results for non-locals are inconsistent. Some results indicated that social support from non-local friends (including host compatriots from their own culture in the host country) was associated with greater acculturative stress in international students. For instance, a study of international students in Hong Kong revealed that social support from non-local friends was found to reduce the positive effect of the integration strategy on psychological adaptation (Ng et al., 2017). The authors suggested that social support from non-local friends may prevent students from learning and adapting to the local culture and not benefit from achieving long-term adaptation to the dominant culture. However, there is limited research in examining the role of non-locals' relationship in international students' acculturative stress literature, and more research is needed (Kashima & Loh, 2006).

Social Connectedness and Acculturative Stress

Another construct that researchers have explored in relation to acculturative stress is social connectedness (Yeh & Inose, 2003). Lee and Robbins (1998) defined social connectedness as an aspect of the self and as "the subjective awareness of being in close relation with the social world" (p.338). They developed this concept from Kohut's self-psychology theory (1984), which emphasized that belongingness is a basic human need. Having a sense of social connectedness assists people relate to their world and helps individuals bond with those they see as dissimilar. This internal and enduring sense of social connectedness guide individual perceptions to their world and direct their feelings, thoughts, and behaviors with others (Lee & Robbins, 1998). People with a high sense of social connectedness are able to manage their needs and emotions better and develop a relationship and participate in social activities easier. Whereas, people with

a low sense of social connectedness tend to have a problem in their social life and are inclined to experience low self-esteem, anxiety, and depression (Lee & Robbins, 1998).

International students face major changes in their social bonds. Theorizing on social connectedness suggests that students who consistently experienced closeness and quality relationships in their early relationships will have an advantage, relative to those with poor early relationships, at navigating the demands of adjusting to a new and sometimes hostile cultural environment (e.g., adjusting to college in another country). In the context of ambiguous cues and support, they will tend to anticipate that their social environment can meet their needs, which will cause them to appraise less social threat and thus experience less threat. In addition, they will have the capacity to draw on inner resources (e.g., loving memories, experiences of successful conflict management) to soothe themselves when facing distressing social situations.

Some initial research has supported this theorizing. Yeh and Inose (2003) surveyed a sample of 359 international students in the urban university in the U.S., and they distributed surveys in international student organizations and clubs. They completed a package of survey questions that includes the Acculturative Stress Scale for International Students (Sandhu & Asrabadi, 1994), the Social Connectedness Scale (Lee & Robbins, 1995), and the Social Support Questionnaire-Short Form (Sarason et al., 1987). They found that higher levels of social connectedness predicted lower levels of acculturative stress. Additionally, social connectedness and social support network satisfaction contributed to 18.3% of the total variance of international students' acculturative stress. In a sample of 299 Turkish international students studying in the U.S., Duru and Poyrazli (2007) found that social connectedness was a significant predictor of acculturative stress and related to a lower level of acculturative stress.

Initial work by Lee and Robins (1998) operationalized social connectedness as a trait-like quality of the student; however, subsequent work has also sought to examine the construct from a bilinear perspective that Berry et al., (1987) proposed in his bi-dimensional acculturation model which included adaption of host culture and maintenance of heritage culture. Yoon, Lee, and Goh (2008) developed a measure that differentiates social connectedness to mainstream society (Mainstream SC) from social connectedness to the student's ethnic community (i.e., home culture) (Ethnic SC). Mainstream SC indicates individual "sense of closeness and belonging to mainstream society" while Ethnic SC implies individual "sense of closeness and belonging to one's own ethnic community" (Yoon et al., 2012, p. 64). These two constructs differ from each other based on psychological and contextual factors. Thus, given some of the work exploring strategies of establishing social support, we might study social connectedness as a stable quality of a person, akin to an attachment style, or as a contextualized sense of closeness to a target community (e.g., host or home culture).

Prior research has consistently confirmed a link between Mainstream SC and acculturation. Du and Wei (2015) found Mainstream SC correlated positively with acculturation in their longitudinal study of Chinese international students in the U.S. Also, they found that Mainstream SC at Time 2 partially mediated the association between acculturation at Time 1 and life satisfaction and positive affect at Time 2. Yoon et al. (2008) also indicated a similar result in their sample of Korean immigrants, which Mainstream SC was strongly associated with acculturation.

However, the findings of the association between Ethnic SC and acculturation are inconsistent. Du and Wei (2015) found no correlation between Ethnic SC and acculturation, and Ethnic SC at Time 2 would not mediate the association between acculturation at Time 1 and

subjective well-being at Time 2 in Chinese international students. Ethnic SC also showed no relationship with acculturation in a sample of Korean immigrants (Yoon et al., 2008). However, Yoon et al. (2012) discovered that Ethnic SC was negatively correlated with acculturation in a sample of Asian American students. The result also revealed that the effects of acculturation on subjective well-being was mediated by both Ethnic SC and Mainstream SC. The authors suggested that the discrepancy in findings may be due to the different samples being studied. Asian American students seemed to share the dissimilar experience with both Korean immigrants and Chinese international students. For example, Asian Americans are most likely born and raised in the states with stronger English proficiency and American nationality. Taken together, these findings suggest that more work is needed to clarify the role of maintaining relationships with friends and family from home, or from one's home country, when this may potentially decrease motivation to form strong social bonds in one's current environment.

Present Study

The purpose of this study is to advance the international students and acculturation literature to examine the potential social factors in acculturation from a bilinear perspective proposed by Berry et al.'s (1987) bi-dimensional model of understanding individual acculturation from both host culture and home culture perspectives. Although there is an increased body of literature on acculturation for international students, only a few studies have examined social support or social connectedness from a bilinear perspective, as implied by Berry et al.'s (1987) original theorizing. Thus, building on the acculturation and social factors literature, the main goal of the present study is to examine further the extent of perceived social support and social connectedness among international students in the U.S. Also, to test the moderation effects proposed in Berry et al.'s (1987) theoretical work, I will investigate the

interaction effects among the variables on international students' acculturative stress. Accordingly, I examined the following hypotheses.

First, I hypothesized that acculturative stress will negatively correlate with social support from locals, social support from home country, social connectedness, Mainstream SC, Ethnic SC. Prior research provides evidence that these social factors associated with acculturative stress (e.g., Du & Wei, 2015; Hendrickson et al., 2011; Yeh & Inose, 2003).

Second, I hypothesized that social connectedness will moderate the relationship of social support from locals, social support from home country, Mainstream SC, Ethnic SC with acculturative stress. Specifically, the strength of the relationship between those social factors and acculturative will be weakened for people who report having higher social connectedness. According to Berry's (1987) model of moderation on acculturation and stress, individual differences, such as social connectedness is one of the moderators that could impact the relationship of acculturation and stress. Some initial work has supported that individuals with a higher sense of social connectedness could form relationships with others easily, so they adjust to the new social environment more efficiently and experience less psychological stress (e.g., Duru & Poyrali, 2007; Yeh & Inose, 2003). Therefore, in the present study I sought to test the moderation effects of social connectedness proposed in Berry's (1987) model.

Third, I hypothesized that higher social support from locals, and social support from home country will predict acculturative stress. In prior research, social support from locals has been robustly linked with less acculturative stress. Findings are mixed with regard to social support from one's country. Social support from home country is also important for international students because it helps them to maintain and practice their culture identity that helps them to feel less stressed (Ng et al., 2017).

Fourth, I hypothesized that general social connectedness, Mainstream SC, Ethnic SC will predict acculturative stress. Specifically, higher levels of general social connectedness, Mainstream SC, Ethnic SC will predict lower levels of acculturative stress. Consistent with previous studies, general both social connectedness and Mainstream SC seemed significantly associated with acculturation. Higher social connectedness and Mainstream SC provide a stable sense of belonging to others and the U.S. society that help international students acculturate into new culture and increased their well-being. Additionally, Ethnic SC could provide international students with sources of support from their ethnic community that may reduce their negative feelings, leading to less acculturative stress (Du & Wei, 2015).

Fifth, I hypothesized that social support from locals, and social connectedness will be the most influential predictors of acculturative stress. Previous research has shown that social support from locals and social connectedness were significantly associated with acculturative stress, and both were significant predictors of acculturative stress for international students. Both of them seemed to facilitate the international student acculturation process by providing support and maintaining a strong sense of belonging that decreases their acculturative stress.

Furthermore, the result of social support from non-locals seemed inconsistent but it seemed to benefit international students' adjustment and acculturation by encouraging them to learn about the host culture and share similar experiences (Kashima & Loh, 2006). Thus, social support from non-locals would enter the model as a covariate to understand its effect on acculturative stress and contribute to current literature. English proficiency, years in the U.S, prior experience in the U.S, people whom they hang out the most are also shown significant effects in international student acculturation experience so they would be entered in the model as covariates as well (Smith & Khawaja, 2011).

To test these hypotheses, I will conduct a multiple regression analysis. Specifically, a four-step hierarchical multiple regression will be conducted with acculturative stress as the dependent variable. The order of predictors entering in hierarchical multiple regression model depends on the theoretical rationale and research relevance (Wampold & Freund, 1987). Covariates, including English proficiency, years in the U.S., prior experience in the U.S., people who they hang out with the most, and social support from non-locals will be entered in the model first to control for their effects on acculturative stress. Social support from locals and general social connectedness will be entered in the second step. Social support from the home country and Mainstream SC will be entered in the third step. Ethnic SC appears to have mixed effects on acculturative stress, so it will be entered at the last step.

Method

Participants

An A priori power analysis (Cohen, 1988) was conducted using G*Power Version 3.1. (Faul et al., 2009). The result indicated that attending a medium effect size (f = 0.15) needs to have a minimum sample size of 92 participants with five tested predictors in multiple regression. This assumed the model was tested by an alpha of 0.05 and a power of 0.80 (Cohen, 1988). Participants were 204 international students recruited through university SONA system and email listservs. Among these 204 participants, 186 participants are from Email Listservs and18 from university SONA system. The range of participants age is from 18 to 41 and the Mean is 25.68. In terms of gender, 36.8% (*n* = 75) of the sample identified as men; 62.7% (*n* = 128), as women; and 1, as gender non-binary. Ages ranged from 18 to 41 years, with a mean of 25.72 (*SD* = 4.32). Participants identified as 2.5% Freshman (*n* = 5), 6.9% Sophomore (*n* =14), 7.8% Junior (*n* =16), 7.8% Senior (*n* = 16), 2.5% Post-Baccalaureate (*n* = 5), and 72.5% Graduate Student (*n*

= 148). Participants primarily identified having 3.5 to 4.0 GPA (75.5%, *n* = 154), 3.0 to 3.49 GPA (16.7%, *n* = 34), 2.5 to 2.99 GPA (3.9%, *n* = 8), 2.0 to 2.49 GPA (1.5%, *n* = 3), less than 2.0 GPA (.5%, *n* = 1) and four people did not provide any answers. In terms of marital status, 86.8% of participants identified as single (*n* = 177), 11.3% identified as married (*n* = 23), 1.0% identified as divorced (*n* = 2), .5% identified as widowed (*n* = 1), and one person did not answer. In terms of regions of the world participants came from, 71.1% identified from Asia (*n* = 145), 8.3% identified from Southeast Asia (*n* = 17), 6.4% identified from Latin American (*n* = 13), 4.9 identified from Africa (*n* = 10), 4.4% identified from Europe (*n* = 9), 2.0% identified from Middle East (*n* = 4), 1.5% identified from Central American (*n* = 3), .5% identified from Canada (*n* = 1) and 1% identified from Oceania (*n* =2). Participants were asked to identify the people they hang out with the most on a multiple-choice question with options of other international students, international students from same country, local' friends/domestic students and others. They identified as 16.2% other international students (*n* = 33) , 44.6% international students from same country (*n* = 91), 31.4% local' friends/domestic students (*n* = 64), and 7.4% others (*n* = 15). One person did not identify any of them above. For length of residency in the US, 18.6 % of participants indicated less than one year (*n* = 38), 15.7 % one to two years (*n* = 32), 14.7% two to three years (*n* = 30), 11.3% three to four years (*n* = 23), and 39.7% four or more years (*n* = 81). These results are summarized in Table 2.

Table 2

Participant Demographics

	N	*Range*	*M*	*SD*
Age	204	18 – 41	25.72	4.32
			N	*%*
Gender				

Female	128	62.7%
Male	75	36.8%
Gender Non-Binary	1	.5%
Academic Standings		
Freshman	5	2.5%
Sophomore	14	6.9%
Junior	16	7.8%
Senior	16	7.8%
Post-Baccalaureate	5	2.5%
Graduate Student	148	72.5%
GPA		
3.5 – 4.0	154	75.5%
3.0 - 3.49	34	16.7%
2.5 - 2.99	8	3.9%
2.0 - 2.49	3	1.5%
< 2.0	1	.5%
No Answer	4	2.0%
Marital Status		
Single	177	86.8%
Married	23	11.3%
Divorced	2	1%
Widowed	1	.5%
No Answer	1	.5%
Regions		
Asia	145	71.1%
Southeast Asia	17	8.3%
Latin America	13	6.4%
Africa	10	4.9%
Europe	9	4.4%
Middle East	4	2.0%
Central America	3	1.5%
Oceania	2	1.0%
Canada	1	.5%
Prior Experience		
None	118	57.8%
One to Two Times	59	28.9%
Three to Four Times	15	7.4%
Five or More Times	12	5.9 %
Friend Group		
Other International Students	33	16.2%
International Students from Same Country	91	44.6%
Local's Friends/Domestic Students	64	31.4%
Others	15	7.4%
No Answer	1	.5%
Length of Residency		

< 1 Year	38	18.6%
1 – 2 Years	32	15.7%
2 – 3 Years	30	14.7%
3 – 4 Years	23	11.3%
> 4 Years	81	39.7%

Procedure

The current study employed a cross-sectional, correlational design. The Institutional Review Board at a large urban university in the south approved the current study methods. After receiving the approval, international students were recruited through the SONA system at the large urban university in the South, and email listservs. For email listservs, recruitment emails were sent to several urban universities from the south and west to their international student houses, international student offices, international student organizations, and multicultural centers. Recruitment emails were also sent to the American Psychological Association Division 17, Society of Counseling Psychology, email listservs, and Ministry with International Students Organization at an urban city in the South, and they helped to distribute the recruitment email to their members. The inclusion criteria were international students who hold a legal "F-1" visa and over the age of 18. "F-1" visa is a nonimmigrant visa for foreigners to study in the U.S. legally. Participants received one research credit for participating in the study if they took the survey through SONA. All participants recruited through SONA, and email listservs could choose to share their name and email to be entered into the raffle to win one of ten $10 gift cards. Their entry into the raffle was not contingent on participating in the study, and any that share their name and email would qualify.

Participants were informed that participation was voluntary and anonymous. They received information on the benefits and risks of participation, the purpose of the study, and

contact information for the primary investigator. The participants were also informed that they may not answer any questions they found distressing and may leave the survey at any time without punishment. Once a participant agreed to participate in the study, the participant was directed to a link embedded in the description of the study to Qualtrics. Participants completed the survey online in English.

Measures

Demographic Questionnaire

Demographic items including age, gender, academic level, GPA, ethnicity, marital status, region of the world, country of origin, nationality, years in the U.S., prior experience in the U.S., people who they hang out the most, self-report English proficiency were gathered from each participant. To measure prior experience in the U.S., participants were asked, “How many times have you been to the U.S. before you started school?” with a response range from “None” to “Five or more times.” To measure people who they hang out the most, participants were asked, “Who are the people you hang out with the most?” with responses of “Other international students,” “International students from same country,” “Locals friends/domestic students,” “Others.” Self-reported English proficiency was assessed using a composite score from these two questions: “How well do you feel you read and understand written English?” and “How well do you feel you speak and understand spoken English?” Participants were provided with a 5-point Likert scale to select 0 (Not at all) to 5 (Very well). Cronbach’s alpha was assessed for the 2-item was .77 in this study.

Acculturative Stress

Acculturative stress will be assessed with the 36-item scale Acculturative Stress Scale for International Students (ASSIS; Sandhu & Asrabadi, 1994). This scale was specifically designed to identify and assess the acculturative stress of international students (Sandhu & Asrabadi, 1994) and has been widely used in international student acculturation studies (e.g., Duru & Poyrazli, 2007; Yeh & Inose, 2003). Although the ASSIS has seven subscales, there is evidence for interpreting a total score (Yeh & Inose, 2003), which I did in the present study. Items are rated on a 7-point Likert-type scale with the following anchors: (1= *Strongly disagree* to 7= *Strongly agree*). Higher scores indicate a higher level of perceived acculturative stress. An example item is, "I am treated differently in social situations." The ASSIS demonstrated evidence of reliability with Cronbach's alpha coefficients ranging from .87 to .95 (Duru & Poyrazli, 2007; Sandhu & Asrabadi, 1994; Yeh & Inose, 2003). Cronbach's alpha for the current study was .94.

Social Support

Social support will be assessed with the Multi-Dimensional Support Scale (Winefield et al., 1992). Originally developed to assess the frequency and adequacy of supportive behaviors toward young adults (Winefield et al., 1992), the measure has been used to study social support in an international student study (Ng et al., 2017). The original scale has three subscales: Confidants (six items), Peers (five items), and Supervisors (five items). The current study used their subscale of confidants (six items) to assess the support from family and friends in the home country. The subscale of peers (five items) used separately to assess support from locals (e.g., professor, domestic students) and non-local' friends (e.g., other international students). The supervisor subscale was designed to measure the support from people who have some sort of authority, so it did not match the purpose of this study (Winefield et al., 1992). The confidant's

subscale has an extra item “How often did they really make you feel loved?” The example item for all the subscale is, “How often did they listen to you when you talked about your concerns or problems?” Participants rate items on a 4-point Likert scale, ranging from 1=*Never* to 4= *Always*. The Multi-Dimensional Support Scale demonstrated evidence of reliability in each substance; (i.e., Cronbach’s alpha coefficients of subscale of confidant was .86 and of subscales of peer was .85; Winefield et al., 1992). The scale also showed evidence of concurrent validity with measures of psychological well-being (Winefield et al., 1992). For the present sample, Cronbach’s alpha coefficient for the support from family and friends at the home country subscale was .90; for the support from locals subscale was .89; for the support from non-locals subscales was .92; for the full scale was .84.

Social Connectedness

The social connectedness was assessed with the eight items Social Connectedness Scale (SCS; Lee & Robbins, 1995). This scale was designed to measure individual levels of interpersonal closeness with the social world and the level of difficulty in maintaining this sense of closeness. This scale has been widely used in international student literature to measure international students’ level of social connectedness with others (e.g., Du & Wei, 2015; Yeh & Inoose, 2003). Participants rated items on a 6-point Likert scale with response options ranging from 1 = *Strongly agree* to 6 = *Strongly disagree*. Higher scores indicate a higher sense of social connectedness. A sample item is, “I feel distant from people.” The measure has demonstrated evidence of reliability, with a Cronbach’s alpha coefficient of .91 (Lee & Robbins, 1995). Likewise, in a sample of international students, the Cronbach’s alpha coefficient was .93 (Yeh & Inoose, 2003). The scale showed evidence of construct validity, being associated with loneliness,

intimate loneliness, and social loneliness (Chen & Chung, 2007). Cronbach's alpha was .90 for the current study.

Social Connectedness to Mainstream Society and Ethnic Community

The Social Connectedness in the Mainstream Society Scale (SCMN) and the Social Connectedness in the Ethnic Community Scale (SCETH; Yoon, 2006) were used to assess Mainstream SC and Ethnic SC. This scale contained two sets of five parallel items measuring Mainstream SC and Ethnic SC, respectively. Participants rated their agreement using a 7-point Likert scale from 1 = *Strongly disagree* to 7 = *Strongly agree*. Higher scores indicate stronger SCETH and SCMN. Sample items are "I feel a sense of closeness with U.S. Americans (SCMN)" and "I feel connected with the _____ American community (SCETH)." Yoon and Lee (2010) reported coefficient alphas for the SCMN and the SCETH at .92 and .93 in a sample of Korean immigrants in the United States. Du and Wei (2015) reported coefficient alphas for SCETH were .94 (total sample), .94 (Chinese version), and .95 (English version) and for SCMN were .88 (total sample), .89 (Chinese version), and .91 (English version) in their study of Chinese international students. Regarding convergent validity, the SCMN correlated with acculturation and SCETH correlated with enculturation (Yoon, Lee, & Goh, 2008). For the current study, Cronbach's alpha for SCMN was .91, and for SCETH was .93.

Results

Preliminary Analysis

The Statistical Package of Social Science (SPSS) 25.0 was used generate to an electronic data set and analyze it. This study employed a quantitative cross-sectional research design. In total, 214 participants completed the survey. Out of those participants, 10 participants were

excluded from the study because they do not meet the inclusion criteria (i.e., they identify either from the U.S. or are American). Next, Little's Missing Completely at Random (MCAR) test was conducted to check the pattern of missing data to determine whether missing data could be imputed for the remaining participants. Little's MCAR test was significant, indicating that the data was not missing completely at random (MCAR). Therefore, expectation maximization was conducted to impute values for missing data, as Schlomer, Bauman, and Card (2010) recommended.

Outliers and normality were examined the next step. One univariate outlier was identified in the SCETH variable and was adjusted to three standard deviations from the mean. Multivariate normality was met in the sample. The values of skewness and kurtosis were between -1 and +1 for all variables, indicating that there was no problem with normality. The multicollinearity was checked by examining tolerance, the Variation Inflation Factors (VIF), and the correlation matrix. The preliminary analysis of hierarchical linear regression indicated tolerance ranging from .254 to .840, and the VIF ranging from 1.191 to 3.935, indicating that collinearity was not a concern. Additionally, the scatterplots did not indicate any curvilinear relationships. The correlation among predictors was also checked to further confirmed that collinearity was not a problem.

Correlations Hypotheses

I hypothesized that social support from locals, social support from home country, general social connectedness, Mainstream SC, Ethnic SC would be negatively correlated with acculturative stress. To test this hypothesis, Pearson's product-moment correlation was conducted to assess their relationship with acculturative stress in international students. Descriptive statistics and bivariate correlations are reported in Table 2. As predicted,

acculturative stress was negatively related to support from locals (r = -.31, p < .01), support from home country (r = -.20, p < .01), general social connectedness (r = -.47, p < .01), Mainstream SC (r = -.42, p < .01), whereas was not significantly related to Ethnic SC (r = .07, p = .34). I also ran a correlation between acculturative stress and social support from non-locals, English proficiency, years in the U.S., prior experience in the U.S., friend group (people who they hang out the most) to contribute current literature and the results were also shown in Table 3.

Table 3

Bivariate Correlations and Descriptive Statistics

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Acculturative Stress	2.53	.65	--												
2. Social Support from Home	3.04	.73	-.19**	--											
3. Social Support from Locals	2.70	.71	-.31**	.32**	--										
4. Social Support from Non-Locals	2.76	.72	-.08	.24**	.37**	--									
5. Social Connectedness	3.51	.97	-.47**	.16**	.31**	.16*	--								
6. Mainstream SC	3.97	1.31	-.42**	.22**	.49**	.19*	.43**	--							
7. Ethnic SC	5.22	1.24	.07	.35**	.14	.27**	.19**	.19**	--						
8. Years in US	3.38	1.57	.07	-.27**	-.07	-.14	.01	.09	-.20**	--					
9. Prior Experience	1.61	.87	-.15	.01	-.06	-.01	.14*	.18**	-.04	-.07	--				
10. English Proficiency	5.04	.87	-.15*	.07	.09	.03	.19**	.26**	-.04	.26**	.08	--			
11. Other IS			-.04	.08	-.08	.08	.07	-.02	.07	-.11	.12	.07	--		

12. IS from Same Country	.15*	-.11	-.13	.03	-.14*	-.25**	.14*	-.10	-.17**	-.17*	-.40**	--	
13. Local Friends	-.12	.06	.20**	-.10	.11	.32**	-.12	.18**	.03	.16*	-.30**	-.61**	--
14. Others	-.01	-.03	-.01	-.01	-.06	-.07	-.13	.05	.06	-.08	-.12	-.25**	-.19**

* = $p < .05$; ** = $p < .01$*

Note. Mainstream SC = Mainstream Social Connectedness; Ethnic SC = Ethnic Social Connectedness; Other IS = Other International Students; IS from Same Country = International Students from Same Country.

Social Connectedness as Moderator

I hypothesized that social connectedness would moderate the relationship between acculturative stress and social support from locals, social support from home country, Mainstream SC, Ethnic SC, such that social connectedness would weaken the relationship between them and acculturative stress. Four separate moderation analyses using the PROCESS macro (Hayes, 2013) with Model 1 were conducted. The first combination was general social connectedness (moderator) and social support from locals (predictor). The second combination was general social connectedness (moderator) and social support from home country (predictor). The third combination was general social connectedness (moderator) and Mainstream SC (predictor). Result of these four separate moderation analyses are reported in Table 2. The interaction between general social connectedness and social support from locals, and social support from home country, and Mainstream SC did not predict incremental variance in acculturative stress ($p > .05$). The interaction between general social connectedness and Ethnic SC was significant ($B = .08$, $p < .05$). To interpret the interaction effect, I conducted a simple slope analysis (see Figure 1). The result revealed that at lower levels of social connectedness, the interaction was not significant ($B = 2.54$, $p = .92$). However, at high levels of social connectedness (i.e., +1 SD), Ethnic SC was associated with greater acculturative stress ($B = 4.48$, $p < .001$). These results indicate social connectedness significantly moderates the relationship between Ethnic SC and acculturative stress; however, not in the way that was predicted. These analyses were repeated by controlling the covariates (social support from non-locals, English proficiency, years in the U.S., prior experience in the U.S., people who they hang out the most), the interaction was still significant ($B = .08$, $p < .05$).

Additionally, according to the results from PROCESS, the interaction between social connectedness and social support from locals was marginally significant (p = .07). Thus, I conducted a simple slope analysis and Johnson-Neyman techniques (Johonson & Neyman, 1936) with PROCESS macro (Hayes, 2013) to further examine probe for interaction and to identify ranges of values of the moderator for which the interaction is significant. The Johnson-Neyman technique results revealed that when social connectedness was higher than 3.25, the interaction was significant (B = -. 13, p = .05). Also, the simple slope results indicated that the association between social supports from locals and acculturative was statistically significant at the higher level (B = 4.48, p <.001) of social connectedness, but not at the lower level (B = 2.54, p = .58). Thus, this result indicated that when international students have a higher level of social connectedness, a higher level of social support from locals was possibly related to a lower level of acculturative stress.

Table 4

Results of Moderation Analyses

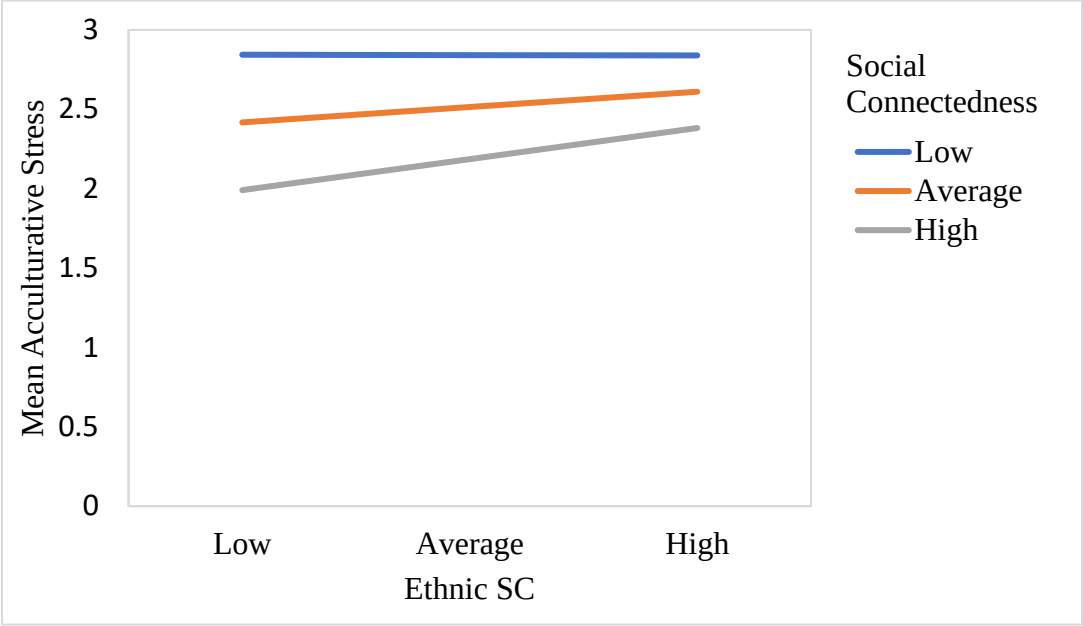
	Coefficient	SE	t	*p*	*CI*
			Acculturative Stress		
Constant	4.69	.64	7.30	.00	3.42 to 5.95
Social Supports from Home	-.36	.20	-1.76	.08	-.76 to .04
Social Connectedness	-.36	.18	-2.87	.00	-.88 to -.16
Social Supports from Home X Social Connectedness	.07	.06	1.26	.21	-.04 to .18
			Acculturative Stress		
Constant	2.92	.59	4.93	.00	1.75 to 4.09
Social Supports from	.22	.22	1.00	.31	-.21 to .66

Locals					
Social Connectedness	.01	.16	.09	.93	-.31 to .34
Social Supports from	-.11	.06	-1.84	.07	-.22 to .01
Locals X					
Social Connectedness					
Acculturative Stress					
Constant	3.62	.47	7.64	.00	2.69 to .4.56
Mainstream SC	-.06	.12	-.52	.60	-.31 to .18
Social Connectedness	-.16	.13	-1.20	.23	-.42 to .10
Mainstream SC X	-.02	.03	-.59	.56	-.08 to .04
Social Connectedness					
Acculturative Stress					
Constant	4.83	.64	7.60	.00	3.58 to .6.08
Ethnic SC	-.22	.12	-1.80	.07	-.45 to .02
Social Connectedness	-.77	.17	-4.44	.00	-1.12 to -.43
Ethnic SC X	.08	.03	2.61	.01	.02 to .15
Social Connectedness					
Acculturative Stress (Controlling for Covariates)					
Constant	5.19	.93	5.56	.00	3.34 to 7.03
Ethnic SC	-.22	.13	-1.72	.09	-.46 to .03
Social Connectedness	-.76	.18	-4.18	.00	-1.12 to -.40
Ethnic SC X	.08	.03	2.54	.01	.02 to .15
Social Connectedness					
English proficiency	-.05	.05	-.95	.34	-.14 to 05
Social Support from	-.03	.06	-.50	.62	-.14 to .09
Non-locals					
Years in US	.05	.03	1.84	.07	-.00 to .11
Prior Experience	-.04	.05	-.87	.39	-.14 to .05
Other IS	-.22	.59	-.37	.71	-1.38 to .94
Locals Friends	-.26	.59	-.44	.66	-1.42 to .90
IS from Same Country	-.17	.59	-.29	.77	-.13 to .99
Others	-.35	.60	.57	.57	-1.54 to .84

Note. Other IS = Other International Students; IS from Same Country = International Students from Same Country.

Figure 1

Graph of Interaction of Social Connectedness with Ethnic SC on Acculturative Stress



Predictors of Acculturative Stress

I hypothesized that higher levels of support from locals, support from home country, general social connectedness, Mainstream SC, Ethnic SC would predict lower levels of acculturative stress. I conducted a multiple regression analysis to test these hypotheses. Specifically, a four-stage hierarchical multiple regression was conducted with acculturative stress as the dependent variable. Preliminary analyses were conducted to ensure no violation of the assumptions of linearity, multicollinearity, independence of residuals, homoscedasticity, multicollinearity and normality.

The results of the regression analysis confirmed these hypotheses. Table 4 presents the results of the hierarchical regression statistics. The hierarchical multiple regression indicated that at step one, English proficiency, years in the U.S., people who they hang out the most, prior experience in the U.S., social support from non-locals contributed significantly to the regression model, F (7,196) = 2.18, p <.05, with an R^2 of .07, that accounted for 7.20 % of the variance of acculturative stress. Adding social support from locals and general social connectedness variables into the model, the change of R^2 = .20 was significant, F (9, 194) = 8.02, p < .001, which explained additional 19.9% of the variance in acculturative stress. Adding social support from the home country and Mainstream SC in the regression model explained an additional 3.01 % of the variance in acculturative stress, the change of R^2 = .03 was significant, F (11, 192) = 7.57, p < .001. At the last step, entering Ethnic SC explained an additional 4.70% of the variance in acculturative stress, the change of R^2 = .05 was significant, F (12, 191) = 8.54, p < .001.

Also, I hypothesized that social support from locals and social connectedness would be the most influential predictors in acculturative stress. When all independent variables and covariates entered in step four of the regression model, English proficiency, years in the U.S., prior experience in the U.S., people who they hang out the most, social support from non-locals, social support from locals, social support from home were not significant (p > .05). As predicted, social connectedness was the most important predictor of acculturative stress, which contributed 9.49% variance in acculturative stress. Ethic SC was the second one, contributing 4.67% of the variance in acculturative stress. The multiple regression model with all the predictors accounted for 34.9% of the variance in acculturative stress. Therefore, the result of the regression analysis

provided partial confirmation for this hypothesis, which social connectedness was the most influential predictors in acculturative stress.

Table 5

Summary of Hierarchical Regression Analysis for Variables Predicting Acculturative Stress

Variable	*B*	*SE B*	*β*	*Δ R²*	*Δ F*	*df*
Step 1				.07*	2.18	7,196
Other International Students	.06	.20	.04			
International Students from Same Country	.14	.18	.11			
Local Friends	-.05	.18	-.04			
Prior Experience	-.09	.05	-.12			
Social Support from Non-Locals	-.06	.06	-.06			
English Proficiency	-.11	.05	-.15*			
Years in U.S.	.05	.03	.11			
Step 2				.20***	26.51	2,194
Other International Students	.08	.18	.05			
International Students from Same Country	.12	.16	.09			
Local Friends	.07	.16	.05			
Prior Experience	-.07	.05	-.09			
Social Support from Non-Locals	.07	.06	.07			
English Proficiency	-.06	.05	-.07			

Years in U.S.	.03	.03	.08			
Social Connectedness	-.26	.05	-.38***			
Social Supports from Locals	-.19	.07	-.20**			
Step 3				.03***	4.29	2,192
Other International Students	.11	.17	.06			
International Students from Same Country	.14	.16	.10			
Local Friends	.14	.16	.10			
Prior Experience	-.04	.05	-.06			
Social Support from Non-Locals	.08	.06	.09			
English Proficiency	-.03	.05	-.04			
Years in U.S.	.04	.03	.08			
Social Connectedness	-.22	.05	-.33***			
Social Supports from Locals	-.10	.07	-.11			
Social Support from Home	-.05	.06	-.05			
Mainstream SC	-.11	.04	-.22**			
Step 4				.05***	13.72	1,191
Other International Students	.04	.17	.02			
International Students from Same Country	.03	.15	.03			
Local Friends	.11	.16	.08			
Prior Experience	-.03	.05	-.04			

Social Support from Non-Locals	.04	.06	.04
English Proficiency	-.02	.05	-.02
Years in U.S.	.04	.03	.10
Social Connectedness	-.24	.05	-.35***
Social Supports from Locals	-.08	.07	-.09
Social Support from Home	-.11	.06	-.12
Mainstream SC	-.13	.04	-.27**
Ethic SC	.13	.04	.25***

* $p < .05$; ** $p < .01$; *** $p < .001$

Discussion

International students who come to the U.S. from different cultures could experience various challenges. It is critical to understand their unique challenges and needs to support them in the brand-new environment. The purpose of the present study was to examine the relationship between social connectedness, social supports, and acculturative stress. Berry et al.'s (1987) proposed in the acculturation model that social connectedness and social support are the potential factors that could impact the international student acculturation process, which could affect their acculturate stress. Much of the existing literature of international students have examined the relationships among them, but less of them evaluate their relationships from a bilinear perspective, which was proposed by Berry et al.'s (1987) bi-dimensional model. Therefore, this study extended the current literature to understand international student acculturative stress, from both host culture and home culture perspectives derived from Berry et al.'s (1987) model. This study also included the perspective of non-locals, which indicate the connection with other

international students or someone that is not considered a local, which is a significant component of international students' lives (Bochner et al., 1977).

Consistent with prior research, my study found that social connectedness, mainstream social connectedness, social support from home, social support from locals were negatively associated with acculturative stress (e.g., Du & Wei, 2015; Hendrickson et al., 2011; Ng et al., 2017; Yeh & Inose, 2003). Social support from non-locals was unrelated to acculturative stress. Prior research on this relationship has been inconsistent (Kashima & Loh, 2006; Ng et al., 2017). One possibility is that receiving support from people with similar cultural identities (i.e., international students from other countries) may provide international students with comfort and companionship, but not resources to address acculturative stress. Other contextual moderators may explain when social support may reduce acculturative. For example, Ng et al. (2017) suggested that the strength and optimal level of the source of social support may play an important role between social support from non-local friends and acculturation. Furthermore, Ethnic SC was not related to acculturative stress that is consistent with previous studies (Du & Wei, 2015). This result may indicate that sense of connection with their home culture may not affect their acculturative stress in the new environment. These findings suggest that more studies are needed to understand the influences of social support from non-locals and Ethnic SC on acculturative stress for international students.

Two of hypotheses in my study were to test social support from locals, social support from home, general social connectedness, Mainstream SC, Ethnic SC are the significant predictors of acculturative stress in international students, after controlling for the effects of demographic variables, including English proficiency, years in the U.S., people who they hang out the most, prior experience in the U.S., social support from non-locals. These two hypotheses

were supported. The results indicated that although demographic variables, such as language and length of residency, appear to be critical factors influencing the acculturative stress, other factors, including different social support and social connectedness, also play key roles in international student acculturative stress. These findings are consistent with Berry et al.'s (1987) acculturation model, which suggests that social characteristics and psychological characteristics predict acculturative stress. These results also proved that different sources of social support and social connectedness significantly impact acculturative stress among international students. These findings contribute to a more comprehensive understanding of the relationships between social factors and acculturative stress by demonstrating multiples sources of social factors.

Furthermore, this study is one of the first few studies attempting to look at potential social factors in acculturative stress from a bilinear perspective proposed in Berry et al.'s (1987) model. Although previous studies found evidence of social support and social connectedness on acculturative stress, most of them did not look at their association from the bilinear perspective. For example, some of them just investigated the effect of general social support and social connectedness in acculturative stress among international students and did not examine specific types of them (e.g., Duru & Poyrazli, 2011; Yeh & Inose, 2010). Although their findings indicated the importance of social support and social connectedness in attenuating acculturative stress, it lacked further information on how different types of social factor serve different functions in acculturative stress that consist with Berry's bilinear perspective. This study examined social factors from both host culture and home culture perspective, which could provide a more complete picture to understand the influence of social factors on international student acculturative stress. Also, the finding showed that receiving social supports and maintaining a sense of connectedness from both host culture and home culture are important for

international students in an unfamiliar environment. Despite the associations found in this study, there is still much to understand about international student acculturative stress from the bilinear perspective that is consistent with Berry et al.'s (1987) model.

Namely, I hypothesized support from locals, and social connectedness would be the most influential predictors in acculturative stress. This hypothesis was partially supported. The regression result indicated that social connectedness could account for the most variance among all the variables in acculturative stress, followed by Ethnic SC and Mainstream SC, respectively, but not for social support from locals. Specifically, higher social connectedness and Mainstream SC predict lower acculturative stress. Higher Ethnic SC predicts higher acculturative stress. Although previous acculturative stress studies (e.g., Hendrickson, Rosen, & Aune, 2011; Yeh & Inose, 2003) have established a strong relationship of social connectedness and social support from locals with acculturative stress, findings of this study do not fully support this link. This may because receiving support from locals may be helpful in general life and school externally, but it is not sufficient to help international students to reduce their acculturative stress internally in different cultural settings. This also could be because local people may not fully understand what international students need and that sometimes what they provide is a mismatch from what international students' expectations. Additionally, the quality of the social support could play an essential role in influencing the levels of acculturative stress (Mallinckrodt & Leong, 1992). On the other hand, maintaining a strong and enduring sense of social connectedness as well as closeness with their mainstream society could be more helpful for international students to manage their needs and regulate acculturative stress internally. However, a strong sense of social connectedness with their ethnic community may lead to more acculturative stress. This could be because international students with a higher sense of social connectedness with their ethnic

community may spend more time with their ethnic group. A large part of the sample in this study reported that they tended to hang out with international students from the same country (n = 91), and the mean of Ethnic SC (M = 5.22) was relatively higher than Mainstream SC (M = 3.97). It is possible that international students with high Ethnic SC are less willing to accept the influence of the dominant culture, such as likely to spend more time with their peer from the same country, which causes them to have a harder time to adjust to the new environment and have more acculturative stress. Further research is needed before a solid conclusion can be drawn.

With regard to the possible moderating effect of acculturative stress in international students, I hypothesized that social connectedness buffers the relationship between it with social support from locals, social support from home country, Mainstream SC, Ethnic SC with acculturative stress respectively, such that higher levels of social connectedness weaken this relationship. Berry et al.'s (1987) model suggested that social connectedness as a psychological characteristic of an individual could act as a moderator in the acculturation process, which may vary acculturative stress. Previous studies also identified that higher social connectedness predicts a lower level of acculturative stress in international students (Yeh & Inose, 2003). However, the moderation hypothesizes were partially supported. The moderation result revealed that social connectedness only moderated Ethnic SC and acculturative stress. When social connectedness was at a high level, higher levels of Ethnic SC was associated with higher levels of acculturative stress. In other words, the strength of the relationship between Ethnic SC and acculturative stress is stronger for participants who have more social connectedness but not in the expected direction. It is possible that for those who have a high level of social connectedness, it is likely that high ethnic SC would throw more challenges for them to acculturate, as they value more on identifying themselves with their ethnicity of origin rather than adapting themselves to

the new culture. Alternatively, there was no significant relation between Ethnic SC and acculturative stress, when they had lower social connectedness. Additionally, the other possible reason that leads it to an unexpected direction is that this sample includes many Asian international students (n = 162). People in Asian cultures tend to value the importance of interdependence within their own group than other cultures. Therefore, when Asian international students have high social connectedness with their social world, an increase in Ethnic SC may lead them to value more about their interdependence and closeness with their ethnic community, which makes them less likely to adapt to the mainstream culture and increase the likelihood of experiences of acculturative stress. Future research is needed to further clarify their relationship, such as it may be helpful to switch social connectedness as the moderator role with Ethnic SC to provide additional insight into the nature of the relationship.

For the non-significant results, the possible explanation is that most of the international students in this sample indicated lower acculturative stress (acculturative stress M = 2.53 on a 7-point scale) that potentially impacted the study result. It is possible that if one feels less acculturative stress, one will have less an opportunity for the social connectedness server as a protective factor. Additionally, the result may be impacted by numerous metrological factors, such as sample size and elements of research design. However, the additional simple slopes analyses and Johnson-Neyman technique results indicated that the relationship between social support from locals and acculturative stress was negative when social connectedness was high. These results seem to consistent with Berry's (1997) model in which social connectedness could be helpful in certain conditions in decreasing acculturative stress. Thus, further research is needed to explore the moderation effect of social connectedness on acculturative stress.

Limitations and Suggestions for Future Research

First, this study used a cross-sectional design so that it is impossible to know if the model accurately represents the causal order of the variables. Other stronger designs, such as longitudinal research or experimental studies, are necessary to explain the nature of these relationships further. For example, Du and Wei (2015) conducted a longitudinal design study to examine links from acculturation experience through social connectedness to future subjective welling-being in Chinese international students at two different times. This study considered that social connectedness as an enduring personality trait that can influence in response to stressors during the acculturation process and provide a positive impact on their well-being. Therefore, utilizing a longitudinal model across international student's different time frames would provide a much stronger test of the ongoing effects of social factors in international students' acculturative stress.

Second, most participants in this study are graduate students and from Asian countries. Graduate students could have a very different experience from undergraduate students based on their experience and age. Also, international students from Asia could share very dissimilar cultural values from international students from other origins. Therefore, there is much with group heterogeneity that exists that should be further explored. For example, it would be helpful to examine the within group differences, such as bases on age, gender, nationality, class standing, prior experience, or other critical factors of international students.

Third, there is a potential bias of sample collecting. Although, this study did not just use the convenience sample of undergraduate students and tried to include participants from various resources, participants who were willing to engage in the study may generally be more seeking for support or have a strong sense of connectedness with others, which lead to overall lower levels of acculturative stress. Indeed, the relatively lower level of acculturative stress reported in

this study would support this idea. Also, this study offered compensation for participating, and that may add other bias for people who chose to participants than those who chose not to participants. Moreover, this study includes a larger number of graduate students, and this could relate to the sample collecting bias. This study used email listserv to recruit participants. Graduate students likely have more research experience than undergraduate students, which make them likely to participate in research study when they receive recruitment emails.

Fourth, this study employed self-report and quantitative methods. The self-report answer is hard to maintain credibility and is unclear whether the measures accurately reflect participants actual level. Also, quantitative methods do not allow us to understand international students' experience comprehensively and uniquely. It is important to be aware that international students have different experiences from each other. Thus, using qualitative research or develop new and objective measures that could be helpful to further explore their acculturation experience.

Fifth, there is a relatively low response-rate of participation. This could be the reason that leads to the test of moderation underpowered and interaction between social factors and social connectedness not being significant. Future studies may be helpful to consider a shorten questionnaire or change some of the wording to that of a more culture adaptive questionnaire to help international students better understand the questions. Also, it may be helpful to provide additional support while they are working on the questionnaire, such as providing a translation tool.

Sixth, this study did not examine a specific group of international students, such as international students from the same region. Most of the international student research focuses on a specific group of international students to study. Also, international students may share many similarities, but considering them as one group may be problematic. However, due to the

difficulties of sampling collections as well as a small sample size, this study chose to investigate international students in general. Thus, future studies may investigate a specific group of international students or the difference among them to provide a more generalized result.

Clinical Implications

Despite the limitations, the present study has several important clinical implications. First, the overall findings indicate that social connectedness is an important factor for predicting international student acculturative stress. Although international students leave their important connections at home and come to U.S. for education, a strong sense of social connectedness seems to still protect them in various ways. Besides their general sense of social connectedness, their sense of social connectedness with the mainstream society and ethnic community also seems to play different roles in their lives. Thus, educational institutions or other professional helpers should keep this in mind to help international students to continue maintaining or enhance these kinds of closeness.

Second, receiving social support from different resources seems beneficial for international students in general. However, the findings of the current study seem to not fully support this idea in international student's acculturative stress. This could relate to the quality of the support, the specific type of support that international students expect. Thus, it would be beneficial to understand international students' concerns and needs first, and then collaborate with them to provide appropriate support and develop interventions for them.

Conclusion

Although there is increased research of international student acculturative stress for the past several decades, there are still gaps and needs that need to be addressed to further

understand the rapidly growing and larger international student population in the U.S. The findings in this study contribute to the body of international student literature that has highlighted importance of social factors for international students' acculturative stress in the unfamiliar culture settings. Specifically, the ongoing social connectedness seems to continue playing a protective role in supporting international students in a challenging environment. Therefore, it is critical to continue fostering and preserving their sense of social connectedness. Also, this study indicates that different types of social support may play different roles in this process and requires more attention to achieve a full understanding of its function in future study.

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APPENDICES

Appendix A

Demographic Survey

1. What is your age? _____

2. What is your gender?
    a. Male
    b. Female
    c. Transgender
    d. Gender non-binary (e.g., androgynous, genderqueer, agender)
    e. A gender not listed here (please specify): _____

3. What is your academic level?
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
    e. Post-Baccalaureate
    f. Graduate Student

4. What is your current grade point average (GPA)?
    a. 3.5 – 4.0
    b. 3.0 – 3.49
    c. 2.5 – 2.99
    d. 2.0 – 2.49
    e. Less than 2.0

5. What is your marital status?
    a. Single
    b. Married
    c. Separated
    d. Divorced
    e. Widowed

6. What region of the world are you from?
    a. Asia
    b. Southeast Asia
    c. Canada
    d. Latin America

e. Central America
f. Africa
g. Europe
h. Middle East
i. Oceania

7. What is your country of origin?

_____

8. What is your nationality (e.g., Chinese, Korean)?

_____

9. How many years have you lived in the U.S.?
   a. Less than one year
   b. One – two years
   c. Two – three years
   d. Three – four years
   e. Four or more years

10. How many times have you been to the U.S. before you started school?
    a. None
    b. One to Two times
    c. Three to Four times
    d. Five or more times

11. Who are the people you hang out with the most?
    a. Other international students
    b. International students from same country
    c. Locals friends/domestic students
    d. Others

12. What is/are your primary language(s):

    _____

13. How well do you feel you read and understand written English (please pick the best descriptor)?
    0 (Not At All)-----1-----2----3----4----5 (Very Well)

14. How well do you feel you speak and understand spoken English?
    0 (Not At All)-----1-----2----3----4----5 (Very Well)

Appendix B

Questionnaire

ACCULTURATIVE STRESS SCALE FOR INTERNATIONAL STUDENTS – International Student Version

Instructions: Below are some statements that may describe the experiences of international students. For each of the following statements, please check the number that BEST describes your experience. There are no right or wrong answers.

1	2	3	4	5
Strongly Disagree	**Disagree**	**Not Sure**	**Agree**	**Strongly Agree**

Because of my different cultural background, I feel that:

1. Homesickness for my country bothers me.
2. I feel uncomfortable to adjust to new foods and/or to new eating habits.
3. I am treated differently in social situations.
4. I feel rejected when people are sarcastic toward my cultural values.
5. I feel nervous to communicate in English.
6. I feel sad living in unfamiliar surroundings here.
7. I fear for my personal safety because of my different cultural background.
8. I feel intimidated to participate in social activities.
9. Others are biased toward me.
10. I feel guilty to leave my family and friends behind.
11. Many opportunities are denied to me.
12. I feel angry that my people are considered inferior here.
13. I feel overwhelmed that multiple pressures are placed upon me after my migration to this society.
14. I feel that I receive unequal treatment.
15. People from some ethnic groups show hatred toward me nonverbally.
16. It hurts when people don't understand my cultural values.
17. I am denied what I deserve.
18. I have to frequently relocate for fear of others.
19. I feel low because of my cultural background.
20. I feel rejected when others don't appreciate my cultural values.

21. I miss the country and people of my national origin.
22. I feel uncomfortable to adjust to new cultural values.
23. I feel that my people are discriminated against.
24. People from other ethnic groups show hatred toward me through their actions.
25. I feel that my status in this society is low due to my cultural background.
26. I am treated differently because of my race.
27. I feel insecure here.
28. I don't feel a sense of belonging (community) here.
29. I am treated differently because of my color.
30. I feel sad to consider my people's problems.
31. I generally keep a low profile due to fear from other ethnic groups.
32. I feel some people don't associate with me because of my ethnicity.
33. People from some other ethnic groups show hatred toward me verbally.
34. I feel guilty that I am living a different lifestyle here.
35. I feel sad leaving my relatives behind.
36. I worry about my future for not being able to decide whether to stay here or to go back.

MULTI-DIMENSIONAL SUPPORT SCALE

Instructions: Below are some questions about the kind of help and support you have available to you in coping with your life at present. The questions refer to three different groups of people who might have been providing support to you IN THE LAST MONTH. For each item, please check the number that BEST describes your experience. There are no right or wrong answers.

1	2	3	4
Never	**Sometimes**	**Often**	**Usually or Always**

A. Firstly, think of your family and close friends in your home country who are not living in the U.S., especially the 2 -3 who are most important to you

1. How often did they really listen to you when you talked about your concerns or problems?
2. How often did you feel that they were really trying to understand your problems?
3. How often did they really make you feel loved?
4. How often did they help you in practical ways, like doing things for you or lending you money?
5. How often did they answer your questions or give you advice about how to solve your problems?
6. How often could you use them as examples of how to deal with your problems?

B. Now, think of your local friends who are U.S. residents, such as your professors, classmates.

1. How often did they really listen to you when you talked about your concerns or problems?
2. How often did you feel that they were really trying to understand your problems?
3. How often did they help you in practical ways, like doing things for you or lending you money?
4. How often did they answer your questions or give you advice about how to solve your problems?
5. How often could you use them as examples of how to deal with your problems?

C. Lastly, think of your non-local friends that you know, who are like you not U.S. residents, such as other international students, or compatriot.

1. How often did they really listen to you when you talked about your concerns or problems?
2. How often did you feel that they were really trying to understand your problems?
3. How often did they help you in practical ways, like doing things for you or lending you money?

4. How often did they answer your questions or give you advice about how to solve your problems?

5. How often could you use them as examples of how to deal with your problems?

SOCIAL CONNECTEDNESS SCALE

Instruction: Below are some statements that reflect various ways in which we view ourselves. Rate the degree to which you agree or disagree with each statement using the following scale (1 = Strongly Disagree and 6 = Strongly Agree). There are no right or wrong answers.

1	2	3	4	5	6
Strongly Disagree	**Disagree**	**Mildly Disagree**	**Mildly Agree**	**Agree**	**Strongly Agree**

1. I fell disconnected from the world around me.
2. Even around people I know, I don't feel that I really belong.
3. I feel so distant from people.
4. I have not sense of togetherness with my peers.
5. I don't feel related to anyone.
6. I catch myself losing all sense of connectedness with society.
7. Even among my friends, there is no sense of brother/sisterhood.
8. I don't feel I participate with anyone or any group.

SOCIAL CONNECTEDNESS IN MAINSTREAM SOCIETY (SCMN)

Instruction: Below are some statements that reflect various ways in which our sense of closeness and belonging to mainstream society. Rate the degree to which you agree or disagree with each statement using the following scale (1 = Strongly Disagree and 7 = Strongly Agree). There are no right or wrong answers.

1	2	3	4	5	6	7
Strongly Disagree	**Disagree**	**Slight Disagree**	**Neither Agree or Disagree**	**Slightly Agree**	**Agree**	**Strongly Agree**

1. I feel a sense of closeness with U.S. Americans.
2. I feel a sense of belonging to U.S. society.
3. I feel accepted by U.S. Americans.
4. I feel like I fit into U.S. society.
5. I feel connected with U.S. society.

SOCIAL CONNECTEDNESS IN ETHNIC SOCIETY (SCETH)

Instruction: Below are some statements that reflect various ways in which our sense of closeness and belonging to our ethnic society. Rate the degree to which you agree or disagree with each statement using the following scale (1 = Strongly Disagree and 7 = Strongly Agree). There are no right or wrong answers.

1	2	3	4	5	6	7
Strongly Disagree	**Disagree**	**Slight Disagree**	**Neither Agree or Disagree**	**Slightly Agree**	**Agree**	**Strongly Agree**

1. I feel a sense of closeness with people from my ethnic community.
2. I feel a sense of belonging to my ethnic community.
3. I feel accepted by people from my ethnic community.
4. I feel like I fit into my ethnic community.
5. I feel connected with my ethnic community.