A MIXED-METHOD STUDY OF FRIENDSHIP NETWORKS AND PSYCHOLOGICAL AND SOCIOCULTURAL ADAPTATION AMONG CHINESE INTERNATIONAL UNDERGRADUATES IN U.S. HIGHER EDUCATION

By

Mingjun Xie

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ABSTRACT

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In recent years, U.S. colleges and universities have observed a rapid expansion of the enrollment of international students. Particularly Chinese students, the largest group of international students since 2010, have increased nearly threefold in just eight years (Institute of International Education, 2010–2018). Prior studies have investigated the friendship networks of international students (Rose-Redwood & Rose-Redwood, 2013) and the influence of peer relations on international students' cross-cultural adaptation (Hendrickson, Rosen, & Aune, 2011). However, the extant literature has largely neglected to examine international students' lived experiences of establishing friendship networks and the underlying mechanism of the associations between friendships and international student adaptation. Guided by social capital theory (Lin, 1999) and acculturation process framework (Ward, Bochner, & Furnham, 2001), the purpose of my dissertation is to examine Chinese students' peer interaction patterns and how friendships influence their psychological well-being and sociocultural adjustment.

My dissertation consists of two studies. The first study drew upon two waves of surveys collected with 46 Chinese students (30 females, M_{age} = 18.89, SD = .80) and multiple in-depth interviews conducted with five students (three females, M_{age} = 18.40, SD = .89). The results yield three main findings. First, Chinese students of the present study nominated predominant Chinese friends, much more than domestic and other international student friends, in both waves. Second, Chinese students did not necessarily develop more diverse, integrated friendship networks over

time. Specifically, more than half of the participants nominated Chinese friends only in both waves, possibly because of language barriers and prior discrimination experiences. Lastly, the interview findings illustrated that Chinese students' engagement in college settings shaped their experiences of building friendship networks, such that greater engagement in meaningful common experiences (such as club activities, religious groups, and experiences of working together) could facilitate cross-cultural interaction between Chinese students and domestic students.

Guided by social capital theory (Lin, 1999) and acculturation process framework (Ward, Bochner, & Furnham, 2001), the second study examined: (1) how friendship networks, specifically the national backgrounds of nominated friends, the frequency of contact, and the intimacy of friendships, are associated with psychological and sociocultural adaptation among Chinese undergraduates (N = 273, M_{age} = 19.18, SD = .84) in U.S. higher education; and (2) the role of social connectedness as a mediator. Results indicated that compared to superficial relationships, high-quality peer interaction (for example, friendships involving both frequent contact and intimacy) might be a key to bolster Chinese students' ability to navigate cross-cultural challenges. Further, social connectedness mediated the associations between friendships and student adaptation, such that frequent and intimate interaction with domestic students was associated with greater social connectedness and, in turn, better psychological and sociocultural adaptation. The findings point to practical implications for the host institutions, especially for universities enrolling large numbers of international students. It is important for the host institutions to develop corresponding programs to facilitate social opportunities for different groups to mingle and establish sustained friendships.

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CHAPTER 1. INTRODUCTION

Introduction to the Dissertation

In the last two decades, U.S. colleges and universities have witnessed a sharp increase in international student enrollment. Whereas back in 2000, there were 547,867 international students studying in the United States, this number doubled and hit the one million mark in 2018, with a total of 1,094,792 international students enrolled (Institute of International Education, 2018a). Currently one out of every five students at U.S. colleges and universities is an international student (Institute of International Education, 2018a). The continued growth in international students has brought substantial financial and cultural resources to universities, local communities, and the host society. During the 2017-2018 academic year, international students enrolled in U.S. higher education institutes nationwide contributed $39 billion to the U.S. economy and supported over 455,000 jobs (NAFSA, 2018). In Michigan for example, the enrollment of international students (n = 34,049) in local colleges and universities has brought about $1.2 billion to the state economy and supported nearly 15,000 jobs in the 2017-2018 school year (NAFSA, 2018). For every three international students enrolled in Michigan, one job is created and supported. The arrival of international students has also contributed to cross-cultural understanding and campus diversity. They not only bring international perspectives into research and classroom learning, but also improve intercultural competencies of U.S. domestic students (Breuning, 2007).

Despite the rapid increase in international students and their contribution to promoting local economic growth and campus cultural diversity, this population is still “one of the most invisible, understudied, and underserved populations on U.S. campuses” (Wang, Wei, & Chen, 2015, p. 273). Studying in a foreign country might lead to academic and psychosocial adaptation

difficulties among international students. Challenges such as language barriers, high academic stress, homesickness, depressive symptoms, and discrimination are frequently noted in previous research (Lee, 2015; Smith & Khawaja, 2011; Yan & Berliner, 2009, 2013). Asian international students, in particular, tended to experience more adaptation challenges than their peers from European countries. Studies have found that they reported more language barriers, higher levels of anxiety and acculturative stress, more difficulties in making friends, and greater exposure to discrimination (Fritz, Chin, & DeMarinis, 2008; Lee & Rice, 2007; Smith & Khawaja, 2011; Yeh & Inose, 2003).

Chinese students have become the largest group of international students on U.S. campuses since 2010. In the 2017-2018 school year, over 360,000 Chinese students were studying in the United States, accounting for 33% of the total international student enrollment (Institute of International Education, 2018b). Prior findings have demonstrated specific academic and psychosocial challenges Chinese students navigate (Leong, 2015). Academically, Chinese students reported lower levels of English proficiency (particularly writing ability) than did international students from other countries (Li, Chen, & Duanmu, 2009). Many struggled to maintain minimum academic standards and GPA requirements during their first-year studies in the United States (Ma, 2014). Psychologically, a high prevalence of depressive symptoms and anxiety was found among Chinese students (Han, Han, Luo, Jacobs, & Jean-Baptiste, 2013). Socio-culturally, Chinese students were found to be exposed to particular stereotypes and discrimination directed toward their group, both on and off campus, which negatively affected their psychosocial adaptation (Xie, Liu, Duan, & Qin, 2019). How Chinese students adapt to and thrive in college is a major concern for student themselves, their parents, and host institutions.

Among the influencing factors in facilitating international student adaptation, social relations established in the host society are frequently noted as an effective predictor of students' academic learning (Wang, 2017), psychological well-being such as life satisfaction (Yan & Berliner, 2011a), and sociocultural adjustment such as intercultural communication competence (Kim, 2001). For Chinese international students, since most of their established social relations remain back in China, they need to build new social networks in the host society to gain support for navigating challenges they face during cross-cultural transitions (Kim, 2001). Although the benefits of maintaining close relations with local students are well established (Hendrickson, Rosen, & Aune, 2011), previous studies have largely focused on the national/ethnic backgrounds of nominated friends (e.g., Rienties & Nolan, 2014) and neglected to examine the contributing effects of other features of social contact (such as the frequency of contact and the intimacy of relations) in shaping student adaptation. Further, little is known about international students' experiences of building peer relations during their studies in the host society.

Grounded in social capital theory (Lin, 1999) and acculturation process framework (Ward, Bochner, & Furnham, 2001; Figure 1.1), the purpose of my dissertation is to examine Chinese students' friendship networks and how the establishment of friendships influences their psychological well-being and sociocultural adjustment. Social capital theory conceptualizes social relations as resources from which individuals can benefit to facilitate their knowledge and skills (Lin, 1999). Ward and colleagues (2001) incorporated the notion of interpersonal contact as social resources into the examination of acculturation and adaptation process, highlighting the contributing role of social interaction in promoting psychological and sociocultural adjustment of international students.

My dissertation consists of two studies. In study one, drawing on two-wave, longitudinal survey responses and in-depth interviews, I used a mixed-method approach to explore: (1) the peer interaction patterns of Chinese undergraduates studying at a large public Midwestern university; (2) their nuanced experiences of building friendship networks; and (3) how their friendship networks and experiences might change over time. In study two, I used structural equation modeling to investigate: (1) the associations between friendship networks (specifically the frequency of contact and the intimacy of relationships) and psychological and sociocultural adaptation of Chinese undergraduates; and (2) social connectedness as a potential mediator of the associations between friendships and student adaptation.

I hope the findings of my dissertation can help university faculty and professionals who work closely with international students to understand students' experiences of establishing friendship networks and how peer relations contribute to their cross-cultural adaptation. The findings may also point to important practical implications for the development of institutional programs aimed at supporting international student adaptation in U.S. higher education.

CHAPTER 2. STUDY ONE

A MIXED-METHOD EXAMINATION OF LONGITUDINAL CHANGES IN PEER INTERACTION PATTERNS OF CHINESE INTERNATIONAL UNDERGRADUATES IN U.S. HIGHER EDUCATION

Introduction

The number of Chinese students coming to the United States for higher education has been sharply increasing over the last decade. In the 2017-2018 school year, more than 360,000 Chinese students were studying on U.S. campuses, accounting for 33% of the total number of enrolled international students (Institute of International Education, 2018b). The continued growth in international students has brought substantial financial and cultural resources to universities, local communities, and the host society (Breuning, 2007; NAFSA, 2018). Nevertheless, studying in a foreign country, Chinese international students may encounter difficulties during cross-cultural transitions. Challenges in academic learning (Heng, 2019), psychological adaptation (Hirai, Frazier, & Syed, 2015), interpersonal relations (Bertram, Poulakis, Elsasser, & Kumar, 2014; Smith & Khawaja, 2011), and cross-cultural adjustment such as language barriers (Yan & Berliner, 2013) and discrimination experiences (Xie, Liu, Duan, & Qin, 2019) have been noted in prior research. How Chinese students adapt to and thrive in U.S. higher education is a major concern for student themselves, their parents, and host institutions.

Among the individual, interpersonal, and societal factors that contribute to the adaptation outcomes of international students (Zhou, Jindal-Snape, Topping, & Todman, 2008), social interaction with peers in the host society is frequently cited as an important predictor of student adaptation, such as psychological well-being (Bender, van Osch, Sleegers, & Ye, 2019) and acquisition of new sociocultural knowledge (Bierwiaczonek & Waldzus, 2016; Trice, 2004). Although the benefits of maintaining close relations with peers in the host society are

documented (Wilson, Ward, & Fischer, 2013), limited work has elucidated Chinese international students' lived experiences of building friendship networks over time. Exploring such experiences would provide useful information about the changing social-interpersonal challenges and opportunities that international students navigate while they were studying in the host institutions. Building upon prior findings of friendship networks of international students (Bochner, McLeod, & Lin, 1977; Rose-Redwood & Rose-Redwood, 2013), the present study uses a mixed-method approach to explore Chinese international undergraduates' nuanced experiences in establishing friendship networks and the longitudinal changes in their peer interaction patterns.

Friendship Networks of International Students: Patterns

Most studies examining international students' peer relations has focused on the national or ethnic backgrounds of their nominated friends. Three groups are identified: the co-national, host-national, and multi-nationals (Bochner et al., 1977; Furnham & Alibhai, 1985; Hendrickson et al., 2011). *Co-nationals* of international students are peers from the same country as their own (for example, Chinese friends nominated by Chinese international students). *Host-nationals* usually refer to domestic and local resident students in the host country. *Multi-nationals* consist of all other international students besides the co-national peers.

Early research indicates that international students prioritized their friendships with peers who shared similar cultures, such that they nominated co-national friends the most, multi-nationals the second, and host-nationals the least in their friendship networks (Furnham & Alibhai, 1985). However, international students might nominate more host-national students when asked about their larger peer networks (as opposed to nominating their closest friends). In a more recent study exploring international students' friendship networks, Hendrickson and

colleagues (2011) asked participants (mostly graduate students) to nominate up to 50 friends and identify their national or ethnic backgrounds. Findings indicate that international students did not report a higher ratio of co-national students in their friendship networks. Instead, they nominated host-national friends the most, compared to co-national and multi-national friends, in their broad peer networks. With regards to the strength of friendships, international students tended to maintain moderate ties (i.e., remaining in contact but perceiving limited support) across the three peer groups (Hendrickson et al., 2011).

Theories of acculturation and adaptation posit that international students would have more interaction with domestic students when they are more acculturated to the host cultures (Ward, Bochner, & Furnham, 2001; Ward, Okura, Kennedy, & Kojima, 1998). As such, it is assumed that international students would establish more cross-cultural friendships over time during their stay in the host society (Geeraert, Demoulin, & Demes, 2014). Nevertheless, empirical findings seem to suggest the opposite. For example, using two-wave longitudinal network data collected with 592 students (including 484 international students) in the United Kingdom, Rienties and Nolan (2014) found that Asian international students usually established friendships with co-national students, and that international students did not necessarily develop more connections with host-national or multi-national students over time. The tendency for international students to remain self-segregated might be associated with the difficulties of forming close relationships with host-national students due to language barriers and discrimination experiences (Hendrickson et al, 2011; Leong, 2015).

The peer interaction patterns of international students can also be understood based on the national composition of friendship networks. Specifically, drawn on in-depth interviews conducted with 60 international graduate students studying in the United States, Rose-Redwood

and Rose-Redwood (2013) proposed a social interaction continuum model and identified four patterns of friendship networks, including self-segregator, host interactor, exclusive global mixer, and inclusive global mixer. *Self-segregators* (27% of the participants) refer to international students who only interact with co-nationals. *Host interactors* (7%) are those who only mingle with co-national and host-national friends. *Exclusive global mixers* (38%) are those who nominate both co-national and multi-national friends. Finally, *inclusive global mixers* (28%) are those who develop friendships with all three groups, co-national, host-national, and multi-national peers.

To sum, prior studies primarily centered around the national backgrounds of the friends nominated by international students. Other essential components of networks, such as the quantity of contact and the quality of friendships (Ward, Bochner, & Furnham, 2001), had been largely neglected. These two characteristics also play a role in shaping psychological adaptation of international students (Ward & Rana-Deuba, 2000). The present study extends prior findings by including the frequency of contact and the quality of relationships when examining the patterns of friendship networks of Chinese undergraduates and how the patterns might change over time.

Friendship Networks of International Students: Functions

The contributing effects of friendship networks in shaping international students' psychological and sociocultural adaptation have been well supported by both theoretical and empirical evidence (Bochner et al., 1977; Furnham & Alibhai, 1985; Hendrickson et al., 2011; Kim, 2001; Wang, 2017; Yan & Berliner, 2011a). Theoretically, a functional model proposed by Bochner and colleagues (1977) considered the co-national group as the primary and most important network for international students, as this group could support international students'

expression of cultural identity and values. Besides, the co-national group was rated by international students as their most preferred group for emotional support and companion for daily activities (Furnham & Alibhai, 1985). The host-national group was described as the secondary network, given its contribution in facilitating international students' academic learning (Furnham & Alibhai, 1985) and acquisition of cultural knowledge (Bochner et al., 1977). Moreover, social interaction with host nationals was considered as a key to improve international students' host culture communication competence, an overall capability of appropriate and effective communication in the host society (Kim, 2001). Lastly, the multi-national group was considered as the least preferred group (Furnham & Alibhai, 1985), which had the least influence (Bochner et al., 1977) and only provided recreational and entertaining companionship. Empirically, prior findings suggest that international students usually benefit from knowledge-based resources and information shared within their co-national networks (Wang, 2017; Yan & Berliner, 2011a). For the influence of host-national friendships, international students nominating more host-national friends tended to report greater life satisfaction and contentment and less homesickness (Hendrickson et al., 2011). Finally, interaction with multi-national students could improve international students' cross-cultural understanding and intercultural competence (Rose-Redwood & Rose-Redwood, 2013).

Challenges of Establishing Friendship Networks

Problems and difficulties of developing friendships with host-national students are also documented in prior research. First, language barriers often prevent international students from mingling with domestic students (Smith & Khawaja, 2011). Second, culturally different understanding of friendships might impede the establishment of close relationships between international students and host-nationals. For example, Chinese international students observed

that U.S. domestic students always keep some distance between friends (Yan & Berliner, 2013), and that although they took the initiative to interact with host-nationals to expand their peer networks, they often found it difficult to build close relationships with host-nationals (Bertram et al., 2014). Lastly, feeling isolated or segregated among domestic students made it harder for Chinese students to reach out to host-national peers (Xie et al., 2019; Bertram et al., 2014). Prior experiences of being discriminated against by people in the host society might also hinder Chinese students' interaction with host-national peers (Leong, 2015).

The Present Study

Although the friendship networks of international students are well examined (Bochner et al., 1977; Rose-Redwood & Rose-Redwood, 2013), the existing literature has largely neglected to investigate the longitudinal changes in peer interaction patterns and Chinese students' experiences of establishing friendship networks in the host society. Further, most prior results were drawn upon mixed samples consisting of a wide range of international students (Hendrickson et al., 2011; Rienties & Nolan, 2014; Rose-Redwood & Rose-Redwood, 2013). Such findings might overlook the nuanced experiences of students from a particular culture, such as Chinese international undergraduates of the present study. Specifically, previous research concerning Chinese students' friendship networks has noticed *guanxi*, an indigenous construct featuring interpersonal relations in the Chinese society (Chen & Chen, 2004), in affecting Chinese students' academic learning (Fraiberg & Cui, 2016; Wang, 2017) and career experiences (Fraiberg, Wang, & You, 2017). Compared to broadly defined interpersonal relationships, *guanxi* refers to elaborately established networks of exchange through which individuals can obtain instrumental resources and social benefits (Bian, 2001). For some Chinese students, guanxi may be a main motive for building friendship networks in the host society. The present study would

contribute to the literature by examining Chinese students' friendship networks with the consideration of guanxi.

In sum, building upon the existing models describing friendship networks of international students (Bochner et al., 1977; Rose-Redwood & Rose-Redwood, 2013), the present study uses a mixed-method approach to examine: (1) the peer interaction patterns of Chinese undergraduates; (2) their nuanced experiences of building friendship networks at a large public Midwestern university; and (3) how their peer interaction patterns and experiences changed over time (sophomore versus freshman year). I used a hybridized sociocultural framework (Heng, 2018) to obtain a holistic understanding of participants' experiences. This framework posits the interdependence of individual behaviors and contexts, such that individual experiences are shaped by their embedded sociocultural contexts, including the schooling setting, the surrounding community, and the dominant socioeconomic-cultural contexts (Heng, 2018). Another tenet of this framework indicates that participants' behaviors and experiences may change over time (Heng, 2018). Guided by this framework, the present study assumes that Chinese students' experiences would be shaped by the university setting and the broader cultural context (such as Chinese cultures), and that their experiences would change over time. This study hypothesized that Chinese undergraduates would nominate a higher proportion of co-national friends relative to host-national and multi-national friends, and that Chinese undergraduates would have a more diverse, integrated friendship network at Time 2 (for example, a higher ratio of host-national and multi-national friends) as they spent more time in the host society. The examination of changes in both the quantity and quality of friendships of Chinese undergraduates was mostly exploratory, given a lack of prior research on this topic.

Methods

Justification of Research Design

This study uses a mixed-method approach to address the research questions. First, I drew on two-wave survey responses to examine the peer interaction patterns of Chinese undergraduates (i.e., the national background of their nominated friends, the frequency of contact, and the degree of intimacy of their friendships) and the longitudinal changes in these patterns. Next, I used a qualitative inquiry to explore Chinese students' lived experiences of building friendship networks and their meaning-making with regards to the changes in their peer interaction patterns over time. I chose a phenomenological approach, given that it allows for the examination of common experiences of individuals who share similar living experiences (Starks & Trinidad, 2007) and how their experiences may change over time using multiple in-depth, semi-structured interviews conducted with the participants (Moustakas, 1994). Both survey and interview data used in the present study were collected as part of a longitudinal, mixed-method study assessing academic performance, psychological well-being, and sociocultural adaptation of Chinese international undergraduates studying at a large public, land-grant university in Midwestern U.S. In 2014 when the data were collected, the university was ranked among the top 10 U.S. higher education institutions in enrolling international students.

Survey Data and Analysis

Participants. A total of 273 Chinese undergraduates were recruited to complete the survey study, including 150 students participating in Time 1 survey (first year), 77 students participating in Time 2 survey (second year), and 46 students who completed both Time 1 and 2 surveys. Given that I was interested in the longitudinal changes in peer interaction patterns of Chinese undergraduates, I used a subsample of 46 Chinese students (Time 1 mean age = 18.89,

SD = .80) who completed both waves of surveys. Demographic characteristics of the survey sample are presented in Table 2.1.

Procedure. This study used a convenient sampling approach for participant recruitment. After obtaining the university Institutional Review Board approval, the research team sent out an e-mail invitation with a link for the study survey to all first-year Chinese students. To be eligible for the survey study, students must be originally from mainland China and at least 18 years old. The response rate of the survey study is approximately 20%. The online surveys were administered through the *Qualtrics* software (Version 4.18; Qualtrics, 2018), a web-based survey tool. Participants were asked to sign an informed consent before they started the survey. To encourage more Chinese students to complete the survey, multiple reminders were sent via e-mails one and two weeks after the initial invitation. The survey study was conducted completely in Chinese to circumvent any language barriers that might hinder students' expression of their thoughts and feelings.

Measures. The survey questions covered the following five aspects: (1) demographic characteristics such as gender, age, and students' previous schooling experiences; (2) interpersonal relations such as relationships with parents and peers; (3) psychosocial adaptation such as perceived stress and social connectedness; (4) students' perceived stereotypes and discrimination; and (5) institutional support and campus resources. Responses included Likert-type scales and open-ended questions.

Results of this study were predominantly drawn upon survey responses to questions about participants' peer relations in the host society. A grid (Appendix F) was used to measure students' friendship networks. Considering that close contact with three to five friends was adequate for measuring the influence of interpersonal relations (Dunbar & Spoor, 1995), the

participants were asked to list up to six closest friends they had met on campus by identifying: (1) the national background of each nominated friend (1 = *co-national*, 2 = *host-national*, and 3 = *multi-national*); (2) the frequency of contact (from 1 = *almost every semester* to 5 = *almost every day*); and (3) self-disclosure in friendships, i.e., if they would share personal concerns with their nominated friends (1 = *no*, 2 = *yes*), which was regarded as the proxy for intimacy of relationships.

Moreover, given that language proficiency (Smith & Khawaja, 2011), the quantity and quality of cross-cultural friendships (Bertram et al., 2014), and prior experiences of being discriminated against by host-nationals (Leong, 2015) are influential factors to intergroup relations among international students, these variables were also included in analyses for the examination of Chinese undergraduates' peer interaction patterns. Specifically, we measured: (1) how frequently Chinese students spoke English outside of class (from 1 = *never* to 4 = *often*); (2) the frequency of contact with host-nationals and multi-nationals (from 1 = *not at all* to 5 = *very frequently*); (3) how comfortable they were when interacting with host-nationals and multi-nationals (from 1 = *not at all* to 4 = *very comfortable*); (4) perceived discrimination; and (5) perceived hate. Both perceived discrimination and hate are subscales of Acculturative Stress Scale for International Students (ASSIS; Sandhu & Asrabadi, 1994), a 36-item scale measuring international students' stress and cultural adaptation challenges during cross-cultural transitions. Items were rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Example scale items include "I feel that my people are discriminated against" and "People show hatred toward me through their actions," with higher scores reflecting more discrimination or hate perceived from the host society. Two demographic variables, whether

students completed high school in China or in the United States and the national background of their roommates, were also included in analyses.

Data analysis. Drawing on students' responses to the peer network grid, I explored the peer interaction patterns of Chinese undergraduates. First, I computed the total number of friends nominated by the participants and the subtotals for each peer group (co-, host-, and multi-nationals). Second, I calculated the ratio of friends of each peer group to the total number of nominations. Third, I computed the mean scores to show the average frequency of contact and the average degree of intimacy of friendships for each peer group. These steps were conducted to investigate students' friendship networks at both Time 1 and 2. Lastly, I visualized the peer interaction patterns in both waves using: (1) the size of the shape to indicate the proportion (or ratio) of each peer group to the total number of nominations (i.e., the more nominations, the larger size in shape); (2) the thickness of connecting lines between Chinese undergraduates and peer groups to represent the frequency of their interaction, with a thicker line reflecting more frequent interaction; and (3) the length of connecting lines to reflect the degree of intimacy of their friendships.

Next, guided by the social interaction continuum model (Rose-Redwood & Rose-Redwood, 2013), I categorized Chinese students into two groups based on the national composition of their nominated friends: self-segregators (nominating co-nationals only) and mixers (nominating at least one host-national or multi-national friend besides co-nationals). In order to describe how students' peer interaction patterns changed over time, I further specified four profiles: (1) self-segregator → self-segregator (a student who remained a self-segregator over time); (2) self-segregator → mixer (a student who was a self-segregator at Time 1 but turned into a mixer at Time 2); (3) mixer → mixer (a student who remained a mixer over time); and (4)

mixer → self-segregator (a student who was a mixer at Time 1 but turned into a self-segregator at Time 2).

Finally, I explored how the characteristics of Chinese undergraduates (as collected at Time 1) differed by the four profiles describing the changing patterns of peer interaction, using (1) cross tabulation tests to examine potential group differences with regards to whether students completed high school in the United States or in China, the national backgrounds of their roommates, and how frequently they spoke English outside of class; and (2) one-way ANOVAs to examine if significant group differences exist in terms of how frequently participants interacted with host-national and multi-national students, their perceived comfort level in interacting with host-nationals and multi-nationals, and perceived discrimination and hate from the host society. All analyses were conducted using data adjusted for missing values via SPSS (Version 25, 2017).

Interview Data and Analysis

The present study used semi-structured, in-depth interviews to discover the nuanced experiences of Chinese undergraduates with regards to their cross-cultural learning and adaptation experiences in the United States. The purpose of in-depth interviews, as commented by Seidman (2013), is to depict "the lived experience of other people and the meaning they make of that experience" (p. 9). The interview data allow us to understand Chinese students' meaning making about the changes in their peer interaction patterns over time.

Participants. Twenty-seven Chinese undergraduates (13 females) participated in the two-wave, longitudinal interviews. Students were first interviewed during their first year and then followed-up when they were juniors. Most interviewees were majoring in business, engineering, biochemistry and medical science, and education. Given that research using a

phenomenological inquiry usually involves purposive sampling methods to recruit a relatively small heterogeneous group (varying from 3 to 15 participants) who have experienced the phenomenon of interest (Creswell, 2013; Starks & Trinidad, 2007), in this study, I used a subsample of five Chinese undergraduates (3 females, Time 1 mean age = 18.4, *SD* = .89) who completed both waves of surveys and interviews to explore their nuanced experiences of the changes in their peer interaction patterns over time. These participants were selected because their peer interaction patterns were diverse and could roughly represent the experiences of other Chinese students at the university. Specifically, among the five interviewees, two were self-segregators at Time 1 and remained self-segregators at Time 2; the remainder were mixers at Time 1, including two remaining mixers at Time 2 and one turning into a self-segregator at Time 2. The demographic characteristics of the interview sample are displayed in Table 2.2.

Procedure. Interviews were firstly collected in spring 2015 when the participants were in their first year and again in fall 2016 when they were juniors. Participants were recruited using snowball sampling (Merriam, 1998) through personal networks and WeChat (a Chinese social media app) groups. A semi-structured interview protocol was developed to explore: (1) students' prior schooling experiences; (2) their academic learning experiences after arrival; (3) student adaptation experiences, such as mental health issues and perceived stereotypes and discrimination; and (4) interpersonal relations. Interviews were conducted in Mandarin Chinese by a team of researchers trained in qualitative research. Each interview lasted from one to two hours. All interviews were audio recorded and transcribed in Chinese verbatim. In this study, I mainly focused on Chinese undergraduates' experiences of how they interacted with co-nationals, host-nationals, and multi-nationals on campus and how their peer interaction patterns changed over time.

Data analysis. I followed a three-step analysis of phenomenological research (Creswell, 2013; Moustakas, 1994) to code interview transcripts: (1) horizonalization of data; (2) clustering of meaning; and (3) integrating essential descriptions. First, after reading all transcripts several times to gain a general understanding of participants' experiences, I extracted significant phrases and sentences from each transcript that were pertinent to students' lived experiences of interacting with peers. I then developed a list of significant statements that provided non-repetitive, non-overlapping information to understand participants' experiences. Next, I grouped these significant statements into larger units (or clusters) of information which presented the common themes of transcripts. Lastly, I integrated the significant statements into in-depth descriptions to illustrate the "essence" (or themes) of the phenomenon, i.e., "what" and "how" Chinese undergraduates experienced with regards to their interaction with peers, as presented in the present study.

Positionality. Moustakas (1994) suggested that researchers should bracket biases, i.e., reflect on personal experiences and take a fresh perspective toward participants' experiences when conducting phenomenological studies. As a Chinese student coming to the United States for graduate school in my early 20s, my cultural backgrounds and proficiency in Mandarin helped me develop rapport with the participants (Berg & Lune, 2012), allowing me to explore their lived experiences of establishing friendship networks. However, students used to view me as a representative of the university who tried to investigate their college life, and hence, some students hesitated to share their personal opinions and negative experiences at the beginning. In order to gain the confidence of the students, I explained my positioning, including the responsibility to protect confidentiality and my interpersonal experiences at graduate school, a medium-size, private university enrolling small numbers of international students. I expected

differences in the experiences of Chinese students in this study, who studied at a public, land-grant Midwestern university enrolling a large group of Chinese undergraduates. I also ensured the trustworthiness of the study through clarifying researcher bias, peer debriefing, and providing rich, thick descriptions of data (Merriam, 1988).

Survey Data Results

Patterns of Peer Interaction

Chinese students in this study nominated predominantly co-national friends compared to host-nationals or multi-nationals in their friendship networks. The participants nominated a total of 216 friends at Time 1 (Figure 2.1), including 184 co-nationals (85.2%), 23 host-nationals (10.6%), and 9 multi-nationals (4.2%). The average frequencies of contact for co-national, host-national, and multi-national friends were 3.23, 3.96, and 4, respectively. Given that in the peer network grid, 3 indicates "*almost every other two weeks*" and 4 "*almost every week*," Chinese students in this study, on average, contacted their friends about once a week. Moreover, the participants tended to have relatively more frequent interaction with their host-national and multi-national friends than with their co-national friends. The average intimacy for friendships with co-nationals, host-nationals, and multi-nationals were 1.23, 1.3, and 1.22, respectively, indicating that Chinese students did not hold close friendships with all three peer groups, since 1 indicates no self-disclosure in friendships and 2 indicates participants would share personal concerns with their nominated friends.

The participants nominated more friends at Time 2 (Figure 2.2) than at Time 1, with a total of 240 friends including predominantly co-nationals (n = 215, 89.6%), 15 host-nationals (6.3%), and 10 multi-nationals (4.1%). The frequencies of contact for an average co-national, host-national, and multi-national friend were 3.27, 3.67, and 3.5, respectively, suggesting that

Chinese students, on average, contacted their friends between once every two weeks and once a week. The average intimacy of friendships remained relatively low, with 1.27, 1.4, and 1.2 for co-nationals, host-nationals, and multi-nationals, respectively, indicating that Chinese students in this study were unlikely to share their personal concerns with their friends across the three groups.

Notably, Chinese students nominated more co-national friends and less host-national friends over time. Similar results were found in the peer interaction patterns of Chinese undergraduates (Table 1). Specifically, more than half of the participants (58.7%) were self-segregators (nominating co-national friends only) at Time 1, and this number increased to 73.9% at Time 2. Approximately 42% of the participants were mixers (students nominating at least one host-national or multi-national friend) at Time 1, and this proportion dropped to 26.1% later. This finding contradicts the hypothesis such that students would develop more diverse, integrated friendship networks in their second year than in the first year. Further, the average frequency of interaction between Chinese students and host-nationals slightly decreased over time. It is possible that although Chinese students had increasing chances to make more friends (as reflected in the growing number of total nominations of friends), they might face challenges to interact with domestic students and maintain long-term friendships. I further discussed this issue using qualitative results below. In the next section, I continue to explore the changing patterns of peer interaction among Chinese undergraduates.

Profiles of Changing Patterns of Peer Interaction

Results indicated that slightly more than half of participants (Table 2.1) remained self-segregated, i.e., nominating co-national friends only in both waves. Only three self-segregators (6.5%) at Time 1 became mixers (listing at least one host-national or multi-national friends) at

Time 2. Of the 19 mixers at Time 1, nine (19.6%) remained mixers; the rest (21.7%) turned into self-segregators at Time 2. This finding suggests that almost three quarters of the participants either remained or became self-segregators at Time 2. Given that participants of the two profiles (self-segregator → mixer and mixer → mixer) were less than 10, I combined the two groups and further examined potential group differences in participants' characteristics across the following three categories: (1) self-segregator → self-segregator; (2) mixer → self-segregator; and (3) self-segregator/mixer → mixer.

Results of cross tabulation and one-way ANOVAs (Table 2.3) indicated significant differences between students remaining self-segregated and those who became or remained mixers during their second year. Particularly, for the self-segregator/mixer → mixer group, there was a significantly higher percentage of Chinese undergraduates who often spoke English outside of class, as opposed to the students speaking English less frequently at Time 1. Moreover, students who became or remained mixers at Time 2 tended to report significantly lower levels of perceived discrimination and hate at Time 1, compared to students remaining self-segregated over time, indicating that Chinese students who experienced lower levels of perceived discrimination and hate at Time 1 were more likely to mingle with host-nationals or multi-nationals at Time 2. This finding suggests that prior exposure to discrimination and hatred from the host society might prevent Chinese students from maintaining long-term friendships with host-nationals or multi-nationals.

No significant differences were found with regards to whether Chinese undergraduates completed high school in the United States, the national backgrounds of their roommates, the frequency of interaction with non-Chinese students during their first year, and their perceived comfort level in interacting with host-nationals and multi-nationals. Interestingly, Chinese

students graduating from U.S. high schools did not necessarily become mixers in their second year. In fact, almost 85% of Chinese students completing high school in the United States in this study either remained or became self-segregators over time. In the next section, drawing upon in-depth interviews, I continue to explore Chinese undergraduates' nuanced experiences of building friendship networks at a large public Midwestern university and how their experiences changed over time.

Interview Data Results

Following the three-step analysis procedure of phenomenological research (Moustakas, 1994), I identified significant statements that were pertinent to Chinese students' lived experiences of building friendship networks. From the 10 verbatim transcripts, 47 significant statements that provided non-repetitive information to understand participants' experiences were extracted. The significant statements suggested three factors shaping the peer interaction patterns of Chinese undergraduates: (1) benefits of a cultivated guanxi with co-nationals; (2) the importance of cross-cultural understanding in intergroup friendships; and (3) student engagement in college settings.

Benefits of a Cultivated Guanxi with Co-nationals

Chinese undergraduates of the present study commented that a cultivated guanxi with co-nationals was beneficial to their academic learning and future career, which partly explained the predominant number of co-national friends in their peer networks. *Guanxi* is a typical interpersonal network of exchange in Chinese cultures. Establishing guanxi is very important in the Chinese society, given the social resources and personal advantages (such as job opportunities and preferential treatment) guanxi could bring to individuals within the networks (Bian, 2001). Tian and Feng (males, both were majoring in accounting), who were self-

segregators during their second year, emphasized the importance of a cultivated guanxi with co-nationals. Especially for students in business majors, the guanxiwang (or nets of relationships; see Smart, 1999) of local Chinese would be helpful for their future career either in the United States or back in China. That was the main motive for Tian joining Chinese student organizations to expand his interpersonal connections with other Chinese students. Another participant, Feng, had clear goals of establishing guanxi with co-nationals. Specifically, he preferred to work with high-achieving Chinese students and take the same courses with them so that he could be "grabbing the thigh" of his high-achieving friends (or riding on the coat-tails of the high-achievers; see Fraiberg & Cui, 2016; Wang, 2017). Moreover, he carefully cultivated friendships with Chinese undergraduates who were "super wealthy second generations." He further explained:

> Making more friends with "wealthy second generations" is beneficial and somewhat utilitarian. Wealthy second generations not only have the financial capital to buy the luxuries and fancy cars, but also have access to better educational resources provided by their parents. They are offered much more opportunities than we could imagine, due to their own guanxi with other rich students or the guanxiwang of their parents. … It will be easier to find a job (back in China) if you have more guanxi with the wealthy.

Feng's interpretations of the benefits of a cultivated *guanxi* with co-nationals might justify his choice of being the roommate with a "super wealthy second generation who played computer games all day and could hardly take care of himself" and a Chinese undergraduate "who excelled in coursework" during his sophomore year. Further, the importance of guanxi in Chinese cultures partly explained why some Chinese undergraduates purposefully remained self-segregated and mingled with co-nationals only while they were studying abroad. As many Chinese students of

the present study plan to go back to China in the future, a cultivated guanxi with co-nationals might be more helpful for their career or business startups in China.

The Importance of Cross-Cultural Understanding in Intergroup Friendships

In line with prior research (Hendrickson et al, 2011; Smith & Khawaja, 2011), the participants considered language barrier as a key factor preventing them from establishing close relationships with both host-nationals and multi-nationals. Nevertheless, for students like Xue (female, special education major) and Feng who had experiences of studying in U.S. high schools, they also found it difficult to mingle with host-nationals, despite the fact that they spoke fluent English. Both Xue and Feng remained self-segregators over time. Compared to language proficiency, cross-cultural understanding might play a more important role in the establishment of a diverse, integrated friendship network, due to the following two reasons.

First, while a sizable portion of Chinese students are able to speak fluent English, very few of them are knowledgeable about mainstream cultures in the host society, particularly about topics such as American history and sport cultures (Feng). As a result, many Chinese students found it difficult to join the conversations with host-national students (Tuan, female, majoring in accounting). Even though some Chinese students took the initiative to interact with host-nationals, most of them did not know how to continue the conversations and maintain long-term friendships with host-nationals (Tian). Compared to "distant" relationships with host-nationals, friendships with co-nationals were more "accessible" for many Chinese students, given the similarities in cultural backgrounds, the use of the same language, and the easy availability of large numbers of co-nationals on campus (Xue). As such, many Chinese undergraduates, including those who completed high school in the United States, tended to remain self-segregated and stay in a closed group with Chinese peers.

Second, the participants observed that many domestic students knew little about Chinese cultures and Chinese students' experiences (Feng). Domestic students' understanding of Chinese students was "superficial" to a certain extent, which in turn, might lead to biases and stereotypes about this group. For instance, some American students tended to overgeneralize behaviors such as driving luxury cars performed by a few Chinese students to the whole group, and they stereotyped all Chinese students as "super wealthy second generations" (Xue). Some host-nationals also perceived Chinese students as "closed-minded and not sociable" (Ling, female, majoring in actuarial science), and thus, they might be less likely to mingle with Chinese students. Ling commented that cross-cultural communication could help reduce American students' misunderstanding of Chinese students: "If they could be more patient and spend more time communicating with us, they will find out that Chinese students have many good characteristics, not just being wealthy or closed-minded."

Student Engagement in College Settings

The participants also remarked the important role of student engagement in shaping their experiences of building friendship networks. For example, Chinese undergraduates often met new friends through class activities, especially host-national and multi-national peers (Tian). Nonetheless, friendships with classmates were usually short-term, and it was challenging for Chinese students to maintain contact with their classmates after the completion of the course (Feng). Participating in residence life was another way to expand Chinese students' friendship networks. The participants valued living on campus, and some of them even met their best friends in the residential hall during their first year. That was the case for Xue, who described friendships built in the dormitory as precious memories to her study-abroad experiences and indicated that staying with her friends gave her a sense of belonging.

It is noteworthy that disengagement from residence life might change the peer interaction patterns of Chinese students. Specifically, when Chinese students moved outside the campus, they tended to make less host-national or multi-national friends, and their friendship networks became narrower compared to their peer networks during the first year, probably because they were less likely to have opportunities to join on-campus activities to mingle with peers of different groups. That was the case for Tian, who was a mixer at Time 1 but turned into a self-segregator at Time 2. Another participant, Ling, who remained a mixer over time, shared similar feelings:

> During my sophomore year, I lived off campus, and I barely knew anyone living in the same apartment. … I felt so terrible for not making any new friends over the past year. Thus, I decide to move back to the campus. It turns out that I have met a great more people here, which makes me feel pleased and integrated.

For Ling, living on campus was key to the establishment of a more diverse friendship network. Transitions after the first year, such as moving to off-campus housing, may result in a tendency to remain self-segregated among Chinese undergraduates at Time 2. Specifically, over 70% of the survey participants (34 out of 46) lived in off-campus housing in the sophomore year, among which 73.5% chose co-national roommates (25 out of 34). Of the remainder students (n = 12) who lived on campus, 50% of them were from self-segregators turning into mixers at Time 2. This number is greater than the ratio of mixers among students living off campus (17.6%). A possible explanation is that Chinese students living in the residence hall might be more likely to take advantage of on-campus activities that usually involve students of different groups, and hence, they had more opportunities to mingle with host-nationals and multi-nationals.

Lastly, participation in student organization activities and working on campus also allowed Chinese undergraduates to meet more co-nationals and peers of diverse backgrounds. Both Tian and Xue joined Chinese student organizations, where they had met many senior Chinese undergraduates. These experiences expanded their interpersonal networks from which they gained resources and information about advanced courses and internships (Tian). Nonetheless, excessive involvement in Chinese student organizations might further narrow students' friendship networks (both Xue and Tian nominated co-national friends only at Time 2). For Tuan, she found it very beneficial to join student organizations. During her first year, she engaged in a Bible study group where she had met many host-national friends, and they often studied as a group and celebrated holidays together. Frequent interaction with her domestic friends made her remained a mixer at Time 2.

Working on campus also provided opportunities for Chinese undergraduates to reach out to peers of diverse backgrounds. Students with similar experiences in the workplace were more likely to develop high quality friendships. In fact, some Chinese students met their best friends while they were working in the residential hall (Ling) or at the cafeteria (Tuan). Specifically, Ling commented that she never expected that she could make such great friends with domestic students, who were "kind-hearted, always caring about me both at work and in my personal life." One explanation is that frequent, meaningful interaction occurred in the workplace helped Chinese students develop connections that were more than a simple meet and greet with host-nationals, which were often long-lasting than relationships built upon in class or the residential hall. Moreover, experiences of joining club activities or working together are different from peer interaction occurring in temporary dormitory or class attendance situations: The former involves

activities sharing a common goal or interest, and hence, students are more likely to have meaningful interaction with peers.

Discussion

Most studies examining the peer network patterns of international students focus on the national backgrounds of their nominated friends (Bochner et al., 1977; Furnham & Alibhai, 1985; Hendrickson et al., 2011). Limited research, however, has elucidated international students' lived experiences of establishing friendship networks over time. Guided by the functional model of friendship networks (Bochner et al., 1977) and the social interaction continuum model (Rose-Redwood & Rose-Redwood, 2013), the present study used a mixed-method approach to examine the longitudinal changes in the peer interaction patterns of Chinese undergraduates and their nuanced experiences of building friendship networks at a large public, Midwestern university.

The results yield three main findings. First, aligned with previous studies (Bochner et al., 1977; Furnham & Alibhai, 1985; Rienties & Nolan, 2014), this study found out that Chinese undergraduates nominated predominant co-national friends, much more than host-national and multi-national friends, in both waves. This finding could be explained using the theory of similarities in friendship formation, or "birds of a feather flocking together," such that individuals tend to affiliate with friends who share similarities (McPherson, Smith-Lovin, & Cook, 2001). Similar background characteristics such as race/ethnicity and the use of language were found to be important predictors of friendship formation (Kandel, 1978). As suggested by the hybridized sociocultural framework (Heng, 2018), this finding may also be related to the context in which Chinese students interact with their peers. Specifically, studying on a campus ranked among the top 10 U.S. universities in enrolling international students (with over 62% of

them coming from China), the participants had sufficient opportunities to interact with Chinese peers. Likewise, with limited representativeness of non-Chinese international students on campus, Chinese undergraduates of the present study were less likely to have chances to mingle with multi-nationals, and thus, they nominated the least multi-national friends in their peer networks. Moreover, results of the in-depth interviews suggest that another motive for Chinese undergraduates maintaining close relationships with co-nationals was *guanxi*, an indigenous interpersonal relation in Chinese cultures, given that a cultivated guanxi with other Chinese students might bring about social advantages, such as preferential treatment and job opportunities (Chen & Chen, 2004). It may also be related to some features of the recent wave of Chinese international students, who belong to a new generation of transnational citizens, most with goals of returning to China because of the opportunities and economic growth in the country and being able to take care of their parents—most of them are single children in family. As such, establishing sustained guanxi may be more beneficial for Chinese students in this situation.

Second, in line with Rienties and Nolan's (2014) research, the findings suggest that Chinese undergraduates did not necessarily develop more diverse, integrated friendship networks over time. Specifically, more than half of the Chinese undergraduates of this study remained self-segregated, possibly because of language barriers and challenges they navigated during cross-cultural transitions. Results of two-wave survey responses indicate language proficiency as an important factor predicting Chinese students' peer interaction patterns, such that Chinese students who spoke English more frequently outside of class during the first year were less likely to be self-segregated when they were sophomores, which is consistent with prior findings of positive associations between English proficiency and cross-national interaction (Hendrickson et

al., 2011). Limited language proficiency, on the contrary, serves as an obstacle to effective communication between Chinese students and host-nationals. In addition, stereotypical and discriminative perceptions directed toward Chinese students may discourage both Chinese and domestic students from mingling with each other. Specifically, stereotypes circulating around (such as the stereotypical images of Chinese students as "wealthy-flaunting" and "closed-minded") might lead to domestic students' purposeful avoidance to Chinese students (Xie et al., 2019). For Chinese undergraduates, prior experiences of being discriminated by host-nationals might prevent them interacting with host-national peers (Leong, 2015).

Lastly, this study illustrated how Chinese students' engagement in college settings greatly shaped their peer interaction patterns. Chinese students of this study pointed out the contexts in which their interaction with friends were most likely to occur, including the class setting, student dormitory, student organization activities, and the workplace of on-campus jobs. Results indicated that greater participation in these settings could facilitate cross-cultural interaction between Chinese undergraduates and both host-national and multi-national students, and that whether students living in on campus might be a key factor affecting their peer interaction experiences. In particular, Chinese students who stayed in on-campus dormitories tended to establish more diverse, integrated friendship networks, compared to the Chinese students living in off-campus apartments. This finding could be explained using the theories of student engagement such that students who actively engaged in college-related activities are more likely to thrive and achieve success (Kuh, 2009). Living in dormitories, participating in student organizations, and working on campus could promote Chinese students' engagement in college activities, which in turn, increase their chances of mingling with students of diverse backgrounds. It should be noted that compared to temporal peer interaction occurring in the class

setting, engaging in meaningful common experiences (such as club activities, religious groups, and experiences of working together) may be more beneficial for the establishment of sustained cross-cultural friendships.

Limitations

It is important to note the limitations when interpreting the results of this study. First, the findings are constrained by the nature of the sample. Drawn on a small sample size of Chinese international undergraduates from a public, Midwestern university enrolling a large group of Chinese students, the findings on students' experiences of establishing friendship networks and the longitudinal changes in peer interaction patterns may not be generalized to Chinese students studying in other contexts, given that their experiences would be shaped by their embedded sociocultural environments (Heng, 2018). It is possible that Chinese undergraduates studying at universities with more diversity in college student enrollment report distinctive patterns of friendship networks. Moreover, due to the small sample size, I was unable to use advanced statistical methods (for example, logistic regression) to examine how student characteristics (such as language proficiency, perceived discrimination) at Time 1 predict their peer interaction patterns at Time 2. Quantitative research investigating multiple waves of friendship networks collected from a large group of Chinese students could add substantially to the findings of this study. Therefore, it will be informative for future work to focus on Chinese undergraduates in different college settings and recruit a larger sample size to examine the longitudinal changes in peer interaction patterns of Chinese students.

Second, the findings might be limited by the numbers of friends the participants could nominate. By asking the participants to list up to six closest friends, I attempted to center on friendships that have the most influence on cross-cultural adaptation of Chinese undergraduates.

Nonetheless, it might constrain students from reporting a complete list of friends in their peer networks. Prior research suggests that international students tended to report a higher ratio of host-national friends than co-national friends when they were given the chance to nominate as many friends as they had (Hendrickson et al., 2011). Future studies should continue to investigate this topic by asking Chinese students to provide an exhaustive list of their friends to show a fuller picture of their friendship networks.

Conclusion and Implications

Despite the limitations, this study contributes to the literature by providing a fuller understanding of peer interaction patterns of Chinese undergraduates. Drawing upon two-wave, longitudinal survey responses and in-depth interviews, this study (1) shed light on four profiles depicting the longitudinal changes in peer interaction patterns of Chinese undergraduates and (2) illustrated how factors (such as cross-cultural understanding, guanxi in the Chinese culture, and students' engagement in college settings) contributed to the changes in Chinese students' peer interaction patterns.

Finally, the findings point to important practical implications for the host institutions, especially universities enrolling large numbers of international students. Given that cross-cultural communication could promote Chinese international students' psychological and sociocultural adaptation (Hendrickson et al., 2011; Kim, 2001; also see Chapter 3 of this dissertation) and improve intercultural competencies of U.S. domestic college students (Breuning, 2007), it is important for the host institutions to develop corresponding programs, such as buddy projects for both international and domestic students, to facilitate social opportunities for different groups to mingle and establish sustained friendships. Moreover, the findings of the associations between student engagement and their friendship networks may be informative for the host institutes to

tailor more responsive services aimed at encouraging Chinese students, particularly those living in off campus, to engage in frequent, meaningful interaction (beyond a simple meet and greet) with both host-national and multi-national students.

CHAPTER 3. STUDY TWO

FRIENDSHIP NETWORKS AND PSYCHOLOGICAL AND SOCIOCULTURAL ADAPTATION AMONG CHINESE INTERNATIONAL UNDERGRADUATES: SOCIAL CONNECTEDNESS AS A MEDIATOR

Introduction

In recent years, U.S. colleges and universities have observed a rapid expansion of the enrollment of international students. Particularly Chinese students, the largest group of international students since 2010, have increased nearly threefold in just eight years (Institute of International Education, 2010–2018). The arrival of international students has significantly contributed in promoting campus cultural diversity (Breuning, 2007) and local economic growth (NAFSA, 2018). For the host institutions, the revenues from tuition fees paid by international students have substantially bolstered their capacity of coping with shrinking budget (Choudaha, 2017). Despite the economic and intercultural benefits international students bring to the host institutions, this group remains one of the understudied and underserved populations in U.S. higher education (Wang, Wei, & Chen, 2015).

Friendships formed on campus have been found to be positively associated with first-year college students' adjustment to academic studies and interpersonal experiences (Buote et al., 2007). For Chinese international students, relationships with their fellow students are especially important for their adaptation in host institutions, specifically in the domains of academic learning (Wang, 2017), psychological well-being such as life satisfaction (Yan & Berliner, 2011a), and sociocultural adjustment such as intercultural communication competence (Kim, 2001). Although the benefits of establishing close relationships with people in the host society are well documented, previous studies have largely focused on the national/ethnic backgrounds of nominated friends (e.g., Rienties & Nolan, 2014) and neglected to examine the effects of other aspects of friendship networks, such as the frequency of contact and closeness of relations.

Moreover, limited studies have elucidated the underlying mechanism (e.g., potential mediators) of the associations between friendship networks and cross-cultural adaptation among international students. Grounded in social capital theory (Lin, 1999) and acculturation process framework (Ward, Bochner, & Furnham, 2001), this study aims to investigate: (1) how friendship networks (i.e., the national backgrounds of nominated friends, the frequency of contact, and the intimacy of relations) are associated with psychological and sociocultural adaptation among Chinese international undergraduates in U.S. higher education; and (2) the potential mediating effects of social connectedness on the associations between friendship networks and student adaptation.

Theoretical Frameworks

The effects of friendship networks on international student adaptation can be understood through social capital theory (Lin, 1999). Social capital is defined as "resources embedded in a social structure" (Lin, 1999, p. 35) from which individuals can benefit. The theory of social capital posits that well-established social relations provide both instrumental (such as information, knowledge, and skills) and emotional support for individuals within the networks (Lin, 1999). For international students, in order to utilize social resources to promote their adaptation, they need to "renew" their social networks after they arrive in the host country (Neri & Ville, 2008). In particular, peers from the same sending country provide "bonding" (or emotional) capital, whereas friends living in the host society offer "bridging" (or instrumental) resources, such as knowledge of local customs (Neri & Ville, 2008).

Another guiding framework of the present study is acculturation process model (Ward et al., 2001), which highlights the contributing role of social interaction in promoting cross-cultural adjustment of international students. Ward et al. (2001) operationalized social contact into three

aspects: (1) intragroup versus intergroup interaction; (2) the amount of contact; and (3) the quality of social relations, indicating that different aspects of social contact might have distinct effects on international student adaptation. Moreover, this framework further specified cross-cultural transition outcomes into psychological and sociocultural adaptation: The former refers to psychologically adaptive responses (for example, life satisfaction and absence of stress), whereas the latter involves individuals' ability to navigate cross-cultural challenges, such as racial/ethnic discrimination (Ward et al., 2001; Ward, Fox, Wilson, Stuart, & Kus, 2010). Grounded in this framework, this study examines how social contact of Chinese students is associated with their psychological and sociocultural adaptation in U.S. higher education.

Friendship Networks and International Student Adaptation

Prior studies usually categorize friendship networks of international students into three groups: the co-national, host-national, and multi-national peer groups (Bochner, McLeod, & Lin, 1977; Furnham & Alibhai, 1985; Hendrickson et al. 2011).

The co-national group. Often defined as peers coming from the same sending country (China in this case), the co-national group was considered as the primary peer network for international students, given that friendships with co-nationals strengthen students' cultural identity and values (Bochner et al., 1977). This group was also rated by international students as their most preferred companion for daily activities, such as helping with academic studies (Furnham & Alibhai, 1985). Theoretically, relationships with co-nationals could offer instrumental and emotional support to promote international students' cross-cultural adaptation (Kim, 2001). Empirical findings suggest that Chinese students obtained knowledge-based resources and information from their co-national networks to facilitate academic learning (Wang, 2017; Yan & Berliner, 2011a). Interaction with co-nationals might also have protective effects

against discrimination, such that Asian international students who reported more support from their co-national friends tended to experience less racism and discrimination than their counterparts (Chen, Mallinckrodt, & Mobley, 2002).

It should be noted that the benefits and protective effects of co-national friendships might be short-term, especially in the initial phase of international students' cross-cultural transitions (Kim, 2001; Wang et al., 2012). In the long term, excessive interaction with co-national friends might isolate international students from mingling with domestic students, which, in turn, hinder the development of host culture communication competence, an ability to properly and effectively understand and respond to conversations with people in the host society (Kim, 2001). Empirical findings also suggest that merely interacting with co-nationals might result in self-segregation, such that some Chinese students refused to interact with different groups of peers (Yan & Berliner, 2011a, 2011b). Moreover, excessive contact with co-nationals might be detrimental to international student adaptation at the later stage of acculturation, which might lead to greater perceived stress and lower levels of cultural adjustment (Geeraert, Demoulin, & Demes, 2014). A higher proportion of co-nationals in friendship networks was also found to be associated with lower levels of life satisfaction and social connectedness among international students (Hendrickson et al., 2011).

The host-national group. Host-nationals usually refer to domestic students who grew up in the host society. Theoretically, the host-national group was considered as important resources for promoting international students' acquisition of cultural knowledge (Bochner et al., 1977) and host culture communication competence (Kim, 2001). Prior research indicates that Asian international students with more frequent social contact with host-nationals tended to acquire more social skills to adapt to the host culture than their counterparts (Li & Gasser, 2005).

Interestingly, while both face-to-face and online contact with host-nationals were associated with more social support perceived by Chinese international students, only face-to-face contact significantly predicted students' ability to acculturate to the host culture (Cao, Meng, & Shang, 2018). Moreover, friendships with host-nationals were associated with better psychological adaptation of international students, such that international students who maintained social contact with domestic students were more likely to report lower levels of depressive symptoms and anxiety than their peers who reported less interaction with host-nationals (Hechanova-Alampay et al., 2002). International students with a higher ratio of host-national friends in their social networks tended to have better psychological adaptation, a construct that was measured using social connectedness, (absence of) homesickness, contentment, and life satisfaction (Hendrickson et al., 2011).

Notably, previous research reports some conflicting findings regarding the effects of social interaction with host-nationals on international students' cross-cultural adaptation. For example, although social and emotional support perceived from domestic students reduced Asian students' stressful life experiences (Chen et al., 2002) and facilitated their life satisfaction (Yan & Berliner, 2011a), some qualitative findings suggest that Asian international students with more frequent contact with host-national friends tended to report higher levels of psychological stress, possibly because maintaining long-term relationships with host-nationals might be a stressful experience for some students (Swagler & Ellis, 2003).

The multi-national group. In the present study, multi-nationals refer to all other international students except for those from China. The influence of friendships with multi-nationals on student adaptation is less clear, due to limited prior studies examining this topic. Early research indicates that the multi-national peer group provided limited support for

international students, mostly in recreational and entertaining companionship (Bochner et al., 1977). This group was also the least nominated by international students regarding their friendship networks in the host society (Furnham & Alibhai, 1985). Friendships with multi-nationals also improved international students' cross-cultural understanding and intercultural competence, which, in turn, facilitated their adaptation to a multicultural society (Rose-Redwood & Rose-Redwood, 2013).

Although the influence of friendship networks on international students' cross-cultural adaptation is well documented, most previous studies have focused on the national/ethnic backgrounds of nominated friends (Hechanova-Alampay et al., 2002; Rienties & Nolan, 2014) and neglected to examine the effects of other aspects of peer relationships, specifically the quantity of contact and the quality of relationships, on international student adaptation. The quantity of contact refers to how frequently individuals interact with nominated friends (Ward et al., 2001), whereas the quality of relationships is often measured using intimacy (such as self-disclosure; see Buote et al., 2007) or satisfaction with peer relations (Leong & Ward, 2000). Some empirical findings suggest that the quality of relationships, rather than the quantity of contact, contributed to psychological adaptation of international students (Ward & Rana-Deuba, 2000). Nonetheless, how these two aspects influence the sociocultural adaptation of international students is less clear. Further, previous studies have examined the direct effects of friendship networks on the cross-cultural adaptation of international students (Geeraert et al., 2014; Hendrickson et al., 2011). Little is known about the psychological mechanism that underpins the associations between peer relationships and international student adaptation. The present study extends prior findings by investigating social connectedness, a fundamental component of social relationships (Lee & Robbins, 1998), as a potential mediator of the relationships between

friendship networks and Chinese international students' psychological and sociocultural adaptation.

Social Connectedness as a Mediator

Defined as "the subjective awareness of being in close relationship with the social world" (Lee & Robbins, 1998, p. 338), social connectedness is positively associated with psychological well-being, such as greater satisfaction with life (Yoon, Hacker, Hewitt, Abrams, & Cleary, 2012), more self-esteem (Lee & Robins, 1998), less social anxiety (Fatima, Niazi, & Ghayas, 2017), and lower levels of psychological distress (Lee, Draper, & Lee, 2001). Social support theory posits that maintaining close relationships could promote a sense of connectedness (Sarason, Sarason, & Shearin, 1986). For international students, having more contact with host-nationals improved their social connectedness (Cao et al., 2018). International students with higher levels of social connectedness tended to report greater life satisfaction (Hendrickson et al., 2011) and less acculturative stress (Yeh & Inose, 2003). Given that prior studies have identified the role of social connectedness in mediating the effects of interpersonal and sociocultural factors (for example, levels of acculturation to the host culture) on the psychosocial well-being of college students (Lee, Dean, & Jung, 2008; Yoon et al., 2012), in this study, I propose that social connectedness mediates the associations between peer relationships and cross-cultural adaptation of Chinese international students.

The Present Study

Guided by social capital theory (Lin, 1999) and acculturation process framework (Ward et al., 2001), the present study examines: (1) how friendship networks, specifically the national backgrounds of nominated friends, the frequency of contact, and the intimacy of relations, are associated with the psychological and sociocultural adaptation among Chinese international

undergraduates; and (2) the role of social connectedness as a potential mediator of the associations between friendship networks and student adaptation. First, it was hypothesized that friendships with co-nationals would be positively associated with Chinese students' psychological adaptation (i.e., lower psychological stress and greater life satisfaction). No hypothesis is provided about the association between co-national friendships and sociocultural adaptation, since previous research reports both benefits and detrimental effects of co-national friendships on students' cultural adjustment (Chen et al., 2002; Geeraert et al., 2014). Second, it was hypothesized that friendships with host-nationals would be associated with lower levels of psychological stress, greater life satisfaction, and less cultural adaptation challenges among Chinese students, given that interaction with host-nationals was found to be beneficial to international students' both psychological and sociocultural adjustment (Hendrickson et al., 2011; Li & Gasser, 2005). Third, it was hypothesized that friendships with multi-nationals would be positively associated with students' psychological but not cultural adaptation, given its recreational and entertaining companionship for international students (Bochner et al., 1977). No hypothesis is provided with regards to the effects of the two aspects of friendship networks, i.e., the frequency of contact and the intimacy of relationships, due to limited prior research on these topics. Lastly, it was hypothesized that the associations between friendship networks and psychological and sociocultural adaptation of Chinese undergraduates would be mediated by social connectedness.

Methods

Participants

Data used in the present study were collected as part of a longitudinal, mixed-methods study assessing academic performance and psychosocial adaptation of Chinese international

students. Participants consisted of 273 Chinese undergraduates (196 freshmen and 77 sophomores) studying at a large public Midwestern university, which was ranked among the top 10 U.S. higher education institutions in enrolling international students. Of the 273 participants (M_{age} = 19.18, *SD* = .84) who completed a survey assessing their peer relations and adjustment experiences, 163 of them were females (59.7%). With regards to friendship networks, over 60% of them only nominated co-national friends; the remainder either nominated at least one host-national (18.3%) or multi-national friend (11%), or listed friends of all three national groups (4.8%). Demographic characteristics of the sample are presented in Table 3.1.

Procedure

The present study used a convenient sampling approach for participant recruitment. After obtaining the university Institutional Review Board approval, the research team sent out an e-mail invitation with a link for the study survey to all first-year Chinese students enrolled in spring 2015, and 196 Chinese freshmen completed the surveys. In spring 2016, the research team conducted another wave of surveys to second-year Chinese students, and 77 Chinese sophomores participated in the study. The response rates of both waves of survey data collection ranged from 20% to 30%. The online surveys were administered through the *Qualtrics* software (Version 4.18; Qualtrics, 2018), a web-based survey tool. Participants were asked to sign an informed consent before they started the survey. To encourage more Chinese students to complete the survey, multiple reminders were sent via e-mails one and two weeks after the initial invitation. Incentives provided to survey participants included $10 for students who completed at least 80% of the survey questions and the chance to participate in a lottery for two Apple Watches.

Measures

The survey questions cover the following aspects: (1) demographic characteristics; (2) family and peer relations; (3) psychosocial adaptation such as perceived stress and life satisfaction; (4) students' perceived stereotypes and discrimination; and (5) institutional support. Responses included Likert-type scale and open-ended questions. The survey study was conducted completely in Chinese to circumvent any language barriers that might hinder students' expression of their thoughts and feelings. In this study, I predominately drew upon students' responses to questions about their friendship networks, psychological stress, life satisfaction, cultural adaptation challenges, and social connectedness.

Friendship network. A peer network grid (Appendix F) was used to measure students' friendship networks. Given that close contact with three to five friends was believed to be adequate for measuring the influence of interpersonal relations (Dunbar & Spoor, 1995), the participants were asked to list up to six closest friends they had met on campus. The participants identified the national background of each nominated friend (1 = *co-national*, 2 = *host-national*, and 3 = *multi-national*). The frequency of interaction was rated on a 5-point Likert scale ranging from 1 (*almost every semester*) to 5 (*almost every day*) with higher scores reflecting more frequent interaction. The participants were also asked about self-disclosure in friendships, i.e., if they shared personal concerns with their nominated friends (1 = *no*, 2 = *yes*), which was considered as the proxy for intimacy of friendships.

Psychological stress. Students' psychological stress was measured using a composite including perceived stress, homesickness, fear, and stress due to change. Perceived stress was measured using the Perceived Stress Scale (PSS-14; Cohen, Kamarck, & Mermelstein, 1983), a 14-item measure assessing to what extent participants perceived their life situations as stressful

in the past two weeks. Items were rated on a 5-point Likert scale ranging from 0 (*never*) to 4 (*very often*). Possible scores ranged from 0 to 56 with higher scores reflecting more perceived stress. Sample items include "How often have you felt nervous and 'stressed'?" The Cronbach alpha was estimated to be .80 for this scale.

The Acculturative Stress Scale for International Students (ASSIS; Sandhu & Asrabadi, 1994) was used to measure homesickness, fear, and stress due to change. ASSIS is a 36-item scale measuring international students' pressure related to cross-cultural transitions and cultural adaptation challenges they encountered in the host society. Items were rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The homesickness subscale includes 4 items, such as "I miss the people from my country of origin." Possible scores ranged from 4 to 20 with higher scores reflecting higher levels of homesickness. The fear subscale includes 4 items, such as "I fear for my personal safety because of my different cultural background." Possible scores ranged from 4 to 20 with higher scores reflecting a stronger sense of fear about studying in the host society. The stress due to change subscale includes 3 items, such as "I feel uncomfortable adjusting to new cultural values." Possible scores ranged from 3 to 15 with higher scores reflecting greater stress resulting from cross-cultural transitions. The Cronbach alpha coefficients were estimated to be .69, .77, and .69 for the homesickness, fear, and stress due to change subscale, respectively.

Life satisfaction. Life satisfaction was measured using a 9-item scale adapted from the Overall Satisfaction with College Life (Sum, McCaskey, & Kyeyune, 2010), which assesses college students' perceived satisfaction with their lives in the host institution, including their college learning and living experiences in the local community (such as housing, shopping and entertainment, healthcare facilities). Items were rated on a 5-point Likert scale ranging from 1

(*very dissatisfied*) to 5 (*very satisfied*). Possible scores ranged from 9 to 45 with higher scores indicating greater life satisfaction. The present study uses a mean score 3 as the cut-off score, such that students with mean scores larger than 3 tend to be satisfied with their lives. The Cronbach alpha was estimated to be .82 for this scale.

Cultural adaptation challenges. Cultural adaptation challenge was measured using students' experiences of discrimination and hate perceived from the host society. Both perceived discrimination and hate experiences were assessed using the subscales of the Acculturative Stress Scale for International Students (ASSIS; Sandhu & Asrabadi, 1994). The perceived discrimination subscale includes 8 items, such as "Others are biased toward me" and "I feel that my people are discriminated against." Possible scores ranged from 8 to 40 with higher scores reflecting more perceived discrimination experiences. The perceived hate subscale includes 5 items, such as "People show hatred toward me through their actions." Possible scores ranged from 5 to 20 with higher scores reflecting more hatred perceived from people in the host society. The Cronbach alpha coefficients were estimated to be .90 and .85 for the perceived discrimination and perceived hate subscale, respectively.

Social Connectedness. Students' sense of connectedness was measured using the Social Connectedness Scale-Revised (SCS-R; Lee et al., 2001), a 20-item measure assessing participants' awareness of closeness in the social world. Items were rated on a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Possible scores ranged from 20 to 120 with higher scores reflecting a stronger sense of connectedness. Previous research suggests using a mean score 3.5 as the cut-off score to judge the level of social connectedness, such that participants with mean scores larger than 3.5 are more likely to feel socially connected (Lee et

al., 2001). Sample items include “I see people as friendly and approachable” and “I feel distant from people.” The Cronbach alpha was .91 for this scale.

Analytic Strategy

First, to investigate the associations between friendship networks and Chinese students’ psychological and sociocultural adaptation, I fit a series of SEMs using maximum likelihood estimation via *Mplus* (Mplus version 8.3, Muthén & Muthén, 1998–2019). SEM allows a simultaneous examination of multiple dependent variables, including both observed variables and latent factors (Kline, 2015). Three SEMs were fit to examine: (1) the associations between the frequency of contact in friendships and student adaptation; (2) the associations between the intimacy of friendships and student adaptation; and (3) the associations between frequent and intimate interaction and student adaptation. The predictors of the three SEMs consisted of the overall interaction with the three peer groups, specifically co-nationals, host-nationals, and multi-nationals. For example, for a Chinese student who nominates four co-national friends, the overall contact with co-nationals is the sum of contact with all four nominated co-nationals ($\sum_{i=1}^{4} Contact_{co-national}$), and the overall intimacy with co-nationals is the sum of intimacy with all four nominated co-nationals ($\sum_{i=1}^{4} Intimacy_{co-national}$), and the overall frequent and intimate interaction is the sum of interaction (Contact*Intimacy) with all four nominated co-nationals ($\sum_{i=1}^{4} Contact_{co-national} * Intimacy_{co-national}$). The outcome variables consisted of psychological stress (a latent variable including four indicators describing the negative aspects of psychological adaptation, i.e., perceived stress, homesickness, fear, and stress due to change), life satisfaction (an indicator of positive psychological adaptation), and cultural adaptation challenges (a latent variable including two indicators of discriminatory experiences: perceived discrimination and perceived hate).

Next, I fit a SEM to examine the indirect effects of frequent and intimate interaction with nominated friends on student adaptation through social connectedness using the bias-corrected bootstrap method (MacKinnon, Lockwood, & Williams, 2004). I used 1,000 resamples to construct bootstrap 95% confidence intervals (CI) to determine the significance of the mediation effects, with zero not included within 95% CI reflecting the indirect effects significantly different from zero at the .05 level (Cheung & Lau, 2008).

Participants' gender (1 = male, 0 = female) and year of college (1 = freshman, 0 = sophomore) were included as covariates in all analysis. Missing data were handled using full information maximum likelihood estimation. Multiple indices were used to evaluate model fit: the χ^2 index (Bollen, 1989), the comparative fit index (CFI; Bentler, 1990), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA; Hu & Bentler, 1999). Acceptable model fit is reflected by a non-significant χ^2 index, CFI and TLI above the cut-off score .90, and a RMSEA below .08.

Results

Preliminary Analyses

Descriptive statistics, sample size, and correlations among study variables are displayed in Table 3.2. Descriptive results indicated that interaction with co-national friends (including the frequency of contact, the intimacy of friendships, and overall interaction) was significantly negatively correlated with interaction with both host-nationals and multi-nationals, indicating that Chinese students with more interaction with co-national friends were less likely to mingle with host-nationals or multi-nationals. No significant associations were found between interaction with host-nationals and interaction with multi-nationals. Moreover, interaction with co-nationals was positively correlated with homesickness, stress due to change, and social

connectedness, such that the more interaction with co-national friends, the higher levels of homesickness, more stress due to change, and stronger sense of social connectedness Chinese students experienced. Interaction with host-nationals was positively associated with life satisfaction and negatively correlated with fear, homesickness, stress due to change, perceived discrimination, and perceived hate. That is, Chinese students having more interaction with host-nationals tended to report lower levels of psychological stress, greater life satisfaction, and perceived less discrimination and hate from the host society. No significant associations were found between multi-national friendships and student adaptation outcomes. Lastly, social connectedness was positively correlated to life satisfaction and negatively associated with all indicators of psychological stress and cultural adaptation challenges.

SEMs for Testing the Associations Between Friendship Networks and Student Adaption

I fit three SEMs to examine the associations between friendship networks (specifically the frequency of contact, the intimacy of friendships, and overall frequent and intimate interaction) and Chinese student adaptation. Path coefficient estimates (unstandardized) and standard errors from the three SEMs are presented in Table 3.3.

The frequency of contact. The model examining the associations between the frequency of contact with nominated friends and student adaptation reflected good model fit: χ^2 (38) = 90.51, $p < .001$, RMSEA = .07, CFI = .95, TLI = .92. Results indicated that contact with host-national friends was negatively associated with psychological stress and positively associated with life satisfaction, indicating that Chinese students who had more frequent contact with host-nationals tended to report less psychological stress and greater life satisfaction. The associations between contact with co-nationals and both psychological and sociocultural adaptation were not

significant. The associations between contact with multi-nationals and both psychological and sociocultural adaptation were also not significant.

The intimacy of friendships. The model examining the associations between the intimacy of friendships with nominated friends and student adaptation reflected good model fit: χ^2 (38) = 84.10, $p < .001$, RMSEA = .07, CFI = .95, TLI = .93. Similar to the findings of the model above, results of this model indicated that intimate friendships with host-nationals were negatively associated with psychological stress and positively associated with life satisfaction. The associations between intimate friendships with co-nationals and both psychological and sociocultural adaptation were not significant. The associations between intimate friendships with multi-nationals and both psychological and sociocultural adaptation were also not significant.

Frequent and intimate interaction. The model examining the associations between overall frequent and intimate interaction with nominated friends and student adaptation reflected good model fit: χ^2 (38) = 87.32, $p < .001$, RMSEA = .07, CFI = .95, TLI = .92. Consistent with the first hypothesis, results of this model indicated that interaction with co-national friends was positively associated with life satisfaction, indicating that Chinese students with more frequent contact and intimate friendships with co-nationals tended to be more satisfied with their lives in the host institution. It should be noted that such association was not found in the models examining the effects of the frequency of contact and intimacy of friendships, suggesting that Chinese students might be more likely to benefit from high-quality interaction with co-national peers (i.e., friendships with more frequent contact and greater intimacy). The association between interaction with co-national friends and students' cultural adaptation challenges was not significant, as expected.

With regards to friendships with host-nationals, consistent with the second hypothesis, results of this model indicated that frequent and intimate interaction with host-nationals was negatively associated with psychological stress and positively associated with life satisfaction. Moreover, frequent and intimate interaction with host-nationals was negatively associated with cultural adaptation challenges, indicating that Chinese students with more frequent contact and intimate interaction with host-nationals tended to experience less cultural adaptation challenges, such as perceived less discrimination and hate from the host society. Finally, in contrast to the third hypothesis, frequent and intimate interaction with multi-nationals was not significantly associated with Chinese students' psychological adaptation. The association between frequent and intimate interaction with multi-nationals and students' cultural adaptation challenges was not significant, as expected.

The SEM for Testing Mediation

The SEM (Figure 3.1) examining the indirect effects of frequent and intimate interaction with nominated friends on student adaptation through social connectedness reflected good model fit: χ^2 (42) = 102.66, $p < .001$, RMSEA = .07, CFI = .94, TLI = .91. The indirect and direct effects of the model are presented in Table 3.4. Results indicated that as hypothesized, social connectedness mediated the associations between friendship networks and student adaptation, such that (1) social connectedness mediated the association between frequent and intimate interaction with co-nationals and Chinese students' life satisfaction, and that (2) social connectedness mediated the associations between interaction with host-nationals and Chinese students' psychological stress, life satisfaction, and cultural adaptation challenges.

Interestingly, contrast to the study hypothesis, the effects of interaction with co-nationals on student adaptation became more salient after including social connectedness as a mediator.

The situation in which the inclusion of the third variable strengthens the association between a predictor and an outcome variable is defined as suppression (Tzelgov & Henik, 1991). A suppression effect is presented when the direct effect of a predicting variable is larger than its total effect on the outcome variable, or when the direct and indirect effects have opposite signs (MacKinnon, Krull, & Lockwood, 2000). Results of the present study identified suppression effects of social connectedness in the relationships between interaction with co-nationals and student adaptation, such that with the inclusion of social connectedness as a suppressor, interaction with co-nationals was significantly positively associated with Chinese students' psychological stress and cultural adaptation challenges, as opposed to the non-significant associations found in the SEM examining the total effects of interaction with co-nationals on student adaptation. That is, Chinese students who reported more frequent and intimate interaction with their co-national friends tended to experience higher levels of psychological stress and more cultural adaptation challenges, while controlling for the suppression effects of social connectedness.

Lastly, the associations between interaction with multi-nationals and Chinese students' psychological stress, life satisfaction, and cultural adaptation challenges remained not statistically significant at the .05 level when including social connectedness as a mediator, and therefore, no interpretation is provided with regards to the indirect and direct effects of interaction with multi-nationals on student adaptation. Overall, approximately 17.3% of the variance in social connectedness was explained by the variables included in the model; the variance explained was 42.7%, 17.4%, and 22.8% for psychological stress, life satisfaction, and cultural adaptation challenges, respectively.

Discussion

Prior studies have investigated the influence of friendship networks on international students' cross-cultural adaptation (Hendrickson et al., 2011; Kim, 2001). However, the extant literature has largely focused on the national/ethnic backgrounds of nominated friends (Hechanova-Alampay et al., 2002; Rienties & Nolan, 2014) and neglected to examine the contributing effects of other aspects of friendship networks in shaping student adaptation. Moreover, prior work has not yet elucidated the underlying mechanism of the associations between friendship networks and international student adaptation. Guided by social capital theory (Lin, 1999) and acculturation process framework (Ward et al., 2001), the present study extends previous findings by examining: (1) how friendship networks, specifically the national backgrounds of nominated friends, the frequency of contact, and the intimacy of friendships, are associated with the psychological and sociocultural adaptation among Chinese undergraduates in U.S. higher education; and (2) the mediating role of social connectedness in such associations.

The results yield four main findings. First, in line with previous research (Hendrickson et al., 2011; Li & Gasser, 2005), results of this study identified positive associations between friendships with host-nationals and Chinese students' psychological and sociocultural adaptation. Specifically, Chinese undergraduates with more frequent and intimate interaction with host-nationals tended to experience less psychological stress, greater satisfaction with their lives, and perceived less discrimination and hate from the host society. These findings confirm the importance of well-established interpersonal relationships in facilitating college student adjustment in U.S. higher education (Buote et al., 2007). Compared to domestic students, peer relationships may matter more for international students who leave home for obtaining academic credentials in a different society. Since most of their established social networks remain in the

home country, they need to build new social relationships in the host society to gain both instrumental resources and emotional support to overcome difficulties that occur during cross-cultural transitions (Kim, 2001). Given that theories of acculturation and adaptation hinge on intergroup contact (Ward et al., 2001) and intercultural communication (Kim, 2001), this study provides important empirical support for these theories by demonstrating how interaction with host-nationals may promote Chinese students' psychological and sociocultural adjustment in the host society.

Second, the present study found out that high-quality peer interaction might be a key to bolster Chinese students' ability to navigate cross-cultural challenges. Specifically, compared to superficial relationships, only high-quality interaction (for example, friendships involving both frequent contact and intimacy) with host-national students was significantly associated with less perceived discrimination and hate from the host society. This finding may be explained using contact hypothesis theory (Amir, 1969), which suggests that intergroup interaction at superficial level is not sufficient to change intergroup attitudes or relationships. Given that the quality (or closeness) of friendships, rather than the amount of contact, plays an essential role in promoting international student adaptation (Ward & Rana-Deuba, 2000), it is important for the host institutions to develop programs and provide opportunities for international students, including both Chinese and students from other countries and domestic students to mingle and establish sustained and close relationships. For example, it may be useful to offer Chinese students training or workshops on how to deepen and maintain long-term friendships with students of other groups, considering that Chinese students often reported barriers to the establishment of close relationships with both host-national and multi-national students (Bertram, Poulakis, Elsasser, & Kumar, 2014). Opportunities for international and domestic students to share and

engage in long-term activities together, such as club or group activities with a common focus or interest, also promote intergroup relationships over time (see Chapter 2 of this dissertation).

Third, the present study contributes to the literature by exploring the underlying mechanism of the associations between friendship networks and international students' cross-cultural adaptation. Specifically, I examined the role of social connectedness as a mediator. Findings indicate significant indirect effects of interaction with host-nationals on student adaptation through social connectedness, such that more frequent and intimate interaction with host-nationals was associated with greater social connectedness, which, in turn, was associated with lower levels of psychological stress, greater life satisfaction, and less cultural adaptation challenges. The significant mediating effects of social connectedness echo the importance of maintaining a sense of connectedness in the host society for promoting international college students' psychological and sociocultural adaptation (Hendrickson et al., 2011; Yeh & Inose, 2003).

Lastly, results of this study indicate possible suppression effects of social connectedness in the relationships between co-national friendships and international student adaptation. In particular, the direct effects of co-national friendships on student adaptation became larger with the inclusion of social connectedness in the model, and interaction with co-nationals turned into a risk factor, such that more frequent and intimate interaction with co-nationals was associated with greater psychological stress and more cultural adaptation challenges. This finding suggests the complexity of the effects of co-national friendships on Chinese students' cross-cultural adaptation and provided an explanation for the mixed and somewhat conflicting results found in prior research (e.g., Chen et al., 2002; Hendrickson et al., 2011). It is possible that adequate interaction with co-nationals improves Chinese students' sense of connectedness, which, in turn,

promoted their psychological and sociocultural adaptation in the host society (Hendrickson et al., 2011). Excessive exposure to co-national friendships, by contrast, might isolate students from mingling with both host-nationals and multi-nationals (Yan & Berliner, 2011a, 2011b), and thus, it may impede the development of intercultural communication competence (Kim, 2001) and lead to lower levels of cultural adjustment among international students (Geeraert et al., 2014).

This finding could also be interpreted in the context of the university from which the participants were recruited. The university was ranked as one of the top 10 U.S. higher education institutions in enrolling international students, among which over 60% were from China. Almost every participant of the present study nominated at least one co-national peer in their friendship networks, and more than 60% of them only nominated co-national friends. Chinese students may be less motivated to reach out to both host-nationals and multi-nationals, given the easy availability of a large group of co-national peers at this university. Co-national friendships may be less beneficial for Chinese students in this situation. The results also point to practical implications for the host institutions, especially for those enrolling large numbers of international students like the university of the present study. Despite the intercultural perspectives international students bring to the campus, the rapid growth of students from one country (China in this case) may pose new challenges to the university and students themselves. It is important for the host institutions to develop responsive programs to create social opportunities for different student groups to mingle, and to provide training and workshops for international students on the practices of establishing close, sustained friendships with peers of other groups, given the benefits of cross-cultural friendships in facilitating international students' psychological and sociocultural adaptation.

Limitations and Future Directions

Several limitations should be noted when interpreting the results of this study. First, the findings are limited by the nature of the sample. The participants were recruited from a public Midwestern university enrolling large numbers of Chinese international students, whose friendship networks consisted of predominant co-nationals. It should be cautious when trying to generalize the findings to all Chinese students. In particular, with the limited number of multi-national friends nominated by the participants, the present study might not be able to detect a sizable effect of multi-national friendships on student adaptation. It will be informative for future work to use samples of international students recruited from universities enrolling international students of diverse backgrounds to explore the influence of interaction with co-nationals, host-nationals, and multi-nationals on student adaptation.

Second, this study uses a cross-sectional research design to address the research questions, and hence, the findings provide no evidence of longitudinal associations between friendship networks and Chinese students' psychological and sociocultural adaptation. Future studies utilizing a prospective, longitudinal design will be useful to investigate how friendship networks may predict international students' subsequent adaptation.

Third, although the present study extends prior findings by including both the quantity and quality of relationships in the examination of the influence of friendship networks, this study only measured one aspect of the quality of relationships using a dichotomous variable assessing participants' self-disclosure in friendships. Future research should continue to examine the distinctive effects of the quality of relationships by measuring multiple features of social interaction, such as perceived satisfaction with friendships, in affecting international students' cross-cultural adaptation. Lastly, prior research suggests that international students also

perceived social support from family and friends in the home country (Chen et al., 2002) and from online communication with host-nationals (Cao et al., 2018), factors that lie beyond the scope of the present study. Future work should also consider the influence of other types of social relationships, such as friendships with co-nationals in the home country, to provide a more holistic understanding of the associations between friendship networks and international student adaptation.

Conclusion

Despite the limitations, the present study makes important contributions to the extant literature on peer relations and international student adaptation. First, by examining the influence of friendship networks, this study provides empirical support for theories of acculturation and adaptation by demonstrating the benefits of maintaining frequent contact and intimate relationships with host-nationals in facilitating Chinese students' psychological and sociocultural adjustment. Second, with the inclusion of social connectedness as a mediator in the examination of the effects of friendship networks, the present study elucidates the psychological mechanism that underpins the associations between friendship networks and student adaptation. The results identify the potentially detrimental effects of excessive interaction with co-nationals on international students studying at universities enrolling large numbers of fellow co-nationals. Finally, the findings have important implications for the development of institutional programs aimed at supporting (Chinese) international students, particularly those remaining self-segregated (for example, students only interacting with co-national peers), in facilitating their psychosocial and cultural adaptation in U.S. higher education.

CHAPTER 4. CONCLUSION

Conclusion to the Dissertation

The importance of peer influence has been widely documented in the literature on adolescent development (Brown & Larson, 2009; Smetana, Robinson, & Rote, 2014) and college student adjustment (Buote et al., 2007). Compared to domestic college students, peer relations may matter more for international students who leave home and study in a different society. Of the influencing factors in promoting international student adaptation, peer relations established in the host society have been found to effectively facilitate international students' academic learning (Wang, 2017), psychological well-being (Hendrickson, Rosen, & Aune, 2011), and sociocultural adaptation (Zhang & Goodson, 2011). Drawing upon both survey responses and in-depth interviews collected with Chinese international undergraduates at a large public Midwestern university, my dissertation extends prior findings by using a mixed-method research design to examine Chinese students' lived experiences of establishing friendship networks and how their peer networks might be associated with their psychological and sociocultural adaptation in U.S. higher education.

Findings of this dissertation contribute to the extant literature on social relations and international student adaptation. First, by exploring the longitudinal changes in friendship networks of Chinese undergraduates, this dissertation identifies four profiles describing the changes in Chinese students' peer interaction patterns and illustrates how factors (such as language proficiency and previous experiences of perceived discrimination) might contribute to the changing patterns of peer interaction. Second, drawing on in-depth interviews, this dissertation provides a fuller understanding of Chinese students' friendship networks by elucidating students' lived experiences of establishing friendships with different groups of peers,

and how student engagement and the cultural practice of cultivating guanxi might shape their nuanced experiences of building peer networks on campus. Third, through the examination of the associations between friendship networks and student adaptation, this dissertation provides empirical support for theories of acculturation and adaptation by demonstrating the benefits of maintaining close, sustained relationships with host-nationals and potentially detrimental effects of excessive interaction with co-nationals on Chinese students' psychological and sociocultural adaptation. Finally, the findings point to important practical implications for the host institutions, especially the universities enrolling large numbers of international students, for the development of responsive programs aimed at supporting international students to engage in frequent, meaningful interaction with different groups of peers and to facilitate their cross-cultural adaptation in U.S. higher education.

APPENDICES

APPENDIX A: Chapter 2 Tables

Table 2.1. Study 1 Sample Demographics (N = 46).

Demographics (collected at Time 1)		*n* (%)
Gender	Female	30 (65.2)
	Male	16 (34.8)
Age	18	17 (37)
	19	17 (37)
	20	12 (26)
Single child in family	Yes	29 (63)
	No	17 (37)
Hometown	First-tier metropolises	11 (23.9)
	Second-tier metropolises	18 (39.1)
	Small cities	14 (30.5)
	Rural or other areas	3 (6.5)
Completed high school	In China	33 (71.7)
	In the United States	13 (28.3)

Patterns of Peer Interaction	Time 1 *n* (%)	Time 2 *n* (%)
Self-segregator (co-national friends only)	27 (58.7)	34 (73.9)
Mixer (at least one host- or multi-national friend)	19 (41.3)	7 (26.1)

Profiles of Changes in Peer Interaction (T1→T2)	*n* (%)
Self-segregator → self-segregator	24 (52.2)
Self-segregator → mixer	3 (6.5)
Mixer → mixer	9 (19.6)
Mixer → self-segregator	10 (21.7)

Table 2.2. Study 1 Demographic Characteristics of Interviewing Participants.

Pseudonym	Gender	Age (Time 1)	Completed High School	Friendship Network	
				Time 1	Time 2
Tuan	Female	18	In China	Mixer	Mixer
Xue	Female	18	In China	Self-segregator	Self-segregator
Tian	Male	18	In the U.S.	Mixer	Self-segregator
Ling	Female	18	In China	Mixer	Mixer
Feng	Male	20	In the U.S.	Self-segregator	Self-segregator

Table 2.3. Comparisons Among Three Changing Patterns of Peer Interaction Among Chinese Undergraduates (N = 46).

Characteristics (collected at Time 1)	Self-segregator → Self-segregator (n = 24)	Mixer → Self-segregator (n = 10)	Self-segregator/Mixer → Mixer (n = 12)			
	n (%) [a]	n (%)	n (%)	χ^2	df	p
Complete high school in						
China	15 (45.5)	8 (24.2)	10 (30.3)	2.14	2	n.s.
United States	9 (69.2)	2 (15.4)	2 (15.4)			
Background of roommate						
Co-national	20 (57.1)	6 (17.2)	9 (25.7)	2.12	2	n.s.
Host- or multi-national	4 (36.4)	4 (36.4)	3 (27.2)			
Speaking English outside of class						
Never	2 (100)	0	0			
Occasionally	13 (56.6)	5 (21.7)	5 (21.7)	18.10	6	< .05
Sometimes	9 (56.2)	5 (31.3)	2 (12.5)			
Often	0	0	5 (100)			
	One-way ANOVA					
	M (SE)	M (SE)	M (SE)	F	df	p
Interaction with host- and multi-nationals						
Frequency of contact	2.6 (.16)	2.72 (.13)	2.79 (.15)	.39	2	n.s.
Perceived comfort level	2.48 (.10)	2.52 (.11)	2.71 (.13)	1.03	2	n.s.
Acculturative stress						
Perceived discrimination	20.17 (1.31)	16.1 (2.07)	14.27 (1.57)	3.93	2	< .05
Perceived hate	11.79 (.80)	10.3 (1.38)	8.1 (.71)	4.04	2	< .05

Note. n.s. = not significant.

[a] The percentages in parentheses are row percentages, indicating the proportion of each peer interaction profile (by column) within each characteristic variable (by row).

APPENDIX B: Chapter 3 Tables

Table 3.1. Study 2 Sample Demographics (*N* = 273).

		Freshman Sample (*N* = 196)	Sophomore Sample (*N* = 77)
	Demographics	*n* (%)	*n* (%)
Gender	Female	113 (57.7)	50 (64.9)
	Male	83 (42.3)	27 (35.1)
Age	18	58 (29.6)	1 (1.3)
	19	99 (50.5)	21 (27.3)
	20	34 (17.3)	41 (53.2)
	21 and above	2 (1.0)	14 (18.2)
Hometown	First-tier metropolises	67 (34.2)	30 (39)
	Second-tier metropolises	87 (44.4)	31 (40.3)
	Small cities or other areas	39 (19.9)	15 (19.5)
	Peer Nomination		
Co-national friends only		128 (65.3)	47 (61.1)
Co- and multi-national friends		19 (9.7)	11 (14.3)
Co- and host-national friends		36 (18.4)	14 (18.2)
Co-, multi-, and host-national friends		10 (5.1)	3 (3.9)
No nomination		3 (1.5)	2 (2.6)

Note. *N*s vary due to missing data.

Table 3.2. Descriptive Statistics of Study Variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Perceived stress	—																
2. Fear	.33**	—															
3. Homesickness	.23**	.53**	—														
4. Stress due to change	.37**	.69**	.58**	—													
5. Discrimination	.35**	.63**	.46**	.58**	—												
6. Perceived hate	.24**	.64**	.42**	.50**	.85**	—											
7. Life satisfaction	–.27**	–.29**	–.10	–.37**	–.31**	–.34**	—										
8. Connectedness	–.43**	–.43**	–.31**	–.42**	–.42**	–.40**	.35**	—									
9. Co-nat contact	.01	.19*	.15	.21**	.12	.12	–.08	.09	—								
10. Multi-nat contact	.00	–.03	.00	–.01	–.01	–.01	–.01	.03	–.50**	—							
11. Host-nat contact	–.15*	–.30**	–.25**	–.25**	–.18*	–.17*	.18*	.11	–.60**	.05	—						
12. Co-nat intimacy	–.01	.19*	.25**	.22**	.11	.10	–.05	.12	.73**	–.50**	–.58**	—					
13. Multi-nat intimacy	.02	–.06	.00	–.03	–.04	–.03	.01	.07	–.52**	.95**	.07	–.47**	—				
14. Host-nat intimacy	–.11	–.28**	–.26**	–.23**	–.16*	–.16*	.14*	.10	–.58**	.03	.95**	–.52**	.07	—			
15. Co-nat interact	–.05	.15	.18*	.21**	.09	.08	.02	.23**	.85**	–.45**	–.48**	.92**	–.44**	–.45**	—		
16. Multi-nat interact	.01	–.06	–.00	–.02	–.04	–.02	.01	.06	–.48**	.95**	.06	–.45**	.99**	.05	–.40**	—	
17. Host-nat interact	–.12	–.28**	–.25**	–.22**	–.16*	–.15*	.15*	.10	–.55**	.03	.96**	–.51**	.06	.98**	–.43**	.05	—
Valid *N*	269	271	270	272	268	270	270	267	170	212	216	167	212	214	165	212	214
Mean	24.37	8.8	10.55	6.57	17.99	10.57	3.35	4.18	20.92	.86	1.53	7.81	.3	.58	32.46	1.19	2.26
SD	7.11	3.18	3.21	2.36	6.05	3.9	.58	.8	6.42	2.71	3.55	2.61	.91	1.38	12.41	3.8	5.6

Note. Co-nat = co-national; multi-nat = multi-national; host-nat = host-national; * $p < .05$, ** $p < .01$.

Table 3.3. Path Coefficient Unstandardized Estimates from the SEMs.

	Model Description					
	Frequency		Intimacy		Interaction	
Parameter Estimates	β	*SE*	β	*SE*	β	*SE*
	Structural Model					
Co-national → Psy stress	–.00	.06	.11	.13	.01	.02
Co-national → Satisfaction	.02	.01	.03	.02	.01*	.00
Co-national → Cul challenges	.03	.12	–.02	.25	.00	.05
Host-national → Psy stress	–.26**	.09	–.51*	.20	–.14**	.05
Host-national → Satisfaction	.05**	.02	.10**	.04	.03**	.01
Host-national → Cul challenges	–.27	.16	–.71	.37	–.16*	.08
Multi-national → Psy stress	.01	.10	.09	.27	.00	.06
Multi-national → Satisfaction	.02	.02	.04	.05	.01	.01
Multi-national → Cul challenges	.06	.20	–.13	.54	–.03	.12
	Covariances					
Co-national with Host-national	–12.53***	1.70	–1.74***	.26	–27.66***	5.00
Co-national with Multi-national	–8.73***	1.32	–1.08***	.18	–17.91***	3.44
Host-national with Multi-national	.42	.66	.07	.09	.90	1.44
Psy stress with Satisfaction	–.52***	.13	–.55***	.14	–.55***	.14
Psy stress with Cul challenges	11.87***	2.14	11.95***	2.17	12.02***	2.18
Satisfaction with Cul challenges	–1.03***	.21	–1.05***	.22	–1.05***	.21
	Factor Coefficients					
Psy stress						
Perceived stress	1.00	.00	1.00	.00	1.00	.00
Homesickness	.73***	.12	.74***	.12	.74***	.12
Fear	.92***	.14	.92***	.14	.92***	.14
Stress due to change	.66***	.10	.67***	.10	.67***	.10
Cul challenges						
Perceived discrimination	1.00	.00	1.00	.00	1.00	.00
Perceived hate	.61***	.03	.61***	.00	.61***	.03
	Covariate Effects					
Gender → Psy stress	–.89*	.40	–.91*	.40	–.90*	.40
Gender → Satisfaction	–.11	.07	–.10	.07	–.10	.07
Gender → Cul challenges	.09	.75	.08	.75	.08	.75
Year → Psy stress	.75	.43	.66	.42	.65	.42
Year → Satisfaction	–.21**	.08	–.19*	.08	–.19*	.08
Year → Cul challenges	.20	.81	.13	.81	.12	.81

Note. Psy stress = psychological stress; Cul challenges = cultural adaptation challenges; * $p < .05$, ** $p < .01$, *** $p < .001$.

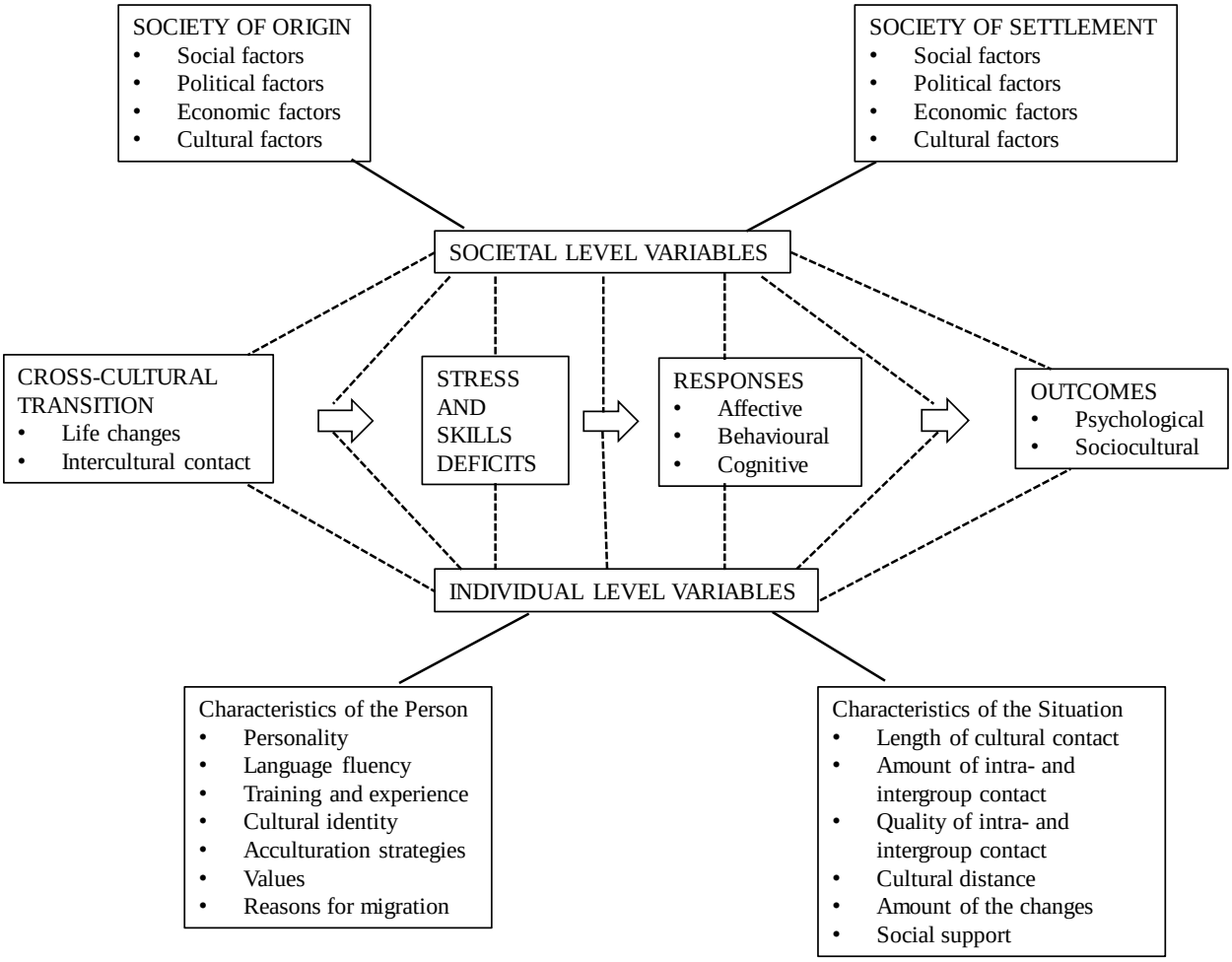
Table 3.4. Indirect, Direct, and Covariate Effects from the SEM for Testing Mediation.

Indirect Effects			
	β (Standardized)	*SE*	95% CI
Co-national → Connectedness → Psy stress	–.29***	.07	[–.44, –.18]
Co-national → Connectedness → Satisfaction	.16***	.04	[.09, .24]
Co-national → Connectedness → Cul challenges	–.24***	.05	[–.36, –.14]
Host-national → Connectedness → Psy stress	–.19**	.06	[–.31, –.08]
Host-national → Connectedness → Satisfaction	.10**	.03	[.04, .17]
Host-national → Connectedness → Cul challenges	–.15**	.05	[–.26, –.06]
Multi-national → Connectedness → Psy stress	–.14**	.04	[–.22, –.06]
Multi-national → Connectedness → Satisfaction	.07**	.03	[.03, .12]
Multi-national → Connectedness → Cul challenges	–.11**	.04	[–.18, –.05]
Direct Effects			
	β (Standardized)	*SE*	
Co-national → Psy stress	.35***	.09	
Co-national → Satisfaction	.03	.10	
Co-national → Cul challenges	.23**	.08	
Host-national → Psy stress	–.07	.08	
Host-national → Satisfaction	.15	.08	
Host-national → Cul challenges	–.01	.08	
Multi-national → Psy stress	.14	.07	
Multi-national → Satisfaction	–.01	.06	
Multi-national → Cul challenges	.09	.07	
Covariate Effects			
	β (Unstandardized)	*SE*	
Gender → Psy stress	–.95**	.35	
Gender → Satisfaction	–.10	.07	
Gender → Cul challenges	.08	.70	
Gender → Connectedness	.00	.10	
Year → Psy stress	.63	.43	
Year → Satisfaction	–.19*	.08	
Year → Cul challenges	.03	.86	
Year → Connectedness	–.03	.11	

Note. Psy stress = psychological stress; Cul challenges = cultural adaptation challenges; CI = confidence interval; * $p < .05$, ** $p < .01$, *** $p < .001$.

APPENDIX C: Chapter 1 Figure

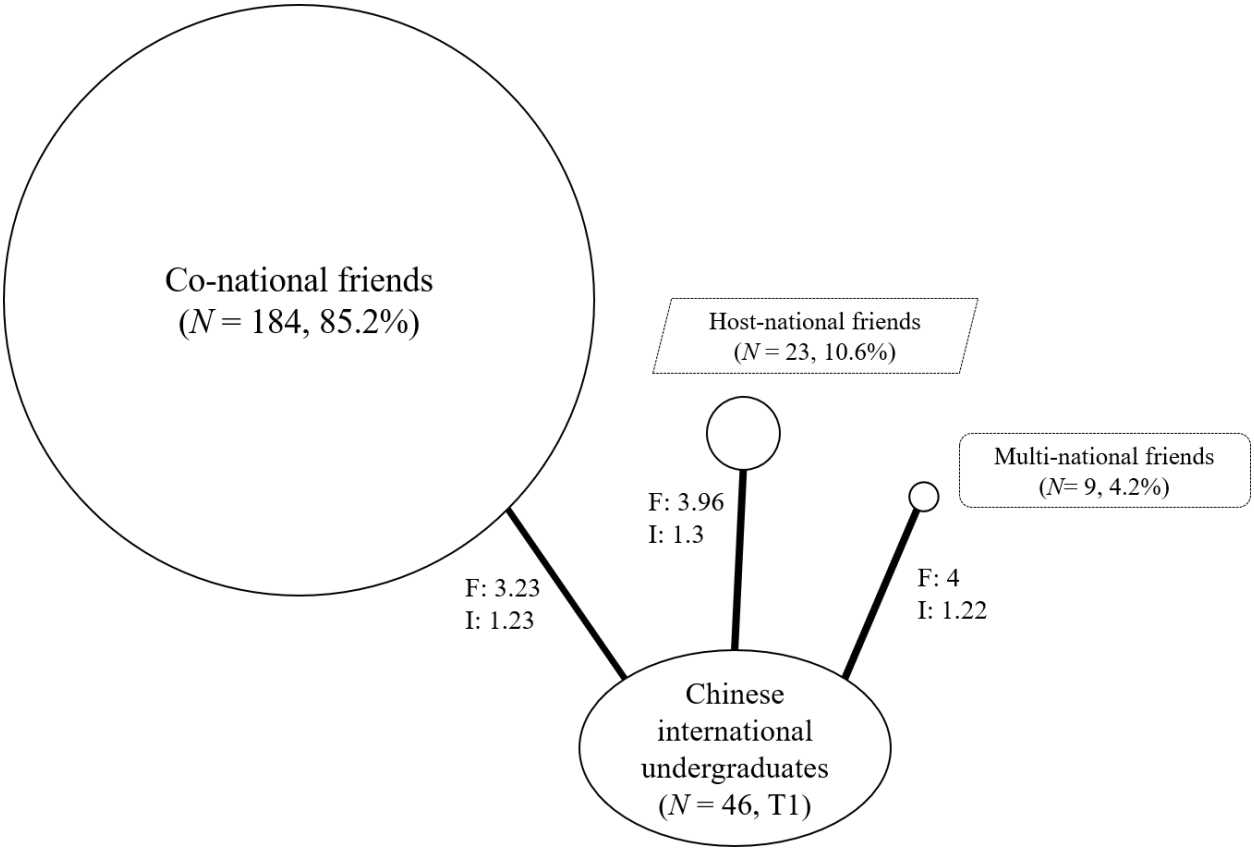
Figure 1.1. Model of Acculturation Process.



Note. Model of acculturation process (Ward, Bochner, & Furnham, 2001, p. 44).

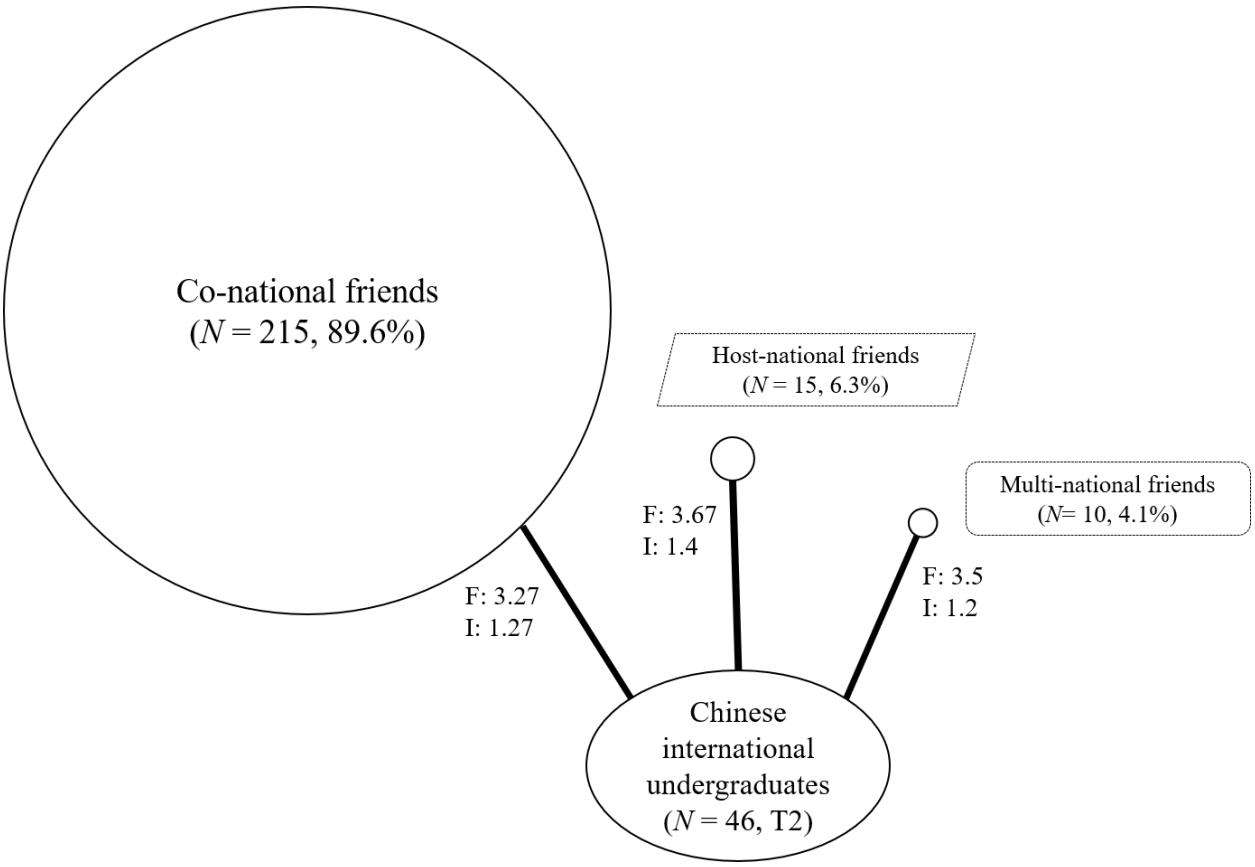
APPENDIX D: Chapter 2 Figures

Figure 2.1. Diagram of Chinese Undergraduates' Friendship Networks (Time 1).



Note. The total nominated friends were 216 at this wave. F and I indicate the average frequency of contact (as reflected in the thickness of the line) and the average intimacy of friendships (as reflected in the length of the line), respectively. The size of the shape represents the ratio of each peer group to the total number of nominations.

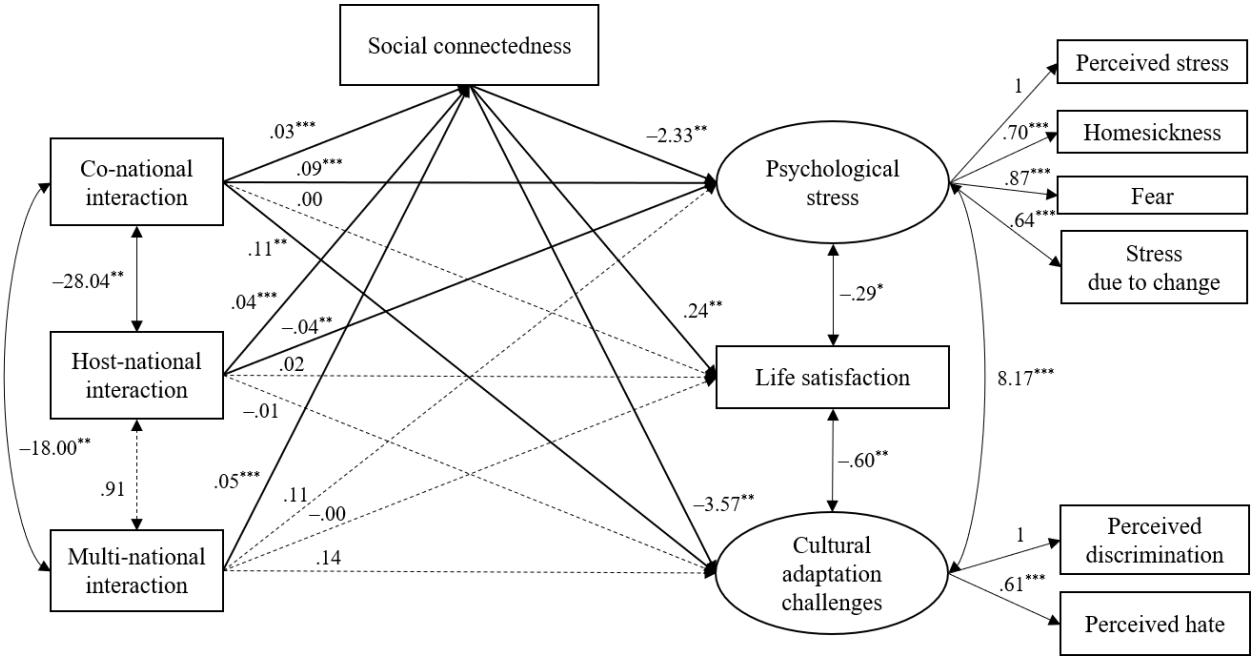
Figure 2.2. Diagram of Chinese Undergraduates' Friendship Networks (Time 2).



Note. The total nominated friends were 240 at this wave. F and I indicate the average frequency of contact (as reflected in the thickness of the line) and the average intimacy of friendships (as reflected in the length of the line), respectively. The size of the shape represents the ratio of each peer group to the total number of nominations.

APPENDIX E: Chapter 3 Figure

Figure 3.1. Simplified Path Analysis Diagram of the SEM Testing Mediation.



Note. Simplified path analysis diagram of the SEM for testing the indirect effects of frequent and intimate interaction with nominated friends on student adaptation through social connectedness. Estimates are unstandardized. Dotted lines indicate non-significant paths. Covariate effects have been omitted from this figure for simplicity. * $p < .05$. ** $p < .01$. *** $p < .001$.

APPENDIX F: Supplementary Questionnaire

Supplementary Questionnaire: Peer Network Grid.

Nominated Friend	National Background 1 = Co-national (Chinese peers) 2 = Host-national (domestic students) 3 = Multi-national (other international students)	Frequency of Contact 1 = Almost every semester 2 = Almost every month 3 = Almost every other two weeks 4= Almost every week 5 = Almost everyday	Sharing personal concerns? 1 = No 2 = Yes
Male Friend 1	1 2 3	1 2 3 4 5	1 2
Male Friend 2	1 2 3	1 2 3 4 5	1 2
Male Friend 3	1 2 3	1 2 3 4 5	1 2
Female Friend 1	1 2 3	1 2 3 4 5	1 2
Female Friend 2	1 2 3	1 2 3 4 5	1 2
Female Friend 3	1 2 3	1 2 3 4 5	1 2

APPENDIX G: Supplementary Interview Protocol

Supplementary Interview Protocol.

Pre-Departure Experiences (Schooling)

1. Can you tell me something about your experiences in China before coming here? Where did you grow up?
2. Can you tell me something about your schooling experiences in China? Was it a lot of pressure? What about peer relations? Was there a lot of competition?
3. Did you attend a lot of *Buxiban* (i.e., after-school tutoring)?
4. Where did you attend high school? Did you participate in the National Exam in China?
5. Why did you come to the US for schooling?
6. When did you first know that you would be going to universities abroad? How did it change your schooling experiences in China?

Pre-Departure Experiences (Family Background and Relationships with Parents)

7. Can you tell me something about your family background? What do your parents do?
8. Tell me something about your parents. What kinds of parents are they?
9. Do you feel a lot of pressure from parents or family to be a certain way as the only child in your family (question for single-child participants)?
10. How involved were your parents in your school? What are the ways they are involved in your school?
11. How were your relations with your parents? Did you communicate well with them? Did you have conflicts? If so, around what areas?
12. What are your parents' expectations for you? Do you find it easy to meet these expectations?

(After-Arrival) Academic Learning and Challenges

13. I'm very interested in the experiences of Chinese international students at our university. Can you tell me something about your own experiences attending the school here? How is the semester going?
14. What reputation does our school have among students in China?
15. Was it hard to get into this university? What did you need to do?
16. What was it like in your first few months of school here? Was this your first time studying in the U.S.? [If no, where were you? And for how long?]
17. What were your expectations about college life here? Are things different from your expectations? How?
18. What have you learned about working with American professors? Are they different from Chinese professors or teachers? What are similarities and what are differences?

(After-Arrival) Psychological and Sociocultural Adaptation Experiences

19. What were some main areas of challenges in your adjustment here?
20. How did you overcome these challenges? Anything helped you adjust to life here?
21. What do you like the most? What do you like the least about your life here?
22. What are the biggest differences between going to school in the U.S. and in China?

23. What is the most challenging about being a student at our university? What are things that are hard to adjust to?
24. What is it like to live in the local community? Do you like it? Is it different from your expectations?
25. Are Chinese students treated well here in the community? Why?
26. How is the dining hall? What do you think of American food?
27. Do you eat outside a lot?
28. Have you experienced discrimination in any way?

(After-Arrival) Social Relations and Perceived Social Support

29. What experiences have you had with domestic students?
30. What are some main areas of support you have had? What's the most important support you have in your life here?
31. Are most of your friends from the U.S., China, or other regions?
32. What do you do with your friends?
33. How are things going in your residence hall? What are things you really like and what are things that you don't like as much about your dorm?
34. How are things between you and your roommate? Do you know each other before? How has it been sharing a dorm together with him/her?
35. Do you regularly interact with your Resident Assistant in your building?
36. What are your American classmates like? Do you interact with them a lot?
37. Some students mention that it's hard to become friends with American students. What are your experiences? Why do you think it is this way?
38. Have your relations with your parents changed after you are here? If so, what kind of changes?
39. Do you have contact with your parents regularly? How do you contact your parents? What is the easiest way? How often do you contact them? And for how long?
40. Can your parents call you or contact you if they want to know how things are going?
41. Do you find it easy to talk to your parents about problems you may have? Do you talk to them about problems you experience?
42. Do you miss your parents? Have your relationship change with your parents now that you are here?

(After-Arrival) Institutional Support

43. What do you think of institutional support provided by our university for international students?
44. Are you aware of resources or offices that can support international students here on campus?
45. Do you use these resources? Why (not)?
46. What other ways of support do you think school should have?

(After Arrival) Future Goals

47. What goals do you have for the future?
48. Who is your role model?
49. What are your passions?

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