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# Social media use and adaptation among Chinese students beginning to study in the United States

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ABSTRACT

Chinese international students studying abroad in the United States undertake a life changing venture; one that produces numerous benefits for both the Chinese students and the American people, yet is also fraught with hardships and struggle. Prior literature shows that large and diverse social networks are ideal for increasing international students' adaptation. Using an online questionnaire administered to 120 Chinese international college students studying in the U.S., we explored the potential impact that the utilization of Social Networking Sites (SNSs) could have on the construction of such social networks, when used during study abroad preparation. We found that students who used SNSs more often during their study abroad preparations had larger, more diverse social networks abroad, compared with students who used SNSs less often or not at all. Students with more diverse social networks reported significantly higher levels of social and academic adaptation in the host culture. We suggest universities and advisors provide training for the use of SNSs to Chinese students during their study abroad preparations, in order to increase social and academic adaptation when abroad.



## 1. Introduction

The number of international students studying in the U.S. has been consistently increasing since the Institute of International Education (2014) began keeping track in 1952. Enrollment in the 2013–2014 academic year hit a record high with 886, 052 foreign students beginning their studies at universities and colleges nation-wide.

This influx of international students from all over the world has positive impacts on the U.S., culturally and economically. Each student brings with them a unique cultural heritage that diversifies the population, increasing awareness and appreciation of other cultures (Bevis, 2002; Harrison, 2002). These students' differing perspectives provide them with a distinct set of skills and knowledge, which adds intellectual capital to the country and work force (Smith & Khawaja, 2011). International students also have a significant effect on the country's financial capital, having contributed over 27 billion dollars to the U.S. economy in 2014 alone. Nearly 80% of international students' college funding comes from outside the U.S. (mostly from family members or themselves) helping to grow the economy (Institute of International Education, 2014). Moreover, "in the last half of the twentieth century, America was the location of choice for the best and brightest scientific minds in the world" (Zucker & Darby, 2007 p. 181), comprising 62% of the global population's star scientists and engineers, the majority of whom first arrived as international students (Hawthorne, 2010). International students provide a plethora of benefits for

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the host country; therefore, "...their academic success, health, and psychological wellbeing (PWB) are important issues for the students themselves, for university administration and for research communities" (Chirkov, Vansteenkiste, Tao, & Lynch, 2007, p. 200). Yet, despite the importance of maintaining and retaining international students, only a small minority intend to stay in the U.S. long term. Upon completing their study abroad programs or degrees, most international students feel torn between the U.S. and their home country, yet the majority report intentions to return home within a few years (Alberts & Hazen, 2005; Hazen & Alberts, 2006).

China has been the number one origin country for international students studying in America for the past five years; currently representing 31% of all international students. Not only has China maintained this top position, but the total number of Chinese students in America has been increasing at an average rate of 25% per year (Institute of International Education, 2014). Adapting to life in America for these 270,000 + Chinese students, however, is no easy task, as the differences between America and China are numerous (Hazen & Alberts, 2006; Yan & Berliner, 2013). Among the many issues these students face, Church (1982) identified academic and social adaptation as two of the most prominent and important. Chinese students struggle academically in understanding how to perform well in American classrooms, as opposed to Chinese ones. Socially, they struggle in adapting to new cultural customs and norms (Yan & Berliner, 2013), and in forging meaningful relationships with US Americans (Hazen & Alberts, 2006). Moreover, Chinese students are often the least adjusted group among all international students, due to their high levels of stress, neuroticism, and perceived cultural distance (Galchenko & van de Vijver, 2007; Hazen & Alberts, 2006). American students' native understanding of social and academic norms in the U.S. may help alleviate some of these issues; creating a more supportive environment and ultimately reducing the attrition rates at universities (Westwood & Barker, 1990).

Social Networking Sites (SNSs) could serve as an avenue for generating social support networks for Chinese international students. The use of SNSs is now the most popular online activity in the world (ComScore, 2011). 73% of American adults use SNSs, such as Facebook and Twitter, and over 400 million Chinese adults use SNSs, such as Weibo and RenRen on a daily basis(China Internet Watch, 2012; PEW Research Center, 2013). SNSs have been found to have a positive impact on creating and maintaining social capital, as well as improving psychological wellbeing for American students, so it follows that they might also help international students (Ellison, Steinfield, & Lampe, 2007; Stefanone, Kwon, & Lackaff, 2011). These new social media platforms may offer a modern and exciting new way to help international students with adapting to their new life; an avenue that has been virtually unexplored in the field of Intercultural New Media Studies (Shuter, 2012). In this paper, we present the results of a study examining whether or not SNSs can be utilized to influence Chinese students' social networks and whether this, in turn, affects their adaptation when they are studying in the U.S.

## 2. Theoretical background

### 2.1. International students

While some literature touches upon the differences among international students, immigrants, and expatriates (Berry & Sam, 1997; Church, 1982), few studies have tested whether or not the differences among such groups are truly meaningful. Kim (2001) separates all individuals moving from one country to another into two categories: short-term and long-term. Long-term individuals are represented by immigrants and refugees who intend to stay in the host country on a more or less permanent basis. Short-term individuals, also known as sojourners, are represented by international students and foreign workers (expatriates) who intend, at least initially, on returning to their origin country.

This study seeks to examine individuals in the latter group, therefore, all of the prior literature we review is either all-encompassing or pertains specifically to sojourners. While we could delineate further to only include literature about international students, we take insights from a few articles about expatriates, as the differences between both types of sojourners are few enough and "all individuals crossing cultures face some common challenges as they pioneer lives of uprootedness and gradually establish working relationships with their new milieus" (Kim, 2001p. 4).

### 2.2. Acculturation, stressors and adaptation

*Acculturation* was originally defined by Redfield, Linton, and Herskovits (1936) as "those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact with subsequent changes in the original culture patterns of either or both groups" (p. 149). Researchers have developed a number of perspectives in the study of acculturation since then; one of the most noteworthy being the development of the bi-dimensional or bi-cultural model, which is used often in intercultural research today. Berry (2005) defines acculturation as "the dual process of cultural and psychological change that takes place as a result of contact between two or more cultural groups and their individual members" (p. 698). As these cultural groups interact, individuals will experience varying degrees of *acculturative stress*, which includes any physical, psychological or social degradations in an individual's health that is related to the acculturation process. Common acculturative stressors include anxiety, depression, identity confusion and feelings of being marginalized (Berry, Kim, Minde, & Mok, 1987). In response to acculturative stress, individuals choose different acculturation strategies based on the two dimensions of acculturation: *cultural maintenance* (the extent to which one maintains his/her heritage culture and identity) and *contact and participation* (the degree to which one becomes involved in the host country's society and with other cultural groups). Those who pursue positive action in both dimensions by maintaining some of their own

cultural practices and identity while simultaneously being open to involvement with members of the host society are identified as using the *integrative* strategy of acculturation[1]. Berry (2005) notes that "for acculturative stress, there is a clear picture that the pursuit of integration is least stressful" (p. 708).

Individuals who use the integrative strategy of acculturation achieve greater *adaptation* (Berry, 2005; Berry, Phinney, Sam, & Vedder, 2006; Berry & Sam, 1997; Curran, 2003), which, "refers to changes that take place in individuals or groups in response to environmental demands" (Berry, 1997p. 13). Adaptation is multifaceted, including psychological (sense of identity, mental health, life satisfaction and psychological wellbeing) and sociocultural (ability to cope with daily stresses from work, school and socializing) aspects (Ward & Searle, 1991; Ward, 1996). Positive psychological and sociocultural adaptation is essential to the continued success or growth of any immigrant, expat or international student (Chiu, Wu, Zhuang, & Hsu, 2009; Kim, 2001; Kuo & Tsai, 1986; Smith & Khawaja, 2011; Ward & Searle, 1991). It must be noted, however, that adaptation is not a purely linear process. An alternative theory that seeks to integrate the above approaches to cultural adaptation introduces the *stress-adaptation-growth dynamic*, which is dialectic, cyclic, and continual as "each stressful experience is responded to with a 'draw back', which, in turn, activates adaptive energy to help individuals reorganize themselves and 'leap forward'" (Kim, 2005p. 384). Multiple factors have been noted as influencing adaptation, such as personality, life changing events, cultural knowledge, degree of contact, and social support (Berry, 2005).

Smith and Khawaja (2011), in their review of 94 studies on acculturative stressors, identify five major categories that pertain specifically to international students: language based, educational, sociocultural, discriminatory, and practical stressors. Language barriers induce much anxiety for international students, both socially and academically. Socially, students who are not proficient in the host country's language find it difficult to make friends with the locals and experience lower levels of self-esteem. Academically, insufficient language skills hinder a student's ability to write papers, understand professors, and take part in classroom discussions. Educational stressors are not confined solely to international students, but are perhaps amplified by being a student in a foreign country. Even international students who are fluent in the host country's language may find it difficult to adjust to the different styles of teaching, such as rote memorization vs. discussion based learning. Moreover, students may experience unfulfilled expectations in terms of their academic performance and in the availability of services for international students (such as guidance counselors and student resource centers). Sociocultural stressors relate to an international student's ability to form new friendships in a foreign land, particularly with local students. Loneliness, resulting from a lack of friends, is often induced by differences in cultural norms, personal characteristics, and misunderstandings of what it means to be a friend. These differences become especially salient for Asian international students studying in Western countries, as collectivist and individualistic cultures operate quite differently in the social domain. Discrimination against international students serves as another stressor that negatively affects students' ability to adapt. All types of discrimination, from subtle condemning stares to overt verbal and physical harassment, can induce depression and discourages international students from making friends with local students. Practical stressors include financial difficulties and trouble with accommodations and transportation. International students often have greater financial difficulties than domestic students, as tuition for international students is often higher and countries place restrictions on foreign nationals' ability to work. Moreover, strict regulations for foreigners in obtaining a place of residence and a means for transportation may contribute as practical stressors. For international students studying abroad, social support received from their social networks may play an especially important role in alleviating a number of the aforementioned acculturative stressors, which, in turn, may lead to more positive adaptation.

### 2.3. Social networks

People are embedded within social groups, and these groups can be thought of as social networks. Wasserman and Faust (1994) provide the following definition of social networks: "A social network consists of a finite set or sets of *actors* and *the relation* or *relations* defined on them" (p. 20). Within a sojourner's social network, there are a number of different possible actors and corresponding relations. For example, there might be friends, acquaintances, teachers, family members, romantic partners and coworkers connected by friendship, acquaintanceship, mentorship[2], etc. (Wang & Kanungo, 2004; Wang, 2002). Each of these actors can be classified into three categories based on national identity: *co-nationals* (actors from the sojourner's own country), *host nationals* (local actors from the host country) and *multi-culturals* (international actors from other countries, different from the sojourner, but not of the host society) (Bochner, McLeod, & Lin, 1977; Kashima & Loh, 2006).

In general, social networks provide people with a number of benefits, including specific resources, social support and a general sense of belongingness (Parks, 2007). Social networks play an especially important role during transitions. A number of studies have demonstrated that stable social networks can mitigate the stresses associated with transitions, such as the transition from elementary to middle school (Hirsch & Rapkin, 1987) or the transition from high school to college (Hays & Oxley, 1986). For international students, two social network characteristics may be particularly predictive of success in their transition to study abroad in the US.

[1] For a detailed overview of all four strategies see Berry (1997).

[2] Relations in a social network can also be negative – enemy, bully, etc. – but for purposes of this analysis, we focus on positive relations.

Sojourners' social networks vary in diversity, particularly with regard to the composition of actors who are co-nationals, host nationals and multi-culturals. A social network, including co-national and host national members, is highly correlated with a sojourner's psychological wellbeing (Caligiuri & Lazarova, 2002; Kuo & Tsai, 1986; Wang & Kanungo, 2004). Psychological wellbeing is an important factor in positive adaptation and refers to the psychological state of an individual in which he/she can function well enough to ultimately realize his/her true potential (Ryff, 1995). Ties with co-nationals is part of this equation, at least initially, as they provide emotional and feedback support for the focal sojourner, giving him/her similar others to confide in and share experiences with (Caligiuri & Lazarova, 2002; Kim, 2001; Lin, Woelfel, & Light, 1985; Maundeni, 2001; Mehra, Kilduff, & Brass, 1998). It is more important, however, to focus efforts on promoting ties with host nationals, as the majority of international students' social networks already contain a disproportionately high number of co-national ties (Alberts & Hazen, 2005; Bochner et al., 1977; Constantine & Sue, 2005; Maundeni, 2001; Ward & Searle, 1991; Westwood & Barker, 1990; Yan & Berliner, 2013; Ye, 2006). This disparity can lead to a large number of negative consequences, such as a lack of willingness to adapt to local customs, discomfort with one's social and physical environment, reduced language acquisition, feelings of social isolation, problems adjusting, and depression (Ali & Kohun, 2009; Church, 1982; Hendrickson, Rosen, & Aune, 2011; Kim, 2001; Maundeni, 2001; Ward & Searle, 1991; Zhang & Goodson, 2011).

The disadvantages international students face from surrounding themselves solely with other co-nationals is exacerbated by the fact they are entering a largely unfamiliar environment, which produces a great deal of uncertainty, stress and anxiety (Abe, Talbot, & Gellhoed, 1998; Berry, 1997, 2005; Kim, 2001; Zhang & Brunton, 2007). Personal ties with host nationals serve to alleviate much of this psychological stress and provide the sojourner with informational, instrumental and feedback support (Caligiuri & Lazarova, 2002; Kashima & Loh, 2006; Kim, 2005; Wang, 2002; Ye, 2006). Moreover, individuals with a higher number of host nationals in their social network are more satisfied, content, socially connected and positively adapted to the host culture than individuals with fewer numbers (Chiu et al., 2009; Hendrickson et al., 2011; Kim, 2005; Ye, 2006; Ying & Liese, 1990; Zhang & Goodson, 2011). Many studies also indicate numerous academic benefits from having more connections with host nationals, such as higher grades, retention rates and overall academic satisfaction, compared with students who lack such relationships (Perrucci & Hu, 1995; Westwood & Barker, 1990; Williams & Johnson, 2011).

A sojourner's social network can also vary in terms of its size and strength. Size is simply the total number of ties in one's social network, which can include friends, colleagues, and other sojourners. Strength refers to how well connected one actor is with another actor, measured by frequency of interaction and tie type (Granovetter, 1983; Wang & Kanungo, 2004). According to Ye (2006), "strong ties are more intimate and involve more self-disclosure and various forms of resource exchange" (p. 864). Weak ties, however, require less maintenance, involve fewer exchanges, and are free of the pressures and dynamics of closer relationships (Adelman, Parks, & Albrecht, 1987).

Large social networks are shown to have a positive relationship with mental health and wellbeing in sojourner social network literature (Caligiuri & Lazarova, 2002; Church, 1982; Galchenko & van de Vijver, 2007; Wang & Kanungo, 2004; Wang, 2002). This is because a large social network offers a sojourner multiple avenues for support and helps reduce uncertainty and ambiguity about living abroad (Wang, 2002; Caligiuri & Lazarova, 2002). Extensive networking also signifies that the sojourner is adapting well to his/her new environment (Kuo & Tsai, 1986).

Wang and Kanungo (2004) unexpectedly discovered that network strength is significantly and negatively correlated with a sojourner's psychological wellbeing. This supports previous claims that purport the benefits of networks containing both strong and weak ties. Granovetter (1983) argues that strong ties and weak ties provide different benefits. Although strong ties can provide critical social support, too many strong ties can lead to political powerlessness, restricted access to crucial information, and impaired mobility. Weak ties offer unique benefits, such as anonymity and objectivity not available in closer relationships, greater mobility and progression among various groups, and increased access to outside information and resources (Adelman et al., 1987; Granovetter, 1983). Research on sojourners support the idea that there are a number of benefits of weak ties and drawbacks of strong ties in sojourner social networks (Hendrickson et al., 2011; Kim, 2001; Wang & Kanungo, 2004; Ye, 2006). In relation to our study, the establishment of weak ties is more conducive to a larger social network.

Taken together, the literature demonstrates that international students, with social networks that are diverse, emphasizing the inclusion of host nationals, and large, connected primarily via weak ties, are shown to have less uncertainty, stress, frustration and ambiguity; increasing their overall wellbeing and ability to adapt.

### *2.4. Social networking sites*

Social media is a general term that refers to several kinds of internet-based applications that allow users to create and exchange their own content, known as user generated content (Kaplan & Haenlein, 2010; boyd & Ellison, 2007). Social Networking Sites (SNSs) are one type of social media, which Kaplan and Haenlein (2010) define as "applications that enable users to connect by creating personal information profiles, inviting friends and colleagues to have access to those profiles, and sending e-mails and instant messages between each other" (p. 63). Emerging research suggests that SNSs may offer a number of benefits for international students, including the creation of larger social networks, and increased connections with local students (host nationals).

Much prior literature has found that SNSs enable students to have larger, more dispersed social networks, including several connections from which to draw resources (Donath & boyd, 2004; Ellison et al., 2007; Ryan, Magro, & Sharp, 2011; Wellman, Haase, Witte, & Hampton, 2001). SNSs have also been shown to increase weak tie connections, due to their inherent

suitability in managing such ties in a quick, easy and affordable manner (Donath & boyd, 2004; Ellison et al., 2007). Moreover, online communities can foster the development of weak ties, because discussions in online communities often focus on the most important topics, relevant to the user's needs (Turner, Grube, & Meyers, 2001).

Numerous authors have highlighted the positive influence SNSs have on generating interpersonal support and social capital (Baym, 2006; Donath & boyd, 2004; Ellison et al., 2007; Stefanone et al., 2011; Turner et al., 2001; Wellman et al., 2001; Ye, 2006). A few studies looked specifically at students' use of Facebook in an educational setting, and all of them found that social networking sites aided in connecting international and local students (McCarthy, 2010; Ryan et al., 2011; Wang, 2012). McCarthy (2010) noted that "one of the most rewarding aspects of the online learning environment was the increased interaction between local and international students. Many international students saw the online environment as a perfect opportunity to engage with their peers. . ." (p. 737). Local students expressed similar satisfaction with their ability to connect with international students via Facebook. Ryan et al. (2011) discovered three ways in which SNSs aided in academic and social adaptation; by enhancing knowledge exchange, alleviating apprehension, and enabling socialization and building community. One student remarked in his interview that "for international students, we can know more about American life from Facebook and we could also make new friends" (Ryan et al., 2011p. 9).

### 2.5. Importance of timing in preparedness

Much of the SNS literature discussed thus far has touched on issues related to international students' adaptation, but none of them have stressed the importance of timing in implementing such technologies. International students face some of the greatest challenges in adaptation and high levels of loneliness the minute they land in a new country (Church, 1982; Lee, Kim, Lee, & Kim, 2012). It is during this initial stage of adaptation that students experience the most stress in to face-to-face communication with host nationals (Ye, 2006). This high level of stress and anxiety make less prepared students more likely to seek refuge in the familiar environment presented by other co-nationals (Hurh & Kim, 1990; Kim, 2005). Once students fall into this comfortable clique, however, they are less likely to pursue relationships with host nationals. It is imperative, then, that steps are taken to better prepare international students by growing and diversifying their social networks *before* they begin studying abroad. This notion of *preparedness* is an important factor in determining one's degree of adaptation, and is an influential variable in 3 of the 21 theorems of cultural adaptation proposed by Kim (2001). One study supporting the importance of such preparedness was done by Ying and Liese (1991). They discovered the significant impact pre-departure mood level has on the wellbeing of students after arriving in the U.S., and state that:

> "During the learning process, while students are discovering how they may fit into this society, they initially will need to call upon people to provide support for their continued sense of self and to foster their emotional well-being. This is best supplied by the support network they have developed prior to coming to the U.S." (p. 360)

Another study, that unintentionally identified the importance of timing and preparedness, showed positive results of a peer-mentor program in helping international students adapt when host nationals made contact with the incoming international students before they arrived (Abe et al., 1998). Our study is the first of its kind to explicitly examine the relationship between international students' use of SNSs before going to study abroad in the U.S., and their subsequent levels of adaptation after arriving.

### 2.6. Hypotheses

The central aim of this research is to examine the relationship between Chinese international students' use of SNSs before going to study abroad in the U.S., and their level of adaptation after they arrive, with particular emphasis on how SNSs use relates to the size and diversity of Chinese international students' social networks. We consequently pose the following hypotheses (Fig. 1):

**H1.** Chinese international students who use SNSs more often during preparations to study abroad, will have *larger* social networks in the U.S. both (**a**) earlier and (**b**) later, than students who use SNSs less often.

**H2.** Chinese international students who use SNSs more often during preparations to study abroad, will have *more diverse* social networks in the U.S. both (**a**) earlier and (**b**) later, than students who use SNSs less often.

**H3.** Chinese international students whose *early* social networks in the U.S. are *larger*, will report higher levels of (**a**) social adaptation and (**b**) academic adaptation, than students with smaller social networks.

**H4.** Chinese international students whose *later* social networks in the U.S. are *larger* will report higher levels of (**a**) social adaptation and (**b**) academic adaptation, than students with smaller social networks.

**H5.** Chinese international students whose *early* social networks in the U.S. are more *diverse* will report higher levels of (**a**) social adaptation and (**b**) academic adaptation, than students with less diverse social networks.

**H6.** Chinese international students whose *later* social networks in the U.S. are more *diverse* will report higher levels of (**a**) social adaptation and (**b**) academic adaptation, than students with less diverse social networks.

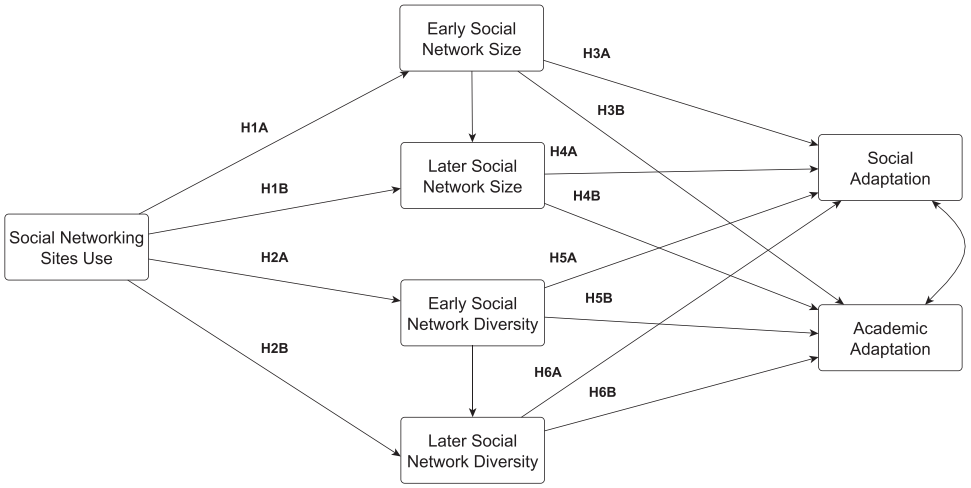


**Fig. 1.** Illustration of hypotheses fit to a Path Analysis Model.

## 3. Method

### 3.1. Participants

A total of 120 participants took part in this research. All participants of this research study were Chinese citizens, who were 18 years or older, and had been studying at a university in the U.S. for less than 1 year. We used a purposive sample to examine this specific population, and excluded students from Hong Kong, Macau and Taiwan. We excluded students from areas outside mainland China, not only due to the cultural and economic differences between mainland China and the aforementioned areas, but also due to the variation in the SNSs use and access between these regions.

We relied on word-of-mouth and respondent-driven recruiting to identify participants for this research. We asked Chinese student organizations from various universities in Boston, Chicago and New York City to assist with recruitment by posting advertisements on their social networking sites (such as Facebook and Weibo) and include links to the survey in their monthly newsletters and e-mail Listserv. Researchers from various U.S. universities, who were interested in the study, assisted with recruitment by posting on their own SNSs and spreading information about the survey via word of mouth. We also asked anyone who was eligible to take part in the study to ask their friends and peers to take part as well. Participants were offered the chance to enter into a drawing where they could win one of twenty-five Starbucks gift cards valued at $25 each. Winners were randomly selected at the conclusion of data collection and sent a gift card via e-mail.

Sixty-four of the 120 respondents were female, 53 were male, and 3 chose not to answer. Almost all students were working on either an undergraduate ($n = 38$) or graduate ($n = 77$) degree. The remaining 5 students were working towards an associate's degree. The mean age for all students was 23.13 years old.

### 3.2. Materials

We constructed an online survey consisting of 38 questions in Mandarin Chinese, which contained the following measures.

The social networking sites use section of the survey measured the frequency of use for a variety of Social Networking Sites (SNSs) during study abroad preparations (before students arrived in the U.S.). The usage numbers in this section were hypothesized to affect the size and diversity of students' social networks in the United States. Using a 5-point-Likert scale, ranging from 1 (never) to 5 (all the time), participants were asked to rate the frequency in which they used 8 different forms of social media, however, because this measure was intended to reflect the use of SNSs specifically and not social media in general, only Facebook, Twitter, Instagram, Weibo and RenRen were considered, all of which were reported to be among the most used SNSs in China and America at the time (China Internet Watch, 2012; PEW Research Center, 2013). We chose not to exclude Facebook, Twitter and Instagram, even though access to these American SNSs is restricted in China, because despite these regulations, the majority of Chinese international students actively bypass censorship measures by using alternative proxy servers (Yang & Liu, 2014), which are user-friendly, low cost or free, and widely available in China (Wolfgarten, 2005). Students who choose not to bypass censorship measures, choose so because of a number of social and political factors, but not because they lack the technological competence or means to do so. Therefore, although censorship could theoretically limit access to American SNSs, in practice, most Chinese students still have the means to do so, should they so choose. Out of the five SNSs, no single site emerged as the most or least common, so we used responses to all five items to create a single variable for each respondent ($\alpha = 0.60$), *SNSs Use*, $\bar{X} = 1.66$ (SD = 0.49).

The social network size section gathered information about one's social network composition in terms of size (number of social ties with actors). One open ended question asked students to enter the number of people they met, for the first time and interact with regularly, since arriving in the U.S. Another open ended question asked students to report the total number of people they have come to interact with in the U.S. on a regular basis, including people they first met while preparing to study abroad. We used these responses to create two variables, *Early Social Network Size* and *Later Social Network Size*, respectively. Temporally speaking, *Early Social Network Size* refers generally to the first few weeks after arrival, while *Later Social Network Size* refers to a time between 6 and 12 months after arrival. Because open responses produced a long-tail distribution, we log-transformed both network size variables to avoid biasing subsequent analyses with long-tail outliers. The log-transformed mean of *Early Social Network Size* was $\bar{X} = 0.92$ (SD = 0.35), and the mean of *Later Social Network Size* was $\bar{X} = 1.37$ (SD = 0.49). A paired samples *t*-test revealed that students' *Later Social Network Size* was significantly larger than *Early Social Network Size* ($t = -9.374$, $p < 0.001$, $df = 119$).

The goal of the social network diversity section was to obtain information on the diversity of one's social network. Using a 5-point-Likert scale, ranging from 1 (none) to 5 (nearly all), participants scored the amount of American actors in their social network. Because Americans represent diversity in Chinese students' social networks, a higher reported proportion of Americans constituted a higher score in social network diversity (Wang, 2002). The questions followed a similar format to the prior questions on network size, only instead of giving a raw number, respondents were asked to give the proportion of Americans (1 = none, 5 = nearly all) among those they had met since beginning to study in the US, and among the total number of people they regularly communicated with in the US. *Early Social Network Diversity* represented the proportion of new American connections made shortly after arrival in the U.S., and had a mean of 1.78 (SD = 1.02). *Later Social Network Diversity* represented the proportion of American connections a student had in the U.S. six to twelve months after arrival, and had a mean of 2.18 (SD = 1.04). A paired samples *t*-test revealed that students' *Later Social Network Diversity* was significantly greater than *Early Social Network Diversity* ($t = -4.000$, $p < 0.001$, $df = 119$).

The student adaptation section evaluated how positively a student believed he/she was adapting to life in the U.S. We used items from the *Student Adaptation to College Questionnaire* (SACQ) by Baker and Siryk (1989). All questions use a 5-point-Likert scale, ranging from 1 (not at all confident) to 5 (extremely confident), and asked the respondent to score 12 items that are indicative of positive adaptation. Scores were calculated for two dimensions of adaptation: *Social Adaptation* and *Academic Adaptation*. *Social Adaptation* was measured with five items which included prompts such as: make friends, become involved in social activities, get along with roommates, etc. ($\alpha = 0.82$). *Academic Adaptation* was measured with seven items which included prompts such as: perform well on exams, develop relationships with professors, attend class regularly, etc. ($\alpha = 0.88$). Overall, students reported slightly higher levels of *Academic Adaptation* ($\bar{X} = 3.53$ (SD = 0.76)) than *Social Adaptation* ($\bar{X} = 3.20$ (SD = 0.80)). An independent samples *t*-test confirmed the significance of this difference ($t = 5.818$, $p < 0.001$, $df = 119$).

### 3.3. Procedure

The survey was translated from English to Mandarin Chinese and administered via Survey Monkey. Data was collected in two rounds. Round one was collected from November 2013 to March 2014, and round two was collected from March 2015 to May 2015. Results from both samples were compared to ensure the distributions were not bimodal and therefore, could be combined for subsequent analyses. In each case, only Chinese international students who had arrived in the US within the past year were eligible to participate (i.e. different students were eligible for each round). All questions required at least partial answers in order to ensure there were few incomplete responses. Respondents were given the option the quit the survey at any time and were still able to enter their e-mail for the contest drawing. The purpose of the survey, as well as our academic affiliations, was disclosed prior to the start of the survey. Anonymity was assured and no personally identifiable data were collected. All procedures and materials were reviewed and approved by both of the authors' university Institutional Review Boards (IRBs) prior to survey administration.

## 4. Results

### 4.1. Path analysis model

We tested our hypotheses by conducting path analysis using the ***lavaan*** package in R (Rosseel, 2012) (Fig. 2) (Table 1).

### 4.2. Hypotheses tests

Hypothesis H1 stated that *SNSs Use* would be positively associated with *Social Network Size*, both (**a**) *earlier* and (**b**) *later* in America. We find support for H1**a**, but reject H1**b**. We also find support for inferred causality from *Early Social Network Size* to *Later Social Network Size*. These results suggest that Chinese students' SNSs use is positively associated with their social network size shortly after arriving in the US, but not with their social network size 6–12 months after arriving. Hypothesis H2 posited *SNSs Use* would be positively associated with *Social Network Diversity*, both (**a**) *earlier* and (**b**) *later* in America. We found support for H2**a**, but not for H2**b**, although there is support for the direct effect *Early Social Network Diversity* has

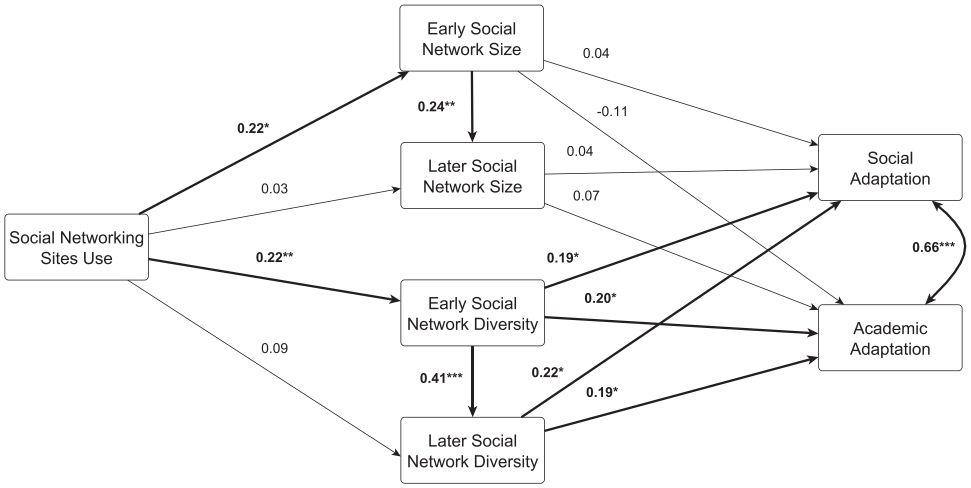


**Fig. 2.** Path Analysis Model of Chinese International Students SNSs Use and Adaptation.
(Standardized Solution; $N = 120$)
Note: $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

on *Later Social Network Diversity*. Similar to H1, these results highlight a positive association between SNSs use and social network diversity shortly after arriving in the US, but not 6–12 months later.

Hypothesis H3 stated early *Social Network Size* would be positively associated with (**a**) *Social Adaptation* and (**b**) *Academic Adaptation*. We found no support for either H3**a** or H3**b**. Hypothesis H4 stated that *Later Social Network Size* would be positively associated with (**a**) *Social Adaptation* and (**b**) *Academic Adaptation*. Similarly to hypothesis H3, we found no support for H4**a** or H4**b**. Taken together, these results suggest a non-existent relationship between the size of one's network and adaptation.

Hypothesis H5 stated that *Early Social Network Diversity* would be positively associated with (**a**) *Social Adaptation* and (**b**) *Academic Adaptation*. We found support for both H5**a** and H5**b**. Our final hypothesis H6 stated that *Later Social Network Diversity* would be positively associated with (**a**) *Social Adaptation* and (**b**) *Academic Adaptation*. We also found support for both of these hypotheses. For the covariance between *Social Adaptation* and *Academic Adaptation*, we find that both measures are strongly correlated. Results from these hypotheses indicate that network diversity, at any point in time, is a significant predictor of adaptation.

In sum, our results suggest there is a direct positive relationship between *SNSs Use* and *Early Social Network Size* and *Diversity* and while *Early Social Network Size* has a direct positive relationship with *Later Social Network Size,* it has no relationship with *Adaptation*. In terms of network diversity's influence on adaptation, our results provide evidence for a direct positive relationship between *Early Social Network Diversity* and *Later Social Network Diversity*, both of which have direct positive relationships with *Social* and *Academic Adaptation*.

**Table 1**
Unstandardized, Standardized, and Significance Levels for Model in Fig. 2 (Standard Errors in Parentheses; $N = 120$).

| Hypothesis | Parameter estimate | Unstandardized | Standardized |
|---|---|---|---|
| H1a | SNSs use → early network size | 0.15 (0.06) | 0.22* |
| H1b | SNSs use → later network size | 0.03 (0.09) | 0.03 |
| H2a | SNSs use → early network diversity | 0.46 (0.19) | 0.22** |
| H2b | SNSs use → later network diversity | 0.19 (0.18) | 0.09 |
| H3a | Early network size → social adaptation | 0.10 (0.20) | 0.04 |
| H3b | Early network size → academic adaptation | -0.25 (0.20) | −0.11 |
| H4a | Later network size → social adaptation | 0.06 (0.14) | 0.04 |
| H4b | Later network size → academic adaptation | 0.11 (0.14) | 0.07 |
| H5a | Early network diversity → social adaptation | 0.15 (0.07) | 0.19* |
| H5b | Early network diversity → academic adaptation | 0.15 (0.07) | 0.20* |
| H6a | Later network diversity → social adaptation | 0.17 (0.07) | 0.22* |
| H6b | Later network diversity → academic adaptation | 0.14 (0.07) | 0.19* |
| – | Early network diversity → later network diversity | 0.43 (0.09) | 0.41*** |
| – | Early network size → later network size | 0.34 (0.13) | 0.24** |
| – | Covariance of social and academic adaptation | 0.35 (0.06) | 0.66*** |

*Note:* $\chi^2$ (6) = 10.98, $p = .09$; CFI = .96; TLI = .87; RMSEA = .08; SRMR = .07.
*Note*: * p < 0.05, ** p < 0.01, *** p < 0.001.

## 5. Discussion

This study examined how using SNSs during study abroad preparations can influence the composition of international students' social networks once they begin studying abroad. Our results have highlighted the role SNSs can play in generating diverse social networks for Chinese students studying in the US, subsequently resulting in higher levels of social and academic adaptation for those students.

Our first major finding was that SNSs use has a significantly positive effect on the diversity of students' social networks shortly after arriving in the US (early on). While previous studies illustrated the role SNSs can play in connecting local and international students in college (McCarthy, 2010; Ryan et al., 2011; Wang, 2012); our findings expand upon this to show that SNSs can connect local and international students before they even step foot in a classroom.

Our second major finding was that SNSs use has a significantly positive effect on the size of students' social networks shortly after arriving in the US. This is consistent with prior literature relating to social media use in domestic situations, and lends support to the notion that frequent users of online social media are also quite social offline (Donath & boyd, 2004; Ellison et al., 2007; Ryan et al., 2011; Wellman et al., 2001). Even more compelling was the fact that these students' early social networks, as we measured them, were comprised entirely of people they had never met before. That is, SNS use was associated with social network growth, and not necessarily indicative of communication with pre-existing contacts in the US. This suggests that frequent users of social media may be able to appreciably change the size and composition of their social networks in ways that prove to be supportive as they transition to study abroad.

Somewhat surprising, however, was the lack of influence social network size had on adaptation, both socially and academically. While this contradicts the strength of weak ties theory by Granovetter (1983), it certainly provides support for the value of strong ties (Krackhardt, 1992). In other words, the quality and type of relationships international students establish is likely to be more important than the overall quantity. In sum, we find our results lend no support for previous studies that purported the benefits of large social networks for sojourners (Caligiuri & Lazarova, 2002; Church, 1982; Galchenko & van de Vijver, 2007; Kuo & Tsai, 1986; Wang & Kanungo, 2004; Wang, 2002).

Regarding social network diversity, students with more diverse networks earlier and later in time were found to have higher levels of social and academic adaptation than students with less diverse networks. These findings resonate with what many researchers have identified as a buffering effect of social support on acculturative stress, where social support is able to effectively reduce the impact of acculturative stressors and lead to better adaptation (Smith & Khawaja, 2011). In this case, it appears that the social support provided by host nationals helps reduce the prevalence of educational and sociocultural stressors, allowing students to pursue the integrative strategy of acculturation (Berry, 1997, 2005). This provides an interesting look into international Chinese students' acculturation process, as the majority of students openly expressed a desire to have American friends (i.e. integrating), but may find it difficult to make the first move in establishing such friendships. Overall, these findings are consistent with prior literature that encouraged the inclusion of host nationals in one's social network in order to increase social adaptation (Caligiuri & Lazarova, 2002; Chiu et al., 2009; Hendrickson et al., 2011; Kashima & Loh, 2006; Kim, 2001, 2005; Wang, 2002; Ye, 2006; Ying & Liese, 1990; Zhang & Goodson, 2011) and academic adaptation (Perrucci & Hu, 1995; Westwood & Barker, 1990; Williams & Johnson, 2011).

### 5.1. Implications

Our study suggests that social media use may be used to improve Chinese international students' adaptation. Currently, many universities do not provide sufficient programs or initiatives to assist international students with the difficult process of adapting to life in a new country (Hwang, Ming-Kuen, & Saing, 2011; Lin, 1998; Pedersen, 2010; Smith and Khawaja, 2011Vande Berg, 2007; Yan and Berliner, 2013). This may be because traditional programs such as pre-departure counseling and facilitated peer groups can be cumbersome and expensive to implement. Our results suggest that some of these same benefits may be facilitated by using social networking sites, so we propose that academic advisors assist Chinese students by encouraging them to use SNSs during study abroad preparations. In the specific case of Chinese students, because nearly all American SNSs are blocked in China, and we cannot ethically suggest activities that involve breaking the law, host universities should consider creating their own internal SNSs, specifically designed for the purpose of connecting American and international students.

Other studies have found peer mentor programs, where host nationals acted as ambassadors to incoming international students, to be effective in increasing the diversity of international students' social networks as well as increasing adaptation (Abe et al., 1998; Sakurai, McCall-Wolf, & Kashima, 2010). We suggest that universities in the U.S. implement similar programs, perhaps facilitated by social networking sites, to assist international students' in connecting with Americans.

### 5.2. Limitations and future work

Although this study provides important insights into how social networking sites may be used to improve outcomes for Chinese international students studying in the US, it is not without limitations. First, the results rely on accurate self-reports of social media use and social network composition at three points in time. Although these times are punctuate by salient events (namely, moving to the US and starting college), it is possible that students may misremember the nature of their social media use and social networks and/or recall slightly different points in time during their reporting. Although we

detected no anomalies in the data that would suggest particular biases related to the reported results, the limitations of a cross-sectional study design should be acknowledged.

Second, as mentioned earlier, the limitations imposed by strict censorship laws in China, which block nearly all American SNSs, make it difficult for many Chinese students to freely access SNSs of their choosing. This complicates our results because Chinese students who were able to access blocked SNSs needed to possess certain software and knowledge to circumvent the restrictive firewalls. Although these practices are fairly widespread among Chinese students, it does suggest the possibilities of spurious variables involving tech skill and/or risk-taking associated with both American SNS use and willingness to interact with new people. Finally, there are some inherent problems in studying social media, because social media is so dynamic and fast paced, popular social media forms today may be outdated tomorrow. Our study, therefore, is not intended to reflect any one specific SNS, but social media use in general. That is, it is not using *Facebook* or *Twitter* per se that provides the reported benefits, but social networking sites in general, including social networking sites that may become popular in the future. Ongoing studies examining new social networking sites should be continuously updated to verify the findings we present here.

Despite these limitations, we believe that the results of this study show great promise for the support of international students studying in the US. Social networking sites may provide an efficient and cost-effective way for international students to build large and diverse social networks that can support them as they adjust to the new social and academic demands of their host countries.

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