

THE IMPACT OF HOUSING STATUS ON
ACCULTURATIVE STRESS AND DEPRESSION
AMONG CHINESE AND INDIAN COLLEGE STUDENTS

by

KOMAL CHANDRA

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Sabrina Marie Chase, PhD

and approved by

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ABSTRACT OF THE DISSERTATION

The Impact of Housing Status on Acculturative Stress and Depression

Among Chinese And Indian College Students

By KOMAL CHANDRA

Dissertation Director:

Sabrina Marie Chase, PhD

This quantitative, non-experimental, study investigated the role of housing status on the relationship between acculturative stress and depression for Asian international college students. The research focused on students who originated from China and India.

Theoretically, country of origin is a factor in acculturative stress levels (Berry, 1997), yet most research on acculturative stress focused on Asian students as a whole rather than grouping them by subregions. Moreover, previous research has shown that there is a direct relationship between acculturative stress and depression (Tareke Gebregergis, 2018). There is strong evidence on housing influencing health and housing as a form of social support for university students. There is a gap in research on the role of housing status (living on campus or off campus) on the relationship between acculturative stress and depression. The current study addressed three questions: (1) Is there a difference in housing status, acculturative stress, and depression levels between Chinese and Indian international college students?; (2) What is the relationship between acculturative stress and depression for Chinese and Indian international college students?; and (3) Does housing status moderate the relationship between acculturative stress and depression for Chinese and Indian international college students? Mann-Whitney U, Chi-square

analysis, simple linear regression, multiple linear regression, and Hayes moderation analyses were conducted. Results indicated that there was a difference in acculturative stress levels between Chinese and Indian international students, with Chinese students having higher levels of acculturative stress. There was no statistical difference in depression scores or housing status between the two groups. There was a statistically significant relationship between acculturative stress and depression, with higher acculturative stress scores associated with higher depression scores. Multiple linear regression also showed that acculturative stress was a significant predictor of depression when controlling for both demographic and housing related factors. Housing did not moderate the relationship between acculturative stress and depression. The findings may inform universities on housing policy and environment for international students.

DEDICATION

This dissertation is dedicated to my family: my parents, Govind and Sandra Chandra, and my siblings, Natasha and Jaadu Chandra for their endless support. I also dedicate this work to all the international students and their sacrifices as they embarked on the journey of higher education in a new country.

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CHAPTER ONE: DISCUSSION OF THE PROBLEM

This quantitative, observational research study examined the practice of grouping Asian international students by continent rather than subregion when investigating acculturative stress; it also explored the role of housing as a potential moderator of acculturative stress and depression among international college students.

Introduction

The effect of globalization on education is reflected in the way that the United States has emerged as a prime choice for international college students pursuing higher education (UNESCO, 2015). A degree from an American university may expand occupational and life opportunities for many international students (Mazzarol & Soutar, 2002). The Institute of International Education (IIE) (2018) reported that during the 2017-2018 academic year, there were 891,330 international students enrolled in the United States, half of which came from China and India ((IIE), 2018).

Acculturation is the term given to the process of experiencing a new culture different from one's own (Berry & Kim, 1988; Graves, 1967; Redfield, Linton, & Herskovits, 1936). Starting a new life in an unfamiliar culture may come with many potential challenges for students studying abroad. Adjustment to a new culture and a new environment is considered an important psychosocial process which can affect an individual's performance and functioning (Poyrazli, Thukral, & Duru, 2010).

International students often struggle with stressors such as cultural differences, language barriers, lack of social support, financial concerns, and homesickness (Hansen, Shneyderman, McNamara, & Grace, 2018; Misra & Castillo, 2004; Sandhu & Asrabadi, 1994).

Acculturative stress refers to the combined physical, emotional, mental, and social impacts of the acculturation and adaptation process. Studies indicated that international college students have insufficient resources in areas of mentorship, transition advisement, health education, visa/legal guidance, and mental health outreach (Hansen et al., 2018; Tareke Gebregergis, 2018; Wu & Mak, 2012). In addition, lack of familiarity with the host culture, absence of social networks, exposure to new culture, linguistic differences, and cultural nuances can also contribute to acculturative stress (McClure, 2007). However, not all students experience similar levels of stress and individual differences preclude aggregating the diversity of experience.

Theoretically, a person's country of origin is a factor in acculturative stress levels (Berry, Kim, Minde, & Mok, 1987) yet most research on acculturative stress focused on Asian students as a whole continent rather than grouping them by one of the five subregions; Southeast Asia, South Asia, East Asia, Western Asia, and Central Asia (Agency, 2018). Previous research also indicated there are differences between the experiences of East and South Asian international students (L. Frey & G. Roysircar, 2006). By researching Asian international college students by subregion, we can better understand their acculturation experience and identify the best interventions to meet the needs of this population.

Though domestic and international students may face common stressors, their reactions and ability to cope with them may differ. Along with these common student stressors, international students also face stressors unique to the international student acculturation experience. Inability to cope with these acculturation stressors may lead to the experience of acculturative stress. Acculturative stress is associated with poor

mental health. Higher acculturative stress scores are predictive of greater depressive symptoms among international students (Constantine, Okazaki, & Utsey, 2004; Rice, Choi, Zhang, Morero, & Anderson, 2012). Still, there are factors that moderate the health effects of acculturative stress.

A moderator is a variable that affects the strength of the relationship between a dependent and independent variable (Baron & Kenny, 1986). It has been reported that social support moderates the relationship between acculturative stress and depression (Flannery Jr & Wieman, 1989; Lee, Koeske, & Sales, 2004; B. Yang & Clum, 1994). Furthermore, research indicated that college campus housing is a form of social support for students (Skahill, 2002). Thus, it is possible that housing may serve as a moderator of acculturative stress

Students spend a substantial amount of time in on-campus or off-campus housing and their living situation contributes to their overall university experience. Universities have claimed that living on campus provides more opportunities for social support, community involvement, and academic achievement as compared to living off campus (López Turley & Wodtke, 2010; Pascarella, 1993; Pike, 2002). The study site for the current study, The New Jersey Institute of Technology (NJIT), hosts 1,400 international students from over 70 different countries ("NJIT Key Facts,"). The majority of these international students live off campus and commute rather than living on campus in university residential housing.

Although several studies have examined levels of acculturative stress and depression among students and touched upon the role of social support in moderating this stress, few have explored the impact of housing or living environments on acculturative

stress. The purpose of this study was to investigate whether there was a difference in the acculturative stress and depression levels of Chinese and Indian international students and assessed whether housing status (living on or off campus) moderated the relationship between acculturative stress and depression.

Research Questions

- 1) Is there a difference in acculturative stress, depression and housing status between international college students from China and India?
- 2) What is the relationship between acculturative stress and depression for Chinese and Indian international college students?
- 3) Does housing status (living on-campus or off-campus) moderate the relationship between acculturative stress and depression for Chinese and Indian international college students?

Hypotheses

1. There is a difference in acculturative stress and depression levels between Chinese and Indian international students. There is not a significant difference between housing status between Chinese and Indian international college students.
2. Higher acculturative stress scores associate with higher depression scores for both Chinese and Indian international college students.
3. Housing status moderates the relationship between acculturative stress and depression for Chinese and Indian international college students.

Researcher's Relationship to the Research Problem

The researcher has ten years of experience working as a student affairs professional; first as a Resident Assistant, then as a Graduate Residence Director, and finally as a Residence Coordinator. In her current role in the Residence Life department, the researcher oversees a residential building of almost 600 resident upperclassmen students at an urban STEM institution.

This institution is host to 1,400 international college students, many of whom live off campus with other international students. The Residence Life department employs the most international students of any NJIT department, perhaps because it does not require students to have federal work study funding, unlike most other on-campus positions. The Residence Life department has several positions available for students such as desk attendants, office assistants, shopping van drivers, and summer conference assistants.

The researcher interacted with several international students during her five years at NJIT as a professor, supervisor, and coordinator. She was moved by the experiences and stories of international students at NJIT. Several students explained that they lived with six-to-eight other international students in a two-bedroom apartment in a neighboring city. This presented a great hardship, as the university shuttle does not start till afternoon, so those with morning classes or work either had to pay for taxi services or walk to campus.

Moreover, several students explained that there was not much guidance during the process of transitioning to life in the United States and life on campus. Though they lived with others, they sometimes felt isolated and depressed because of their struggles as international students. Some of the international students who worked for Residence Life

shared that if they were to start again from the beginning, they would have lived on campus, now that they knew about the benefits of living on campus through Residence Life. Despite these anecdotes, the researcher was not able to find studies about the relationship between living on campus and acculturative stress and depression among international students, and thus emerged the topic of this study.

CHAPTER TWO: CONCEPTUAL FRAMEWORK

This study combined the theoretical framework of Berry's acculturative stress model (Berry et al., 1987) with Abraham Maslow's theory of a hierarchy of needs (Maslow, 1970) to create a conceptual framework that incorporated acculturative stress, depression, and housing into a moderator model.

Figure 1

Berry's Theoretical Concept of Acculturation and Stress. Source: (Berry et al., 1987)

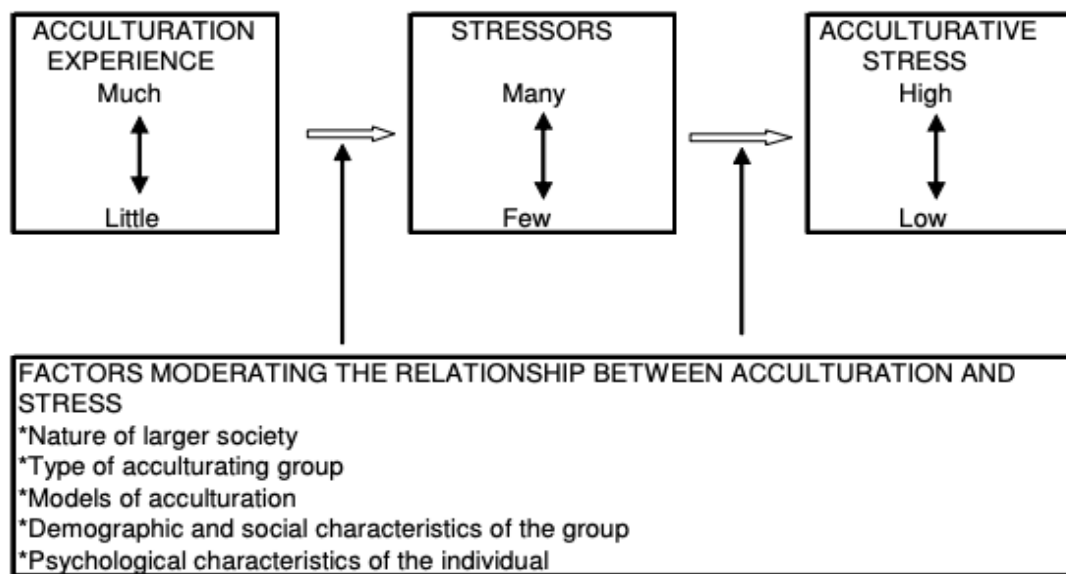


Figure 1 depicts the acculturation stress model by Berry and his colleagues (1987). This model begins with the acculturation experience, which can vary from more acculturation experience to less acculturation experience. The acculturation experience could be illustrated with migrant communities, native settlements, or sojourners like international students in a foreign country. The second section shows that the individual can encounter different stressors, ranging from more to less, based on varying degrees of the acculturation experience. The last section illustrates how an individual may experience high to low levels of acculturative stress based on acculturation experience

and stressors. The researchers claimed that the three sections of the model were probabilistic rather than deterministic, and that there were factors which moderated the relationship between acculturation and stress (Berry et al., 1987). The factors which moderate the relationship between acculturative stress and depression in this model include the nature of the larger society, the type of acculturating group, modes of acculturation, demographic and social characteristics of the individual, and psychological characteristics of the individual (Berry et al., 1987).

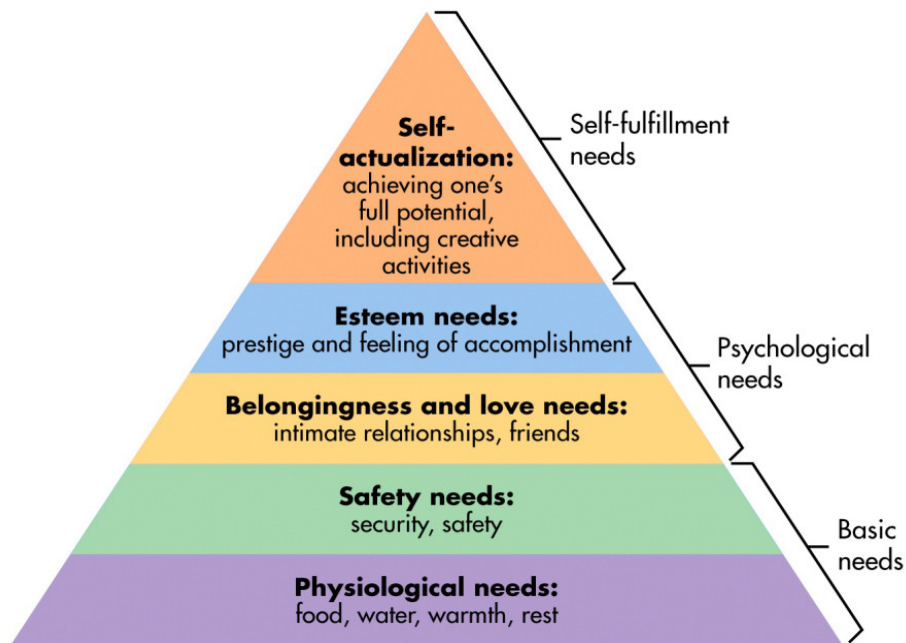
The third moderating factor, mode of acculturation, is crucial for the acculturation experience of international students. It suggested how an individual maintains their home identity while participating in the host society. According to Berry, the four modes of acculturation are marginalization, separation, assimilation, and integration (Berry et al., 1987). Marginalization occurs when the individual does not have a relationship to either the host or home culture. Separation occurs when connection to the home culture is maintained without valuing the host culture. Conversely, assimilation occurs when the individual values the host culture and does not maintain connections to their home culture. Lastly, integration occurs when the individual maintains connections to both the host and home culture.

Campus housing is an environment which weaves together people from different backgrounds. The goal of on-campus residential housing is to foster an integrated community for its students. International students are a unique population for residential housing because of the potential differences between their home and host culture. The ideal mode of acculturation for an international student is integration, because this allows the student to maintain connections to both the culture of their originating country as well

as to the culture of their current host environment. An integrated community creates an opportunity for cross-cultural exchange in which international students can maintain and share their cultural experience and adapt to or learn about the cultural experiences of others. Further, living on campus may decrease stressors such as commuting demands, low levels of social support, and lost opportunities for integration into the host society, resulting in decreased acculturative stress.

Figure 2

Maslow's Theory of Hierarchical Needs (McLeod, 2018)



Maslow (1970) theorized that all humans are striving to reach their full potential, which he called “self-actualization” – the top pillar of the hierarchy of needs. Maslow’s theory claimed that humans are motivated by unsatisfied needs, and that those needs lower on the hierarchy must be satisfied first in order to enable humans to meet their higher needs.

As seen in Figure 2, Maslow's hierarchy has five sections stacked into a pyramidal form: 1) physiological needs (food, water, housing, sex, oxygen), 2) safety needs (security, protection from physical and emotional harm), 3) love needs (belonging, acceptance, friendship, acceptance), 4) esteem needs (autonomy, status, achievement, self-respect, recognition), and 5) self-fulfillment needs (in order to self-actualize, or fulfill one's potential). Maslow (1970) argued that these needs are basic to everyone, and no high achieving goals can be met unless the basic needs are met first.

Housing would be categorized as a basic need experienced by an individual according to Maslow's model. Based on this model, international students would not be able to reach "self-actualization" without proper housing options. Living on or off campus can provide the basic shelter, security, and safety associated with housing, but living on campus may provide more of a sense of belonging and esteem, with its community integration methods and the support of Residence Life. It is possible that the absence of this housing-related integrative component may stunt the self-actualization potential of some international students. This could also exacerbate acculturative stress and subsequently, depression levels, following Berry's (1987) acculturative stress model. Berry's model, when combined with Maslow's theory, offers a theoretical framework through which to better understand the importance of campus housing for international students.

The Housing Moderator Model for International Students

The theories of Maslow (1970) and Berry (1987) can be integrated to create a model using housing as a moderator for the relationship between acculturative stress and depression of international students. Acculturative stress studies have suggested a

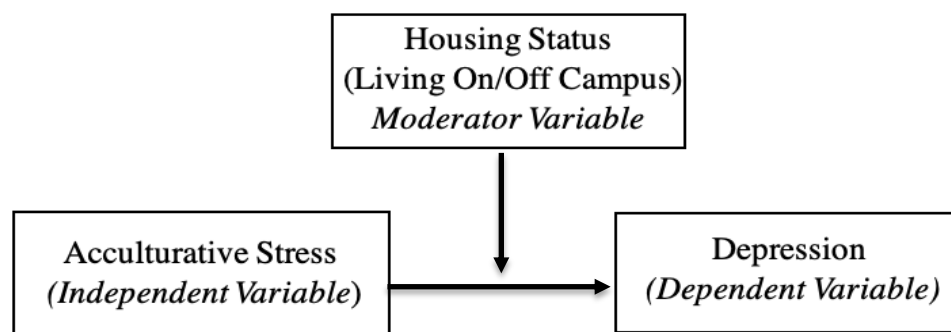
positive correlation between acculturative stress and depression for international students. This means that as acculturative stress scores increase, depression scores also increase proportionately.

Berry's (1987) model illustrated that acculturative stress levels can vary based upon moderating factors. The goal is to find out which factors can moderate acculturative and depression levels for this population.

Maslow's (1970) theory depicted housing as a crucial factor in the hierarchy of needs. Studies have identified housing as a form of social support among college students (Skahill, 2002). Though there are no studies on housing as a moderator for acculturative stress and depression, other studies have indicated that social support served as a moderator in this relationship (Flannery Jr & Wieman, 1989; Lee et al., 2004; B. Yang & Clum, 1994). Therefore, by integrating the theories of Berry (1987) and Maslow (1970) we tested if housing moderated the relationship between acculturative stress and depression.

Figure 3

Housing Moderator Model for International Students



The current study combined these factors to create a Housing Moderator Model. This model, as depicted in Figure 3, shows acculturative stress as the independent variable, depression as the dependent variable, and housing status as the moderating variable. In a moderator model, the moderating variable affects the strength and/or direction of the relationship between a dependent and independent variable (Fairchild & MacKinnon, 2009). Moderators can affect the relationship between the independent and dependent variable by enhancing, reducing, or changing the influence of the independent variable (Fairchild & MacKinnon, 2009).

In this model, there is a relationship between acculturative stress and depression. Through past research we know that higher acculturative stress is directly related to higher depression levels (Constantine et al., 2004; Rice et al., 2012; Tareke Gebregergis, 2018; Tummala-Narra, Alegria, & Chen, 2012; Walker, Wingate, Obasi, & Joiner Jr, 2008). This model theorized that housing status of an international student, whether they live on or off campus, affected the relationship between acculturative stress and depression. The hypothesis proposed is that living on campus may reduce acculturative stress and therefore, depression levels, because campus housing is a form of social support.

CHAPTER THREE: REVIEW OF THE LITERATURE

This chapter reviewed the literature related to acculturation differences among Asian students as well as acculturative stress, depression, social support, and campus housing as experienced by Asian international college students. The review began with an overview of acculturation, Asian international students, and acculturative differences between individuals of different Asian subregions. The next section focused on acculturative stress, sources of stress for international students, the relationship between acculturative stress and depression, and social support as a moderator of that relationship. Finally, the last section identified campus housing/living on campus as a form of social support.

Acculturation

The earliest definition of acculturation by Redfield, Linton, and Herskovits (1936, p.149) was defined as a, “phenomenon which results when groups of individuals having different cultures come into continuous firsthand contact with subsequent changes in the original cultural patterns of either or both groups.” This concept has since been extensively researched by anthropologists, then sociologists and psychologists. However, in the 1950s a systematic investigation was conducted by the Social Science Research Council in order to develop a more holistic definition of acculturation. The Council conceptualized acculturation as an effect of “direct cultural transmission between two or more cultural systems” influenced by ecological and demographic factors (SSRC, 1954).

These definitions, however, focused on acculturation as a group phenomenon rather than an individual experience. As a result, Theodore Graves (1967) proposed that there were two levels of acculturation: the first, at the group level, and second, at the

individual level. Group level acculturation is a process in which there are changes in the natives, in the host/s, or in both cultures' members, whereas individual acculturation is defined as psychological change within an individual as an outcome of interaction with the host culture (Graves, 1967). Further studies in the field of acculturation examined the individual behavioral components of adapting to a host culture. Berry (2003) redefined acculturation at the individual rather than group level. At the individual level, acculturation was defined as a process in which continuous contact from different cultures creates individual psychological and behavioral changes (Berry, 2003).

Asian International Students

The top three countries of origin for international students living in the United States are China (363,341), India (196,271), and South Korea (54, 555) (IIE, 2018). Most research on acculturative stress among Asian international students grouped all of Asia into one large region, however, there is no such thing as a Pan-Asian culture. Asia is the largest and most populated of all the continents. It has 48 countries and is divided into 5 different regions: East, Central, South, South East, and Western Asia (Agency, 2018). The top two countries of origin for international students studying in the United States are from the East and South Asian regions. East Asia includes China, Korea, Japan, Taiwan, and Mongolia, whereas South Asia is made up of Afghanistan, Pakistan, India, Bangladesh, Nepal, Bhutan, Sri Lanka, and Maldives (Agency, 2018). This study focused on India from South Asia, and on China from East Asia, as they are the top two countries of origin for international college students who come to the United States (IIE, 2018). China and India are culturally different in their history and language, religious ideologies, family structures, and attitudes towards education. The next section

elaborated on these differences and provided reasoning for why these countries, and their respective regions, should be studied separately in the field of acculturation research.

History and Language. The written history of China dates back to the Shang Dynasty (c 1600-1040 BC) (Eberhard, 2013). The imperial era lasted from 221 BC to 1912 AD, at which time the Republic of China was established. It lasted from 1912 until 1949. Modern day China (the People's Republic of China) was established in 1949 (Eberhard, 2013). China is comprised of several provinces, municipalities, autonomous and special administrative regions, including Hong Kong. Mandarin is the official language of China, Cantonese is the official language of Hong Kong, and there are several regional languages spoken throughout China (Liu & Tao, 2012).

The Indian subcontinent fell under British colonial rule under the auspices of the British East India Company from the late 18th to mid-19th century. It gained its independence in 1947 (Bose & Jalal, 2002). During that time, English was the official language of administration and higher educations. After gaining its independence, India designated Hindi as its official language, along with English, which is used primarily for official purposes (Bose & Jalal, 2002). According to Ethnologue, India is home to 461 languages (Lewis & Gary, 2015). The constitution of India recognizes 22 languages, as the official languages of India include Bengali, Marathi, Telegu, Tamil, Urdu, Gujarati, Kannada, Malayalam, Odia, Punjabi, and Maithili (Bose & Jalal, 2002).

The different historical backgrounds between China and India have influenced these countries in unique and different ways. China has maintained a steady governance, whereas the effect of British colonization still impacts Indian culture. Furthermore, the

languages between the countries are so unlike that the experience of Chinese and Indian international students adapting to an English-speaking university may also be different.

Religion. According to the 2011 census of India, 79.8% of India practiced Hinduism, 14.2% practiced Islam, and the remaining 6% practiced Christianity, Sikhism, Buddhism, Jainism, and other indigenous ethnically bound faiths (General, 2011).

Religion is a very important aspect of Indian culture. Many political parties and policies have been influenced by different religious beliefs in India. Murder in the name of ‘religious honor’ is rampant and a growing concern for new age India. Examples of religion based criminal incidents include women being harassed for wearing revealing clothes or being too independent, consumption of beef as cows are considered sacred, and unacceptance of inter caste/ inter religious love marriages (Baxi, Rai, & Ali, 2006; Deol, 2014; Nandy, 2002).

Conversely, China is an atheist country, however, many Chinese citizens identify as Buddhist, Taoist, Confucian, or adhere to traditional and regional Chinese practices (F. Yang, 2018). Chinese culture being primarily atheist does not have the same religious impacts as religion has in India.

Family Structure. Family is very important to Chinese culture and is considered a positive and necessary institution (Jankowiak & Moore, 2016). Chinese family structure is patrilineal and patriarchal and therefore power and loyalty belonged to the father’s kin (Jankowiak & Moore, 2016). Traditional Chinese culture follows a virilocal marriage, when the bride leaves her birth family to join her husband’s family (Jankowiak & Moore, 2016). Also, family elders have authority over younger members of the family (Jankowiak & Moore, 2016). Per Davis and Harrel (1993), the ideal family is

multigenerational and there is a “parental willingness to sacrifice for the sake of their dependents and to make judicious investments of their resources for the long-term advancement of the family status” (Davis & Harrell, 1993, p.11). A study in 2006 investigated how family and gender values changed over time. The researchers found that respect for elders and ancestors remained a traditional value still followed and that patrilineal and gender values were less followed traditions overtime (Hu & Scott, 2016). Indian family structure has similar values to Chinese culture regarding importance of elders (Uberoi, 2005). Traditionally, Indian families lived with several generations (children, parents, grandparents) in the same household (Uberoi, 2005). This concept of the Indian joint family is the product of British colonial rule (Uberoi, 2005). Recently, there has been a change in family structure from families living in a joint household to nuclear structures (Mookerjee, 2017). Married couples would traditionally live with their in-laws, but now there is a shift towards married couples living on their own. Nevertheless, family structure plays a central role in the lives of Indians (Sonawat, 2001). As India continues to modernize, families in India undergo changes such as increasing divorce and separation rates, domestic violence, inter-generational conflicts, social problems of drug abuse, and juvenile delinquency (Sonawat, 2001).

Attitude Towards Education. China runs the largest education system in the world with the total enrollment of students in regular and adult schools exceeding 320 million (Wang, 2010). However, the overall level of educational attainment in china is much lower than that of Western developed countries (Wang, 2010). China’s educational problems are attributed to insufficient educational funds, poor school conditions, and poor treatment of teachers (Wang, 2010).

Universalization of primary education has been an important agenda for Indian politics (Majumdar & Mooij, 2012). However, there are social inequalities within the educational system in India preventing educational attainment (Majumdar & Mooij, 2012). Private schooling, which is more expensive, is seen as more elite and may result in more options for advancement for a student than public schooling (Kingdon, 2007). Higher education in India, similar to China, has suffered from several systemic deficiencies (Agarwal, 2006). The Indian education system provides graduates that are unemployable either due to lack of jobs or skills (Agarwal, 2006). Education has also played a role on social mobility and social separation in India. Acquiring education may offer social advantage to people and may lead to new avenues of social mobility for a country with much social inequality (Froerer, 2011).

Summary. If an individual were to move from China to India or vice versa they may experience a level of culture shock! Since there are differences between Chinese and Indian culture, there may also be differences between lived acculturation experience and therefore acculturative stress as well. It is evident that China and India are culturally distinct and those from the two countries cannot be grouped together. Therefore, when studying the acculturative stress levels of Asian international students, it may be beneficial to focus on country of origin rather than on the continent of Asia as a whole. In summary, China and India are too culturally distinct to be grouped together in acculturation research.

Acculturative Differences between Asian Subregion

Researchers have argued that there is no Pan-Asia, nor are there “Asian” shared values, as the different regions are diverse and unique (Acharya, 2010; S. Y. Kim, 2010).

However, past research on Asian international students has either excluded South Asian students or has conflated all Asian regions together when studying acculturation.

One study that focused on the impact of social and linguistic factors on acculturative stress among Asian immigrants did not include any representation from the South Asian region of Asia (Lueck & Wilson, 2010). Of the 2095 Asians recruited for the study, none were from India, Pakistan, Sri Lanka, or other South Asian countries. Interviews were conducted with computer assisted interviewing software in Mandarin, Cantonese, Tagalog, Vietnamese, and English – thus, the researchers excluded students from South Asia in their study (Lueck & Wilson, 2010). However, East Asian students and South Asian students can be very different.

International students from different areas have been found to vary in their resource-seeking habits and acculturative stress responses (Rice et al., 2012). Frey and Roysircar (2006) determined that South Asian students were more likely to utilize help seeking resources than East Asian students. Another study on perfectionism, acculturative stress, and depression among international students found that self-critical perfectionism was positively associated with depression and that the effects were stronger for Asian Indian students than for Asian Chinese students (Rice et al., 2012).

In summary, past research on Asian international students lacked representation from all 5 regions of Asia and yet presented itself as research for all Asia. Additionally, past studies have illustrated that discrepancies existed in the way that individuals in different countries and/or regions of Asia responded to acculturative stress, including resource seeking behavior, self-critical perfectionism, and depression.

Acculturative Stress

Berry, Kim, Minde, and Mok (1987) introduced the concept of “acculturative stress” as an alternative to the term “culture shock”, defined by Oberg (1960).

Acculturative stress is defined as “one kind of stress, that in which the stressors are identified as having their source in the process of acculturation; in addition, there is often a particular set of stress behaviors which occurs during acculturation, such as lowered mental health status (specifically confusion, anxiety, depression), feelings of marginality and alienation, heightened psychosomatic symptom level, and identity confusion” (Berry et al., 1987, p. 492). Berry et al. (1987) argued that the relationship between acculturation and acculturative stress may be unavoidable, and individual characteristics may be a factor.

Researchers have identified instruments to measure the acculturative stress levels of international college students. The two main instruments used for this purpose are the Social, Attitudinal, Familial, and Environmental (SAFE) Acculturation Stress Scale (Fuentes & Westbrook, 1996) and the Acculturative Stress Scale for International Students (ASSIS) (Sandhu & Asrabadi, 1994). The SAFE scale has been used in several studies of migrants and children (Chavez, Moran, Reid, & Lopez, 1997; Hovey & Psychology, 2000; Mena, Padilla, & Maldonado, 1987), while studies that focused on international students utilized the ASSIS (Chavajay & Skowronek, 2008; Constantine, Okazaki, & Utsey, 2004; Vergara, Smith, Keele, & Sciences, 2010).

Sources of Stress for International Students

Some researchers characterized international students as “sojourners”, or those who temporarily reside in a foreign location for education or occupation (Brein & David,

1971a). According to Berry et al. (1987), international students had temporary contact with the host culture, and less permanent social support during their time of study. Thus, they experienced more mental health problems than those who permanently settled in the host culture, like immigrants and refugees (Berry et al., 1987). These researchers indicated that significant sources of stress for international students included academic stress, finances, language proficiency, homesickness, political climate, and lack of social support (Berry et al., 1987). Each of these will be considered below.

Academic Stress. Academic stress occurs when academic demands exceed the resources available to an individual, resulting in mental and emotional pressure, tension, and stress (Wilks, 2008). University students are exposed to a different environment than high school students. They encounter new educational concepts, unique social settings, and a greater workload despite spending less time in class compared to high school. Academic stress also includes the mental distress associated with academic failure, including the possibility or anticipation of failure (Verma & Gupta, 1990). One study found that the greatest sources of academic stress included preparing for and taking exams, grade competition, and the vast amount of content to be mastered in a small amount of time (Abouserie, 1994). Academic stress of this kind has been found to create more concerns for international than domestic students (Burns, 1991).

Finances. Financial concerns are reported to present a significant challenge for international students. The majority of international students pay for their education and must prove that they can fiscally support themselves with personal or familial funds ((IIE), 2018). However, what students report may not actually be an accurate representation of their financial stability. Families may take out loans, or take out just

enough to study abroad, covering only the bare necessities. Most on campus jobs are funded through federal work study opportunities, and international students are ineligible for federal work study funding. Many international students opt for off campus housing and dining options to save on costs. However, university policy may not always offer those options. In addition, many students travel back to their home countries for surgeries, dental work and doctor visits as medical care is cheaper for them there than the US.

Language Proficiency. Insufficient command of the host language is a stressor requiring significant adjustment in a new culture (Smiljanic, 2017; Yeh & Inose, 2003). Most universities require international students to pass the TOEFL (Test of English as a Foreign Language), a standardized exam that measures English language ability. Though international students may pass the TOEFL, in reality, English is often spoken faster than is comfortable for new speakers. In practice, languages are filled with euphemisms and slang endemic to the host location. Often international student reveal that they can read and comprehend class material, but some jokes go over their head. For example, one international student shared that the class was asked to volunteer for presentations, and someone said “nose goes” indicating that the last individual to put their finger on their nose would have to go first. The international student explained that they had no idea why everyone’s finger was on their nose! Furthermore, a study on Asian international students revealed that a lack of adequate language skills may cause low self-esteem and lead to anxiety and depression (Lin & Yi, 1997).

Homesickness, Perceived Hatred, Guilt, and Fear. International students often experience homesickness while living away from their home culture in a foreign host

country (Sandhu & Asrabadi, 1994). It can be difficult to practice the same customs and traditions in a new setting. Cuisine, culture, and slang may be different and unique, creating an environment that leaves students feeling like they do not fit in. Hatred, fear, and guilt are other sources of stress for international students (Sandhu & Asrabadi, 1994). International students may perceive a feeling of hatred from the host culture, leading to feelings of discrimination and fear for international students. Guilty feelings may surface as they fear they are betraying their own culture or enjoying opportunities which others do not have (Sandhu & Asrabadi, 1994). All of these factors may increase levels of acculturative stress experienced by international college students.

Terrorism/Political Climate. The educational and life outcomes of international students are impacted by the sociocultural and political events unfolding in their host countries. According to the Institute of International Education, international student enrollment remained steady or increased from the 1980s until 2002-2007, when it declined about 2% ((IIE), 2018). The decline may have been a result of the impact of the September 11, 2001 terrorist attacks creating an unsafe environment for international students, yet the United States has remained the primary location for international study worldwide ((IIE), 2018). Since 2006, there has been a steady increase in international enrollment from about 3% to 10%, but the 2017-2018 year shows an increase of only 1.5% ((IIE), 2018). This may be attributed to the rise in xenophobia (attitudinal, affective, and behavioral prejudice toward immigrants) (Yakushko, 2009), after the 2016 presidential elections (Rose-Redwood & Rose-Redwood, 2017). International students have reported to the researcher that the United States is becoming an unwelcoming place in which to study abroad with the recent election of Donald Trump. In January 2017,

United States President Trump delivered an executive order travel ban prohibiting the entry of citizens from seven Muslim majority countries (Rose-Redwood & Rose-Redwood, 2017). This ban creates the perception that people originating from Muslim majority countries may be a threat to the United States.

Lack of Social Support. Social support is defined as psychological aid provided to an individual in stress (Crockett et al., 2007). It involves a network of family, friends, community, and resources one can turn to in time of need (Cohen & Wills, 1985). For international students, social support includes assistance with solving practical problems, providing living arrangements, and aid with academic/cultural transition (Masgoret & Ward, 2006). Examples of social support services for international students include orientation programs, peer mentorship, programs promoting intercultural connections, health and academic counseling (Jenkins & Galloway, 2009).

Perceived social support is inversely related to stress-induced mental health concerns (Brown, Alpert, Lent, Hunt, & Brady, 1988). When studying abroad, international students may experience weakening social support networks which may affect acculturative stress levels (Bai, 2016; Sandhu & Asrabadi, 1994). Social support is an influential coping resource during cultural transition and may aid students in adaptation (Arthur, 2001; Berry, 1997). International students who were satisfied with their social support networks experienced less acculturative stress than those who were not (Yeh & Inose, 2003). Moreover, Ye (2006) reported that students who were more satisfied with their interpersonal support networks reported less perceived discrimination, less perceived hatred and fewer negative feelings caused by change than those who were not satisfied with support networks (Ye, 2006).

Acculturative Stress and Depression

As stress accrues, the ability to cope or readjust may decrease and deplete physical or psychological resources (Misra & Castillo, 2004). Moreover, with this lack of ability to cope and lessening of resources there is increased probability of physical illness or psychological distress (Misra & Castillo, 2004). Previous research suggested high rates of psychological distress, especially depression, among university students all over the world (Nerdrum, Rustøen, & Rønnestad, 2006; Ovuga, Boardman, & Wasserman, 2006).

Jieru Bai (2016) utilized the Acculturative Stress Scale for International Students (ASSIS) (Sandhu & Asrabadi, 1994) to study the acculturative stress levels of 1,355 international students at a mid-sized U.S. Midwestern University. Results showed that almost one in four (22.4%) international students scored over 109 on the ASSIS (Bai, 2016). ASSIS scores of 109 were then attributed as an alert line for counseling or psychological intervention (Bai, 2016). Smiljanic (2017) found a correlational relationship between the number of depressive symptoms and the level of acculturative stress.

Further studies conducted in multiple regions of the U.S. and internationally yielded consistent findings; that is, higher acculturative stress scores are predictive of greater depressive symptoms among international students (Constantine et al., 2004; Rice et al., 2012; Tareke Gebregergis, 2018; Tummala-Narra et al., 2012; Walker et al., 2008). Past research strongly suggested that higher levels of acculturative stress are associated with higher levels of depression

Social Support as a Moderator of Acculturative Stress and Depression

Social support and integration have been found to reduce the negative effects of stressful life events (Aldwin & Greenberger, 1987; Sasao & Chun, 1994) including the acculturation process (Safdar, Lay, & Struthers, 2003). Studies on acculturative stress indicated that perceived support from the university greatly impacted individuals' acculturative stress levels (Bai, 2016; L. L. Frey & G. Roysircar, 2006). Research has established that social support moderates the relationship between acculturative stress and depression. One study of Korean immigrant teens revealed that (1) acculturative stress was strongly correlated with mental health symptoms, and (2) social support moderated and buffered the effect of stress on symptoms (Lee et al., 2004). This study listed a small convenience sample of 74 participants as a limitation. The small sample size yielded lower external validity, minimizing the universal applicability to the general population (Lee et al., 2004). Further research also supported the claim that social support reduced the level of acculturative stress for international college students (Sullivan & Kashubeck-West, 2015; Thomas & Baek Choi, 2006; Tummala-Narra et al., 2012; Ye, 2006).

Campus Housing

The majority of college students either opt to or are required to live in student housing during their first year of housing. Typically, first year student housing involves sharing a room with another college student, and usually these are students' first experience of sharing a room (Sanford & Rowatt, 2004). Some universities attempt to match roommates based on similar responses to housing questionnaires rating preferences around noise levels, cleanliness, and extracurricular activities (McEwan & Soderberg, 2006). A reason for this is to potentially reduce stressors of having roommates with

different habits as transitioning to university life is already a stressful experience.

Students have different ways of dealing with stress. Many college students seek social support from their university environment and need assurance that others are willing to talk and listen (Chao, 2012). Campus housing provides an environment of social support with its community focused design and trained residence life staff.

There are several different types of residence hall styles. Some residence halls are single gender (male or female specific) while the majority are now co-ed residence halls. A traditional residence hall includes a communal bathroom area in the middle of the floor in contrast to a suite/apartment style residence hall with a bathroom built next to the shared living space of about 2-8 students (Dober, 1996). Apartment style residence halls are typically for upperclassmen or graduate students. These have a kitchen area and living room space with students in single or shared rooms.

Higher education professionals prefer to utilize the term “residence hall” rather than “dorm/dormitory” because the housing experience offers more than just a place to sleep. Residence halls have evolved over the years to include trained coordinators and student staff (known as resident assistants) who create inclusive communities through programming initiatives and student interactions.

Residence Life staff are usually the first line of defense for emergency situations and they are trained in emergency response protocols. Resident Assistants arrive approximately two weeks prior to the beginning of both the Fall and Spring semesters for training. This training includes sessions on diversity, customer service, programming, and community building. The staff is also trained in institutional specific protocols for

responding to sexual assault, drug violations, fire, suicidal ideations, student death, and other emergency situations in which they cooperate with university staff and police.

Campus Housing as a Form of Social Support

Social support comes from multiple sources, and different sources may provide different levels and types of support (Procidano & Heller, 1983). Researchers have established a relationship between college student housing and social support (Hirsch, 1999; Mallinckrodt & Leong, 1992). Moreover, transfer student studies have indicated that living on campus provides a supportive living environment and successful integration through social connections (Utter & DeAngelo, 2015). Thus, social support has been identified as a moderator of acculturative stress.

Skahill, (2002) examined the role of social support networks in promoting student persistence among residential and commuter students at an urban university. Results indicated that commuter students are less likely to persist in their college studies compared to students residing in student housing, and highlighted the importance of campus housing in creating a socially connected academic community that aids in both learning and persistence (Skahill, 2002).

Shudde (2011) studied the causal effect of campus residency on student retention. Results demonstrated that students living on campus gained an advantage of social support, resources, and campus community integration compared to their counterparts who lived off campus (Schudde, 2011). The study suggested that this advantage may be due to on campus residency facilitating increased social support through greater interaction with peers who experience similar stressors (Schudde, 2011).

Berry et al. (1997) and his colleagues also reported social support as a defensive factor against acculturative stress. Yeh and Inose (2003) discovered that social connectedness and satisfaction with social support contributed to 18.3% of the total variance in the of acculturative stress of international students, while Beiter et al. (2015) found that students living off campus were more stressed, anxious, and depressed than students living on campus.

Moreover, another study discovered that living in a residence hall is associated with fewer mental health problems compared with living off campus (Eisenberg, Gollust, Golberstein, & Hefner, 2007). There have been studies indicating the mediating and moderating effects of social support between acculturative stress and mental health symptoms (M. T. Kim, Han, Shin, Kim, & Lee, 2005). Similarly, the current study investigated whether housing as a form of social support moderated the relationship between acculturative stress and depression.

There is very little, if any, research regarding campus housing as a moderator of stress and mental health. Yet, it is vital that universities continually evaluate the mental health of their students and tailor treatment and interventional programs to specifically target the needs of international students. Universities need to study the effects of housing on levels of acculturative stress.

Summary and Deficiencies in Previous Literature

In summary, research on the acculturation of international students identified that there are important differences between the cultural experiences and responses of students originating from different subregions of Asia. However, several studies that examined the acculturative stress experience focused solely on the East Asian experience.

Furthermore, other studies indicated different acculturation experiences between East and South Asian international students (Frey & Roysircar, 2006). The gap in the literature lies in comparing East and South Asian acculturative stress levels.

This literature review has also established a relationship between higher acculturative stress levels and higher levels of depression (Tareke-Gebregergis, 2018) and underscored that social support may act as a moderator in that relationship (Lee et al., 2004). There is also evidence that living on campus (or in campus housing) offers a form of social support for students (Hirsch, 1999; Mallinckrodt & Leong, 1992). There is no research, however, investigating campus housing as a potential moderator in the relationship between acculturative stress and depression for international college students.

Significance of Study

This study compared the experiences of students from China and India, as half of the international students studying in the U.S. originate from China and India. The majority of current research on Asian international college students focused on Eastern Asian populations as an aggregate, but there are five distinct regions within the continent of Asia. Each region is comprised of a several different ethnic groups and cultures. There are important potential differences in both culture and acculturative stress levels for different regions of Asia. This study filled a gap by comparing the acculturative stress levels of students from China and India, as half of the international students studying in the U.S. originate from these two countries.

The current study aimed to lay the groundwork for more targeted interventions that can be employed with cultural specificity in order to reduce acculturative stress in

these two populations. As results indicate that region of origin is a factor in acculturative stress levels, we can create specifically targeted interventions to lessen the effects of acculturative stress or create more successful interventions to prevent stress inducing situations.

Furthermore, researchers who have studied the psychosocial wellbeing of international college students recognized that there are environmental and psychological barriers which affect the acculturation process (Brein & David, 1971b; Brinson & Kottler, 1995; Ryan & Twibell, 2000). Several researchers have established the relationship between acculturative stress and mental wellness, with higher acculturative stress positively correlating with higher depressive symptoms (Rice et al., 2012; Smiljanic, 2017; Sümer, Poyrzli, & Grahame, 2008).

There is evidence that social support has moderated the relationship, but researchers have overlooked the importance of housing on the health of international students. Living on or off campus may impact the social support experienced by international students, which then could subsequently impact their acculturative stress or depression levels. Thus far, no study has researched the role of housing, primarily living in on campus housing, as a moderator in the relationship between acculturative stress and depression.

With the projected increase in international student enrollment in the United States, it would be extremely beneficial to know if living on campus moderates in the relationship between acculturative stress and depression. With the aid of this kind of research, universities of the future may create, support or promote opportunities enabling international students to live on campus in order to reduce acculturative stress and or

depression. It is hoped that the findings from this study will fill an important gap in the overlap between the literature on acculturative stress and depression in Chinese and Indian international college students and the role of housing as a moderator in this relationship.

CHAPTER FOUR: METHODOLOGY

Research Questions

The research questions for the current study were as follows:

1. Is there a difference in acculturative stress, depression and housing status between international college students from China and India?
2. What is the relationship between acculturative stress and depression for Chinese and Indian international college students?
3. Does housing status (living on-campus or off-campus) moderate the relationship between acculturative stress and depression for Chinese and Indian international college students?

Hypotheses

The following hypotheses were proposed:

1. There is a difference in acculturative stress and depression levels between Chinese and Indian international students. There is not a significant difference between housing status between Chinese and Indian international college students.
2. Higher acculturative stress scores associate with higher depression scores for both Chinese and Indian international college students.
3. Housing status moderates the relationship between acculturative stress and depression for Chinese and Indian international college students.

Study Site

NJIT. The most pursued majors for international college students during the 2017-218 academic year include engineering, business, math, and computer science

((IIE), 2018). U.S. News Best Colleges report lists the New Jersey Institute of Technology (NJIT) as a public, coed, urban STEM institution founded in 1881. The 2019 statistics show a total enrollment of 11,446 students. Undergraduate tuition rates for the 2019-2020 academic year for New Jersey state students was \$14,448 and \$30,160 for out of New Jersey state students. Graduate tuition rates for the 2019-2020 academic year for New Jersey state students was \$20,624 and \$30,540 for out of New Jersey state students. NJIT is located approximately 15 minutes from Newark International Airport and is surrounded by three other cities from which students often commute: Hoboken, Jersey City, and Harrison. U.S. News (2019) lists NJIT as one of the Best Undergraduate Engineering Programs, one of the Best Value Schools, and one of the Most Ethnically and Economically Diverse (Report, 2019).

International Students. According to NJIT's Office of Institutional Research & Planning, there were 1,294 International Asian students enrolled in the 2018-2019 academic year. Of these, 810 international students were from India and 340 from China. There were 379 female Asian international students and 915 males. The ages of Asian international college students at NJIT range from 17–49 years old. There were 166 undergraduate students pursuing bachelor's degrees, 227 doctoral students, 894 master's students, and 7 students are listed as "other degree seeking students".

One hundred thirty-three international students originated from various countries throughout Asia: Taiwan (30); Null (23); South Korea (13); Bangladesh (12); Pakistan (12); Vietnam (11); Philippines (7); Sri Lanka (4); Thailand (4); Nepal (4); Iran (2); Japan (2); Kenya (2); Burma (1); Canada (1); Malaysia (1); Saudi Arabia (1); South Africa (1); Singapore (1); and Indonesia (1). Eleven international students note that their

legal country of residence is different from their birth country: Canada – birth country India (4), Canada – birth country China (1); Congo – birth country China (1); India – birth country Bahrain (1); India – birth country Null (1); India – birth country Qatar (1); Taiwan – birth country Argentina (1); and Taiwan – birth country Hong Kong (1).

Housing. NJIT has six different residency options per the NJIT residence life website. Only students of the Albert Dorman Honors College can live in the Albert Dorman Honors residence hall (an Honors hall). The Albert Dorman Honors residence hall is a coed building housing 360 first year, sophomore, junior, and senior students. This building has single rooms, two-person rooms, and two-room suites.

First year students who are not a part of the Honors college have the option of choosing between Redwood Hall and Cypress Hall. The main difference between these two halls is that Redwood has communal bathrooms with multiple showers and toilet stalls shared by the residents of each floor, and Cypress has private bathrooms in each suite. Redwood Hall houses 200 first year students in double rooms and Cypress Hall houses 420 first year, sophomore, junior and senior students in two-room suites with a shared bathroom.

The largest residence hall is Laurel Hall, designed by world renowned architect Michael Graves, which houses 598 upper class and graduate students in suite-style housing. Laurel Hall has single rooms with a private bathroom, single rooms with suitemates and a shared bathroom, and roommates and suitemates with a shared bathroom. Oak Hall houses upper class and graduate students as well, with 230 beds in two, three, and five-person apartments. These apartments include kitchenettes, a living room, and a shared bathroom. The final on-campus living area for NJIT students is the

Greek Village, which includes eight houses of suites with shared bathrooms for 192 members of various fraternities and sororities.

Safety. NJIT is located in Newark, which is the largest city in New Jersey, and has a population of 282,090 in 2018 with 87 constituent neighborhoods ("Newark, NJ Crime Analytics," 2019). Based on 2018 FBI crime data, Neighborhood Scout (2019) reported that Newark has a crime rate higher than 90% of the New Jersey's cities and towns of all sizes ("Newark, NJ Crime Analytics," 2019). The chance of becoming a victim of either violent crime (rape, murder, non-negligent manslaughter) or property crime (motor vehicle theft, arson, larceny, burglary) in Newark is 1 in 34 ("Newark, NJ Crime Analytics," 2019). Based on this data, Newark is not one of the safest cities in America.

In 2018, NJIT received another "Safe Campus Ranking" in the Top 100 Safest College Campuses in America by the National Council for Home Safety and Security (Jacobs, 2018). The rankings were based off of the FBI's Uniform Crime Reporting and the U.S. Department of Education's Campus Safety Security Survey. Every school's score was calculated by analyzing university-reported crimes (robbery, rape, assault, burglary, arson and motor vehicle theft), as well as the violent and property crime rates for the city in which the school is located (Jacobs, 2018).

NJIT also ranked #15 out of 4,700 eligible schools by Safe Campus, a national organization dedicated to improving the safety of U.S. colleges and universities. The NJIT Department of Public Safety have several initiatives to ensure safety of students including proactive offer positioning, regular security assessments of campus and

community buildings, adoption of body worn cameras, a certified 9-1-1 public safety system, and crime-trend analysis (Jacobs, 2018).

Research Design

This research study was approved by the Institutional Review Boards (IRB) of the New Jersey Institute of Technology (NJIT) and Rutgers University-Newark. NJIT served as the official IRB of record for this study. This study utilized a quantitative, observational, cross-sectional design, as it measured the variables of interest at one point in time. The independent variable is acculturative stress and dependent variable is depression. A survey technique was used to collect data for this study.

Research Instruments

Participants were asked to complete a sociodemographic questionnaire, the Acculturative Stress Scale for International Students (ASSIS) (Sandhu & Asrabadi, 1994), and the Center for Epidemiologic Studies Depression Scale Revised (CESD-R) (Eaton, Smith, Ybarra, Muntaner, & Tien, 2004). Sociodemographic data was collected regarding country of origin, duration in U.S., age, gender, academic major, financial support, safety, marital status, major, degree, and approximate housing cost. Housing status was answered as either on campus, off campus, or off campus with family.

The (ASSIS) is a 36 item, 5-point Likert scale (5 = strongly agree, 3 = unsure, 1 = strongly disagree) which was used to assess acculturative stress among international students. The 36 questions were categorized as belonging to seven subscales: Perceived Discrimination (8 questions; e.g., “I feel that I receive unequal treatment”); Homesickness (4 questions; e.g., “I miss the people and country of my origin”); Perceived Hate (5 questions; e.g., “Others are sarcastic toward my cultural values”); Fear

(4 questions; e.g., “I feel insecure here”); Stress Due to Change/ Culture Shock (3 questions; e.g., “I feel uncomfortable to adjust to new cultural values”); Guilt (2 questions; e.g., “I feel guilty to leave my family and friends behind”); and Nonspecific Concerns (10 questions; e.g., “I worry about my future for not being able to decide whether to stay here or to go back”) (Sandhu & Asrabadi, 1994).

The scoring for the scale ranged from 36 to 180, with higher scores indicating greater acculturative stress. The ASSIS has been reported to have high internal consistency scores ranging Cronbach’s alpha of .87 to .95 (Poyrazli et al., 2010; Yeh & Inose, 2003). Among international students, construct validity was supported with a positive association with depression (Constantine et al., 2004)

The Center for Epidemiologic Studies Depression Scale Revised (CESD-R) is a 20 item, 5-point Likert scale which was used to assess depression. This scale is an updated version of the CES-D (Radloff, 1977). The CESD-R items correspond to the depressive symptomology defined by the American Psychiatric Association Diagnostic and Statistical Manual, fifth edition (Eaton et al., 2004). The nine symptom groups are sadness (dysphoria), loss of interest (anhedonia), appetite, sleep, thinking/concentration, guilt (worthlessness), tired (fatigue), movement (agitation), and suicidal ideation (Eaton et al., 2004). The scoring for CESD-R ranged from 0 to 60, with higher scores indicating greater or more frequent depressive symptoms. Internal consistency for CESD-R is high with Cronbach’s $\alpha = 0.923$ (Eaton et al., 2004).

Type I errors were controlled by using a lower value for alpha, accepting .05 for alpha accepts a 5% chance of error in rejecting the null hypothesis. Type II errors were controlled by obtaining a large sample size to have a stronger beta so the study has more

power. The effect of the covariates was controlled by conducting a multivariate regression analysis (linear regression) to control for sociodemographic factors.

Table 1

Variable Table

Variable	Description
Acculturative Stress (<i>Independent Variable</i>)	Acculturative Stress Score (ASSIS) - 36 total questions in a 5-point Likert scale. The total scores range from 36 to 180. Higher scores are indicative of higher stress perceived by the subject.
Depression (<i>Dependent Variable</i>)	Depression Score (CESD-R) - 20 item, 5-point Likert scale. The scoring for CESD-R ranges from 0 to 60, with higher scores indicating greater or more frequent depressive symptoms.
Housing Status (<i>Moderator Variable</i>)	Living off Campus What city? What room and housemate type? How many roommates?

Sampling Strategy

GPower (version 3.1) was used to estimate the sample size for this study upon effect sizes shown in acculturative stress of international students, which ranged from small to moderate (Hansen et al., 2018; Sullivan, 2010; Wei et al., 2007). The null hypothesis was tested by using t-test with two-sided alpha of 0.05, power estimate for an effect size of 0.30 for a sample size of 82 to meet 80% statistical power.

Sample Recruitment

China and India were the top two countries with the largest number of international students studying at NJIT. The researcher obtained email addresses of all Chinese and Indian international students registered with the institution's Office of Global Initiatives. These students all had F-1 student visas. A description of the study was emailed the total 1042 international college students from China and India. The

email contained a link which directed the participant to the online survey site through Google Forms. Participants were given the option to consent and complete the study survey. They were also informed that the first 25 on campus and first 25 off campus participants would receive \$10.00 Amazon gift cards.

Participants of the study must have been enrolled in a degree program at NJIT and must have moved from China or India prior to the degree program. Participants who lived in another country outside of China or India prior to attending NJIT were excluded from the study. Also, participants who do not fully complete all portions of the quantitative assessment were excluded.

Data Analysis Plan

The data was analyzed in three stages; univariate, bivariate, and multivariate via SPSS software. The univariate analysis described the characteristics of the entire study sample. Categorical variables were summarized using frequencies and proportions. Continuous variables were summarized using means and standard deviations.

Nonparametric testing was utilized instead of an independent samples t-test because a review of skewness and kurtosis, illustrated through a histogram, showed the data was not normally distributed. Research question 1 was analyzed via the Mann-Whitney U test to compare the acculturative stress levels and depression score differences between Chinese and Indian students. Chi-square analysis was used to compare differences in housing status for Chinese and Indian international college students.

Research question 2, the relationship between acculturative stress and depression, was assessed with linear regression analyses. Linear regression was used to establish relationships between acculturative stress (including all seven acculturative stress

subscales) and depression. Multiple linear regression was conducted controlling for demographic variables, and then controlling for housing related variables.

Research question 3, the role of housing status on the relationship between acculturative stress and depression, was assessed using Hayes moderation analysis. Housing status was used as a moderator of the effects of acculturative stress on depression in this analysis. More specifically, the direct effect of acculturative stress on depression and indirect effect of acculturative stress on depression through the housing status was examined.

CHAPTER FIVE: RESULTS

The purpose of this study was to investigate (1) whether there is a difference in housing, acculturative stress, and depression levels of Chinese and Indian international students, (2) to assess the relationship between acculturative stress and depression, and (3) to assess whether housing status (living on or off campus) acts as a moderator between acculturative stress and depression. Data was collected from Chinese and Indian international college students attending New Jersey Institute of Technology. A demographic questionnaire was used to collect socio-demographic data from study participants. Acculturative stress was measured using the Acculturative Stress Scale for International Students (ASSIS). Depression was measured using the Center for Epidemiologic Studies Depression Scale – Revised (CESD-R). The analysis of the data is presented in this chapter.

Sociodemographic Characteristics

Sociodemographic characteristics for continuous variables are displayed in Table 2 while categorical variables are displayed in Table 3. There were 94 total participants in this study; with approximately 20% originating from China (N = 18, 19.1%) and approximately 80% originating from India (N = 76, 80.9%). Approximately 65% of participants were male (N = 61, 64.8%) and 35% were female (N = 33, 35.1%). The mean age for the participants was 23, ranging from a minimum of 18 years and a maximum of 32 years of age (SD= 3.08). The majority of participants (N = 89, 94.5%) were single and only about 5% (N = 5, 5.3%) of participants were married. The subjects had lived an average of 2.5 years in the United States, with the average participants in their third semester of school. The majority of participants (N = 59, 62.7%) were

pursuing master's degrees, 25.5% of participants (N = 24) were pursuing bachelor's degrees, and 11.7% were pursuing doctoral degrees (N = 11). Almost half of the study participants were majoring in Computer and Data Sciences (N = 44, 46.8%) followed by Engineering (N = 33, 35.1%), Business and Management (N = 12, 12.7%), Biological and Chemical (N = 3, 3.1%), and Architecture and Theatre degrees (N = 2, 2.1%). The primary source of financial support for the participants was Parents/Family (N = 64, 40.8%), followed by Loans (N = 35, 22.3%), and then Scholarships (N = 28, 17.8%).

Table 2

Summary of Demographic Continuous Variables

Variable	Min	Max	Mean	Std Dev
Age	18	32	23.80	3.08
Duration in U.S.	2	120	27.28	24.8
Semester	1	16	2.86	2.30

Note: N = 94

Table 3

Summary of Demographic Categorical Variables

Variable	N	%
Gender		
Female	33	35.1
Male	61	64.9
Marital Status		
Married	5	5.32
Single	89	94.7
Degree		
Bachelors	24	25.5
Masters	59	62.8
Doctoral	11	11.7
Major		
Biological and Chemical	3	3.19
Business and Management	12	12.8

Variable	N	%
Major		
Computer and Data Science	44	46.8
Engineering	33	35.1
Architecture and Theatre	2	2.13
Country		
China	18	19.2
India	76	80.9
Financial Support		
Parents / Family	64	40.8
Loans	35	22.3
Scholarship	28	17.8
Savings	14	8.90
Personal Earnings	11	7.00
Other	5	3.20

Note: N = 94

Housing

Table 4 illustrates the categorical variables related to housing, and Table 5 displays the continuous variables related to housing. About 60% of participants lived off campus (N = 57,), with about 40% (N = 37,) living in on campus housing. Of those who lived off campus, almost half lived in Harrison (N = 26, 45.6%), while of those who lived on campus mostly lived in Oak (N = 11, 29.7%) or Laurel Hall (N = 10, 27%). When asked “how safe do you feel commuting from your housing location to class,” 46.8% of participants responded “very safe”, 48.9% responded “moderately safe”, and only about 3% responded “slightly safe”, with 0 respondents indicating they “did not feel safe”.

A little more than half of participants lived in shared room with suitemates (N = 49, 52.1%). There were almost equal number of participants in single rooms (N = 21, 22.3%) and single rooms with suitemates (N = 20, 21.2%). Housing costs for off campus participants ranged from \$0 to a maximum of \$35,000 (N = 57, M = 7104, SD = 5655) per academic year (August to May). Housing costs for on campus participants ranged

from \$0 to a maximum of \$11,000 ($N = 37$, $M = 7280$, $SD = 3199$) per academic year (August to May). Off campus participants had a minimum of 0 to a maximum of 10 roommates and suitemates, with an average of about 3 roommates ($SD = 1.89$), while on campus participants had a minimum of 0 and maximum of 5 roommates, and an average of about 2 roommates ($SD = 1.45$).

Table 4

Summary of Housing Related Categorical Variables

Variable	N	%
Housing		
On Campus	37	39.4
Off Campus	57	60.7
Hall (On Campus)		
Cypress	8	21.6
Redwood	3	8.11
Honors	1	2.70
Greek Village	4	10.8
Oak	11	29.7
Laurel	10	27.0
Off Campus	57	60.6
City (Off Campus)		
Newark	8	14.0
Harrison	26	45.6
Jersey City	8	14.0
Kearny	9	15.8
Other	6	10.5
On Campus	37	39.4
Safety		
Very Safe	44	46.8
Moderately Safe	46	48.9
Slightly Safe	3	3.19
Room Type		
Single Room	21	22.3
Single Room with Suitemates	20	21.3
Shared Room with Suitemates	49	52.1
Triple Room	1	1.06

Variable	N	%
Room Type		
Other	3	3.19
Roommate Type		
On Campus (other students)	37	39.3
By Yourself	7	7.45
Family	6	6.38
Other international students	40	42.6
Other individuals (not students)	3	3.19
Other students (not international)	1	1.06

Note: N = 94

Table 5

Summary of Housing Related Continuous Variables

Variable	Min	Max	Mean	Std Dev
Cost (<i>On Campus</i>)	0	11000	7104	5655
Cost (<i>Off Campus</i>)	0	35000	7280	3199
Total Room/Suitemates (<i>On Campus</i>)	0	5	2.51	1.14
Total Room/Suitemates (<i>On Campus</i>)	0	10	3.21	1.89

Acculturative Stress and Depression

Table 6 illustrates all the ASSIS acculturative stress scores, with each of the seven subscale scores, and the depression scores. The average overall ASSIS score was 93.8 (min = 45, max = 152, SD = 22.4) from a possible score of 36-160. Of the seven subscales, Guilt (M = 4.83, SD = 1.86); Culture Shock (M = 8.77, SD = 2.02); Fear (M = 9.60, SD = 3.12); Perceived Hate (M = 11, SD = 3.26); and Homesickness (M = 12.2, SD = 3.38) had relatively lower ASSIS scores. Perceived Discrimination (M = 21.8, SD = 6.06) and Miscellaneous (M = 25.8, SD = 7.15) had overall higher ASSIS scores. The

average CESD-R score for Chinese and Indian international students was 14.0 (SD=14.03) in a possible range of 0 – 60.

Table 6

Study Acculturative Stress, Acculturative Stress Subscales, and Depression Scores

Variable	# of Questions	Mean	SD	Possible Range	Sample Range
Acculturative Stress (AS)	36	93.8	22.4	36-180	45-152
AS Perceived Discrimination	8	21.8	6.06	8-40	8-36
AS Homesickness	4	12.2	3.38	4-20	4-20
AS Perceived Hate	5	11.0	3.26	5-25	5-20
AS Fear	4	9.60	3.12	4-20	4-17
AS Culture Shock	3	8.77	2.02	3-15	4-15
AS Guilt	2	4.83	1.86	2-10	2-9
AS Miscellaneous	10	25.8	7.15	10-50	10-41
Depression	20	14.0	14.0	0-60	0-60

Note: N= 94

Table 7 describes the acculturative stress and depression scores by hall and for off campus students. The average off campus acculturative stress score was 95, which was similar to the average Redwood Hall (90), Laurel Hall (95), and Oak Hall (92) scores. Cypress Hall had a lower average acculturative stress score of 85, while Honors Hall had the lowest acculturative stress score of 55. Greek Village had the highest average acculturative stress score at 113 compared to the other residence halls and off campus participants. The off campus average depression score was 14. Redwood Hall (11), Oak Hall (8), and Greek Village (9) had similar depression scores, while the one Honors Hall participant had a lower depression score of 2. Laurel Hall (21) and Cypress Hall (20) had the highest depression scores compared to all the other residence halls and off campus participants. On campus students had a lower average acculturative stress score (92)

compared to off campus students (95). Depression scores were on average similar for on and off campus students (14).

Table 7

Study Acculturative Stress and Depression Scores Per Hall

Hall	N	Acculturative Stress Scores (range 36-180)			Depression Scores (range 0-60)		
		Min	Max	Mean	Min	Max	Mean
Redwood	3	77	114	90	1	21	11
Cypress	8	67	109	85	5	60	20
Honors	1	55	55	55	2	2	2
Laurel	10	71	132	95	0	56	21
Oak	11	56	117	92	2	17	8
Greek Village	4	102	134	113	5	15	9
Off Campus	57	45	152	95	0	54	14

Hypothesis Testing

Hypothesis 1: There is a difference in acculturative stress and depression levels between Chinese and Indian international students. There is not a significant difference between housing status between Chinese and Indian international college students.

As depicted in Table 8, Mann-Whitney U statistical analysis was conducted to assess if there was a difference in acculturative stress and depression between Chinese and Indian international college students. The results indicate that acculturative stress is statistically significantly higher for Chinese international students than Indian international students ($U = 354, p = .002$).

Upon further analysis of the acculturative stress subscales, Perceived Discrimination ($U = 406.5, p = .008$), Perceived Hate ($U = 388.5, p = .004$), Fear ($U = 391, p = .005$), and Culture Shock ($U = 477, p = .044$) also showed statistically significant differences between Chinese and Indian international students, with Chinese

students having higher acculturative stress subscale scores. There is no statistically significant difference in depression scores between Chinese and Indian students.

Table 8

Mann-Whitney U Test Results for Acculturative Stress, its Subscales, and Depression for Chinese (N=18) and Indian (N=76) International College Students

Variable	Mann-Whitney U	Z	Asymptotic Sig (2-tailed)
Acculturative Stress	354	-3.172	0.002*
AS Perceived Discrimination	406.5	-2.672	0.008*
AS Homesickness	665	-.184	0.854
AS Perceived Hate	388.5	-2.856	0.004*
AS Fear	391	-2.832	0.005*
AS Culture Shock	477	-2.016	0.044*
AS Guilt	576.5	-1.133	0.257
AS Miscellaneous	354	-3.172	0.002*
Depression	604.5	-0.765	0.444

Note: *p< 0.05

A Chi-Square test of independence was performed to examine the relation between housing status of Chinese and Indian international students. The relation between these variables was not significant, $\chi^2(1, N = 94) = .002, p = .964$. Therefore, there is no statistical difference between Chinese students and Indian students in regard to living on or off campus.

Hypothesis 2: Higher acculturative stress scores associate with higher depression scores for both Chinese and Indian international college students.

Table 9 depicts the simple linear regression analysis used to test if acculturative stress significantly predicted depression. The simple linear regression showed a significant relationship between acculturative stress and depression ($p < 0.05$). The slope coefficient for acculturative stress was 0.158, so the depression score increases by 0.158

for each increase in acculturative stress score. The R^2 value was 0.063 so 6.3% of the variation in depression can be explained by the model containing only acculturative stress.

Upon closer analysis, the subscales Homesickness, Stress of Culture Shock, Guilt, and Miscellaneous all showed a significant relationship with depression ($p < 0.05$).

Homesickness accounts for 9.3% of variance in depression and for every point increase in Homesickness there is a 1.265 increase in depression score. Stress of Culture Shock accounts for 5.8% of variance in depression. There is a 1.672 increase in depression score for every point increase of Culture Shock. The Miscellaneous subscale of acculturative stress accounts for 5.9% of variance in depression. For every point increase of the Miscellaneous subscale there is a .476 increase in depression score. 12.6% of variance in depression is attributed to Guilt and the depression score increases by 2.674 points for each point increase in the Guilt subscale of acculturative stress.

The subscales of Perceived Hate, Perceived Discrimination, and Fear were not statistically significant subscale predictors of depression.

Table 9

Linear Regression Models Predicting Depression Levels Among Chinese and Indian International College Students

Predictor	R^2	B	$SE\ B$	β	t	p
Acculturative Stress (AS)	0.063	0.158	0.063	0.252	2.490	0.014*
AS Perceived Discrimination	0.040	0.461	0.236	0.199	1.950	0.054
AS Homesickness	0.093	1.265	0.413	0.304	3.065	0.003*
AS Perceived Hate	0.004	0.257	0.448	0.060	0.572	0.586
AS Fear	0.024	0.694	0.463	0.154	1.498	0.137
AS Culture Shock	0.058	1.672	0.702	0.241	2.382	0.019*
AS Guilt	0.126	2.674	0.734	0.355	3.643	0.000*
AS Miscellaneous	0.059	0.476	0.199	0.242	2.396	0.019*

Note: * $p < .05$

Sub-hypothesis 2.1: After controlling for demographic variables (age, gender, and marital status), acculturative stress will associate with higher depression scores.

A multiple linear regression was calculated to predict depression based on acculturative stress, age, gender, and marital status. The results are illustrated in Table 10. A significant regression equation was found ($F(4,89) = 2.507, p = 0.048$), with an R^2 of .101. Depression scores increased by .159 points for each increase in acculturative stress when controlling for age, gender, and marital status. This model explained 10.1% of the variance from demographic variables and acculturative stress in depression scores for international college students from China and India.

Table 10

Multiple Linear Regression Model Predicting Depression Levels While Controlling Demographic Variables ($R^2 = 0.101, p = .048$).

Predictor	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
Acculturative Stress	0.159	0.065	0.255	2.445	0.016*
Age	-0.413	0.512	-0.091	-0.808	0.422
Gender	4.398	2.953	0.151	1.489	0.14
Marital Status	-6.151	6.843	-0.099	-0.899	0.371

Note: $p < 0.05$

Sub-hypothesis 2.2: After controlling for housing related variables (housing, cost, city, and hall), acculturative stress will associate with higher depression scores.

A multiple linear regression was calculated to predict depression based on acculturative stress, housing, cost, city, and hall. The results are displayed in Table 11. A significant regression equation was found ($F(5,86) = 2.470, p = 0.039$), with an R^2 of .126. Depression scores increased by .163 points for each increase in acculturative stress when controlling for housing, cost, city, and hall. Depression scores also decreased by

2.886 based on what residence hall a student lived in when controlling for acculturative stress and housing related factors. This model explained 12.6% of the variance from housing related variables and acculturative stress in depression scores for international college students from China and India.

Table 11

Multiple Linear Regression Model Predicting Depression Levels While Controlling Housing Related Variables ($R^2 = 0.126$. $p = 0.039$).

Predictor	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
Acculturative Stress	0.163	0.064	0.263	2.544	0.013*
Housing	10.05	6.68	0.362	1.505	0.136
Cost	0	0	0.156	1.528	0.13
Hall	-2.886	1.294	-0.446	-2.231	0.028*
City	-0.508	1.471	-0.059	-0.345	0.731

Note: $p < 0.05$

Hypothesis 3: Housing status moderates the relationship between acculturative stress and depression for Chinese and Indian international college students.

To test the if housing moderates the relationship between acculturative stress and depression, a Hayes's moderation analysis (2013) was conducted. The moderation analysis was run using an SPSS macro, PROCESS model 1, using 5000 bootstrap samples for bias correction and to establish 95% confidence intervals, predictors were centered (Hayes, 2013). The results are displayed in Table 10.

Housing status did not moderate the relationship between acculturative stress and depression. The housing by acculturative stress interaction was not statistically significant, $b = -0.2111$, $[-0.5261, 0.1038]$. The overall moderation model for the depression variance, $F(3, 90)=1.9581$, $p = 0.1260$ was not statistically significant, therefore the null hypothesis was retained.

CHAPTER SIX: DISCUSSION

The overall purpose of the current study was to address psychosocial well-being of international college students. More specifically, factors impacting depression such as acculturative stress and housing were explored. The purpose of this chapter is to discuss the study findings and draw appropriate implications and conclusions. The findings are split into areas by the research questions: (1) Is there a difference in acculturative stress, depression, and housing status between international college students from China and India?; (2) What is the relationship between acculturative stress and depression for Chinese and Indian international college students?; and (3) Does housing status (living on-campus or off-campus) act as a moderator in the relationship between acculturative stress and depression for Chinese and Indian international college students?

This discussion is based on combining Berry et al.'s (1987) acculturation model and Maslow's (1970) theory of hierarchical needs to create a housing moderator model. Housing is a form of social support among college students (Skahill, 2002) and though there are no studies on housing as a moderator for acculturative stress and depression, other studies have indicated that social support is a moderator in this relationship (Flannery Jr & Wieman, 1989; Lee et al., 2004; B. Yang & Clum, 1994). The theories of Berry et al. (1987) and Maslow (1970) were integrated to conceptualize a housing moderator model, with housing moderating the relationship between acculturative stress and depression.

Hypothesis 1 predicted that there would be a difference in acculturative stress and depression scores but no difference in housing status for Chinese and Indian international students. Hypothesis 2 predicted that there would be a statistically significant

relationship between acculturative stress and depression. Hypothesis 3 predicted that housing would moderate the relationship between acculturative stress and depression. These hypotheses were tested with a Mann-Whitney U test, Chi-Square analysis, linear regression, multiple linear regression, and Hayes moderation analysis. Included in this chapter is a summary of the study findings by research question, comparison to literature review, study limitations, and implications for higher education and health professionals working with international students.

Research Question 1: Is there a difference in acculturative stress, depression and housing status between international college students from China and India?

China and India are too culturally distinct to be grouped together in acculturation research. Most researchers studying acculturative stress tend to group individuals by continent when studying individuals from Asia. However, researchers have argued that there is no Pan-Asia, nor are there “Asian” shared values, as the different regions are diverse and unique (Acharya, 2010; S. Y. Kim, 2010). Asia is the largest and most populated of all continents. It has 48 countries and is divided into 5 different regions: East, Central, South, South East, and Western Asia (Agency, 2018).

Previous literature found international students from different areas vary in their resource-seeking habits and acculturative stress responses (Frey & Roysircar, 2006; Rice et al., 2012). This supports the practice of researching Asian acculturation by subregion when as the acculturative stress scores between Chinese students and Indian students were different, with Chinese students having more acculturative stress than Indian students. This study did not show differences in depression score between groups, which was expected to follow the trend of higher acculturative stress leads to higher depression

scores. This may be due to the sample size or unequal distribution of Chinese and Indian participants. There is a gap in research on housing in relation to acculturation so there is no comparable data. This study sample is from a very diverse institution with a large population of Chinese and Indian international students. These students may have acculturative stress, depression, and housing influenced by other factors.

Research Question 2: What is the relationship between acculturative stress and depression for Chinese and Indian international college students?

The findings of this study support the hypothesis for research question 2, which stated that higher acculturative stress would be associated with higher depression. After controlling for sociodemographic characteristics, acculturative stress was a significant predictor of an individual's depression score. That is, students with more acculturative stress experienced higher levels of depression. The results support Berry et al.'s (1987) theory of acculturation which stated that high acculturative stress corresponded with negative effects. One of these negative effects is psychological wellbeing, often resulting in depression (Berry et al., 1987). These findings support the findings of multiple studies conducted in multiple regions of the U.S. and internationally; that higher acculturative stress scores are predictive of greater depressive symptoms and negative mental health effects among international students (Constantine et al., 2004; Rice et al., 2012; Tareke Gebregergis, 2018; Tummala-Narra et al., 2012; Walker et al., 2008).

The 36 item Acculturative Stress Scale for International Students (ASSIS) consists of 7 subscales: Stress from Culture Shock (3 questions); Fear (4 questions); Guilt (2 questions), Homesickness (4 questions); Miscellaneous (10 questions); Perceived Discrimination (8 questions); and Perceived Hate/ Rejection (5 questions). Upon further

inspection, only some of the acculturative stress subscales had a statistically significant relationship with depression. Higher scores on the subscales of Homesickness, Stress of Culture Shock, Guilt, and Miscellaneous were significantly related to higher levels of depression. Results underscored the impact of Homesickness, Stress of Culture Shock, and Guilt, considering these subscales only consisted of 4, 3, and 2 questions respectively out of the 36-item scale. Based on the results, these particular categories appeared very likely to impact depression. The subscale with the most questions was the Miscellaneous category. Questions categorized as Miscellaneous include: *“I feel nervous to communicate in English,” “I feel intimidated to participate in social activities,”* and *“I don’t feel a sense of belonging (community) here.”* These questions are representative of some of the most vital aspects of acculturation; a sense of acceptance and belonging.

The subscales of Perceived Discrimination, Perceived Hate, and Fear were not found to be significant predictors of depression. This may be due to the perception of the study site as a safe space. Though NJIT is in a city with higher crime rates, the study results support the rankings of NJIT as a safe campus. On the safety question in the sociodemographic questionnaire, 46.8% of participants responded, “felt very safe”; 48.9% responded, “felt moderately safe”; and 3.19% responded, “felt slightly safe” commuting from their housing to classes. None of the participants responded that they “did not feel safe”. Perhaps this alludes to a safe feeling environment or a supportive campus community with less perceived discrimination, perceived hate, and fear associated with depression. Moreover, the sample of participants may have demonstrated higher resiliency for these subscales to affect their psychological wellbeing than other sample populations.

Multiple linear regression also showed that acculturative stress was a significant predictor of depression when controlling for both demographic and housing related factors. Specific residence halls were also a significant predictor in the housing-controlled model. That is, some residence halls may have contributed to an environment which supported lower levels of acculturative stress and depression.

The hall with the lowest acculturative stress and depression levels was Honors Hall, however there was only one participant from that hall which may skew data comparison compared to the averages to the other halls and off campus participants. Off campus participants and residents of Redwood, Cypress, Laurel, and Oak halls all had similar acculturative stress scores between 85 and 95. Greek Village had the highest acculturative stress score at 113. The participants who live in Greek Village may or may not be affiliated with the Greek Life community. Adjusting to the culture shock of studying in the U.S. may be intensified by additional adjustment living in a Greek community environment. This may have unaffiliated students feeling isolated if they are not a part of the Greek community but living in the Greek Village. Furthermore, with less common areas for Greek Village wide programming, interacting with other community members may be more difficult compared to traditional residence halls.

Interestingly, Greek Village, despite having the highest acculturative stress scores, had a comparatively lower average depression score of 9. Conversely, Cypress Hall had an average depression score of 85, but a higher average depression score of 20. Laurel Hall also had a high average depression score of 20 compared to the other residence halls and off campus participants. Cypress Hall, a 400 bed first year building with 14 resident assistants, and Laurel Hall, a 586 bed upper classmen building with 17 resident assistants,

have similar suite style housing with common spaces throughout the buildings. Honors Hall also has similar suite style housing. The other residence halls differ in that Redwood Hall has communal bathrooms, while Greek Village Oak Hall have apartment style suites. The only other similarity is that Cypress and Laurel Hall are the highest populated residence halls with the largest size staff of resident assistant, which may affect participant interactions. Conversely, the range of scores (Laurel 0-56, Cypress 5-60) may indicate that certain individuals have previous unrelated or unknown factors attributing to mental health concerns.

Research Question 3: Does housing status moderate the relationship between acculturative stress and depression for Chinese and Indian international college students?

The theories of Berry et al. (1987) and Maslow (1970) were integrated to conceptualize a housing moderator model, with housing moderating the relationship between acculturative stress and depression. After controlling for sociodemographic factors, acculturative stress was a significant predictor of depression, with higher levels of acculturative stress associated with higher depression. Housing failed to show any significant moderation on the relationship between acculturative stress and depression based on Hayes (2013) moderation analysis. There is no literature about university housing and acculturative stress for comparison. Further research is needed possibly with a larger participant size and better proportion of on campus vs off campus students. Overall, on campus students had a lower average acculturative stress score (92) compared to off campus students (95). Depression scores were on average similar for on and off campus students (14).

Urbanization

The similarity in on campus and off campus depression scores may be explained by urbanization theory. Newark is a hub of internationalism, with many Chinese and Indian citizens, shops, and support services. This creates more opportunities for connections that may already be familiar to international students. There are also several modes of commuting for international students who do not live on campus.

From Newark and Kearny, the campus is about a 20-minute walk. Furthermore, there is a shuttle connecting the campus to Newark Penn Station and Kearny which runs from the afternoon till about midnight. Along with these modes of transportation, ride sharing services, taxis, city buses, and city light rails are also methods by which students can commute to campus. These various forms of transportation make it relatively easy to stay connected with the campus environment. Also, the survey results indicated a sense of overall safety commuting between the participants housing and class. There may not have been a significant difference in depression levels for students living on or off campus as support services may be easily accessible to both groups. The results might be different if this study were conducted at a rural or suburban university.

Study Site

Perhaps the relatively minimal difference in acculturative stress and no major difference in depression scores between on and off campus students is explained by a strong support system already existing at NJIT for international students. NJIT is a top diversity school and the results may suggest that the institution does well to foster international student integration. The sample may already have strong support system networks or know how and where to receive support services on campus. Looking at the

sociodemographic data, the majority of international students that live off campus typically live with other international students. This may aid in the reduced levels of acculturative stress and depression by fostering a natural peer supportive community. This may also address and alleviate the homesickness acculturative stress subscale.

Individual Characteristics

It is important to note that the current sample of students may already have high depression or acculturative stress that housing cannot moderate. A university is already a high stress environment, but international students have additional stressors when moving to and studying in a new country. Students may have individual characteristics or experiences that may affect resiliency during the acculturation experience affecting their acculturative stress and depression response. For example, some students may be familiar to the acculturation process and find it easier to navigate resources in a new environment and make connections. Conversely, acculturative stress shock could be higher for individuals whose academic host environment is significantly different from their home environment.

Immigration

Based on previous trends, it can be expected that the United States will continue to see an increase in the number of international students pursuing an education here. Immigration policies impact international students greatly. At the time of this study, there was a tense political climate surrounding immigrants, public safety and health concerns; this translated into travel bans that appeared to have been influenced by racism. The 2017 ban on Muslim majority countries may have exerted a significant impact on the international student experience. Subsequent encounters with or fears of racism related to

such policies may have affected fear and feelings of belonging among international students. These are two areas that may influence the overall acculturative stress of international students. University officials should provide more resources and staffing for international student offices in order to help them assist students to better navigate immigration paperwork, policies, and when necessary, be redirected to University support services.

Gentrification

When a university expands in an urban setting, not only does the environment impact the university, but the university impacts the environment as well. As a university grows into a city, one can see the growth of businesses, restaurants, bars, and areas for students to explore. Often, gentrification is an effect of universities that develop into urban communities, and it can displace cultural hotspots and low-income residents. Universities should focus on the cultures and people already living in these neighborhoods when considering community impact, so that expansion will benefit both the university and the community.

Housing Policy

It would be useful to examine how housing options are advertised to international students during the admissions process. Students may refer to friends or other international students for advice regarding housing options. Many new international students find apartment room rental possibilities from departing international students' advertisements posted on NJIT Facebook groups. This study did not find that housing moderates the relationship between acculturative stress and depression, however, if students and their families were informed that on campus students exhibit less

acculturative stress than off campus students, then perhaps more students would choose on campus housing. Often, the lure of lower costs prompts students to live off campus, but the survey showed that the costs were relatively similar for on and off campus students.

Additionally, off campus housing policies should be reviewed in an attempt to prevent landlords taking advantage of international students. There should be a limit regarding how many students can live in an apartment to avoid overcrowding. Off campus health and safety measures should be maintained, including heating, air, maintenance, and pest control. On campus students should be housed in areas with increased RA/resident interactions while avoiding placing international students in predefined cultural environments such as Greek housing. Finally, universities may also consider international student-focused housing, complete with kitchens for cooking, to avoid forcing students to participate in the university meal plan.

Limitations

Participants of this study were solicited from only one campus in the northeast United States; therefore, the sample generalizability of Chinese and Indian international students is limited to this region compared to other regions. The sample size could have been larger with better proportion of Chinese and Indian students.

Acculturative stress and depression could also have been affected with the time of study distribution. The study was sent out in early November, perhaps students who were first year international students were still adjusting to the initial culture shock. It would be interesting to see if results were different if the study was conducted in February/March to allow for the first-time students more time to adjust to the culture

shock. Furthermore, there was little control in the sampling as 94 students completed the survey fully out of the 1042 students. The sample may be biased for it only represented students who were interested in the topic – or students with less difficulties/problems in acculturating and more willing to participate. If a student suffers from acculturative stress or depression, they may have been less willing to complete a survey that required time away from other commitments.

Implications

These findings have several important implications. First, there was a difference in acculturative stress scores between Chinese and Indians international students. This supported a need for targeted interventions that can be employed with cultural specificity in order to reduce acculturative stress in these two populations. Results indicated that region of origin was a factor in acculturative stress levels. It is reasonable to suggest that the institution can create specifically targeted interventions to lessen the effects of acculturative stress or create more targeted interventions to prevent stress inducing situations.

This also informs researchers that it is imperative to use the correct terminology for the cultural background of study participants. If the term Asia is used, then all regions/cultures should be represented. It is better practice to be specific and utilize countries or sub-regions of study participants. The cultures across Asia vary and therefore we must be more specific and define Asian populations by subregion when researching acculturation between the cultures are so vastly different. This may promote more accurate research allowing for specialized and targeted acculturative stress and depression response methods.

The second implication is that acculturative stress acts as a predictor of depression. There is a stigma surrounding mental health and depression for Chinese and Indian cultures. It may be difficult to broach the subject of depression with Chinese and Indian international students. However, if practitioners focused on acculturative stress targeted interventions, students may be more receptive. Acculturation programs at universities can focus on the ASSIS subscales as “key performance indicators” to proactively address acculturative stress. Based on this research, an approach of targeting acculturative stress levels would in turn reduce depression levels.

Furthermore, the analysis of acculturate stress and depression scores between the residence halls and off campus participants indicated key differences based on housing areas on campus. The most notable is the high acculturative stress scores of Greek Village international college students from China and India. One recommendation is to house international students in more traditional campus housing to allow for increased student interaction and resident assistant program exposure in communal areas.

Lastly, housing was not a moderator for acculturative stress and depression. Perhaps if specific international student housing was an option, then students may integrate and interact more with the on-campus community. There is evidence to suggest that social support has moderated the relationship, but researchers have overlooked the importance of housing on the health of international students. Living on or off campus may impact the social support experienced by international students, which then could subsequently impact their acculturative stress or depression levels. Thus far, no study has researched the role of housing, primarily living in on campus housing, as a moderator in

the relationship between acculturative stress and depression. This study has laid the groundwork and a level of comparison for future researchers.

With the projected increase in international student enrollment in the United States, it would be extremely beneficial to utilize information about differences in acculturation experiences by cultures and the moderation of acculturation and depression through housing. With the aid of this kind of research, universities of the future may create, support or promote opportunities enabling international students to live on campus in order to reduce acculturative stress and depression. It is hoped that the findings from this study fill an important gap in the overlap between the literature on acculturative stress and depression in Chinese and Indian international college students, and the role of housing as a moderator in this relationship.

Pragmatic Applications

Based on the information obtained through this study, there are several pragmatic approaches that universities can adopt. The most important is to identify international students from China and India by their country rather than by their continent. Connecting new international students to experienced international students from the same home country could assist new students with the transitional experience. The results of this study indicated that students from China exhibit higher levels of acculturative stress than Indian international students. The acculturation experience must be different for these two groups, therefore best practices would specify that university orientations be customized to meet the needs of each group.

To address acceptance and belonging in host countries, universities should promote specific programming focused on facilitating international student integration

with the campus community. This should include Residence Life programming, but could also include university events that include off campus international students as well. In terms of housing, admissions offices should advertise the benefits of living on and off campus to give more information to families. Parents and students should be made aware that students who live on campus have lower acculturative stress levels compared to those who live off campus. Universities could even create an international student-focused living environment with specific programming and community building.

Future Studies

It would be interesting to recreate this study in other urban, suburban, and rural universities to compare findings. Future researchers should use a larger sample size with better proportion distribution between countries or subregions. For a more robust study, individuals from every subregion of Asia (North, South, East, West, and Central) should be included in order to compare all subregions. The study should then be reconducted in other countries with high numbers of international college students, such as the UK, Canada, and Australia.

Also, a qualitative study would be beneficial as a follow up to this study's findings. A qualitative approach could help explain this study's findings, leading to greater and more actionable insights. A qualitative follow up could utilize both focus groups and one-on-one interviews. One series of focus groups could be conducted for Indian international students and another series could be conducted for Chinese international students. This would be ideal in order to obtain more country-specific data. Suggestions for focus group questions may include the following: *“What has your experience been as an international student?”*; *“What were sources of support during*

your acculturation process?”; “What factors do you think added stress to your experience or inhibited your acculturation process?”; and “How can universities better support international students?”. Emerging themes resulting from the analysis of focus group data could guide the design of individual interview questions. In essence, focus groups and interviews could further investigate what makes international students want to live on or off campus, what factors affect acculturative stress levels, and what factors shape student well-being.

Conclusion

The overall purpose of this study was to investigate the wellbeing and mental health of international Chinese and Indian college students through the lenses of acculturative stress and depression. Previous literature has focused on the entire Asian population; which has diluted diversity within the population. Moreover, acculturative stress and depression have been examined among the population, but not housing. There was a significant gap in research about campus housing as it related the acculturation process.


In an effort to fill this gap, the current study applied a modified conceptual framework of housing as a moderator for acculturative stress and depression by integrating the acculturation theory of Berry et al. (1987) and theory of hierarchical needs of Maslow (1970). This modified conceptual framework can be applied to gain a better understanding of mental health of international students and how housing is related to acculturative stress and depression. It may have provided a better understanding of what factors affect depression in international students and how to moderate those effects.

The first outcome of this research was that acculturative stress levels varied between sub-regions of Asia. However, there was no statistically significant relationship of depression scores and housing between Chinese and Indian international students. The results of this study supported the claim that higher acculturative stress is associated with higher depression scores. The results also found that subscales of acculturative stress correlated with higher depression and were moderated by housing. Housing did not moderate the relationship between acculturative stress and depression. Future research is needed to further assess the differences between living on and off campus in relation to mental health of international college students.

Scholars and higher education professionals interacting with international students may use the findings from this study to better facilitate integration of international students and mental health wellbeing through subregion focused programming and interventions by cultural specificity. Furthermore, others may impact depression by targeting acculturative stress factors through its subscales. Lastly, housing can be further researched to understand its role in the acculturation process for international students. The ultimate goal is to support international student wellbeing during the acculturation process.

Appendix A

IRB Approval



Institutional Review Board (IRB) Authorization Agreement

Name: New Jersey Institute of Technology (NJIT)
IRB Registration #: F440-20
FWA#, if any: HHS FWA 00003246

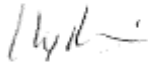
Institution Relying on the Designated IRB (Institution B):
Name: Rutgers University
FWA#: 00003913

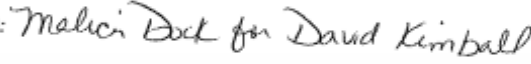
The Officials signing below agree that Rutgers University may rely on the designated IRB for review and continuing oversight of its human subjects research described below:
☐ This agreement applies to all human subject research covered by Institution B's FWA.
☒ This agreement is limited to the following specific protocol(s):

Name of Research Project: The Impact of Housing Status on Acculturative Stress and Depression Among Chinese and Indian International College Students

Name of Principal Investigators: Dr. Sabrina Chase and Komal Chandra (Co-PI)
 (Proc 2019 001370)
Sponsor or Funding Agency: N/A
Award Number, if any: N/A
☐ Other (describe): N/A

The review performed by the IRB at NJIT meets the human subject protection requirements of Rutgers University's OHRP-approved FWA. The IRB at NJIT will follow written procedures for reporting its findings and actions to appropriate officials at Rutgers University. Relevant minutes of IRB meetings will be made available to Rutgers University upon request. Rutgers University remains responsible for ensuring compliance with the IRB's determinations and with the Terms of its OHRP-approved FWA. This document must be kept on file by both parties and provided to OHRP upon request.

Signature of Signatory Official (NJIT): 
Date: September 19, 2019
Print Full Name: Horacio G. Rotstein, PhD
Institutional Title: Professor, IRB Chairman

Signature of Signatory Official (Rutgers University): 
Date: 11/4/19
Print Full Name: David Kimball
Institutional Title: Sr VP ORED

Appendix B

E-mail to Students for Recruitment

Subject: Call for Participants - Doctoral Research Project

Dear Student,

My name is Komal Chandra and I work in Residence Life at our university. I am also working toward a doctoral degree at Rutgers University and I am writing to you today to ask for your participation in my doctoral dissertation. You have been invited to take part in this research study because of your status as an international student at NJIT originating from China or India.

My study focuses on the role of housing on the relationship between acculturative stress and depression for Asian international college students. My goal is to improve understanding in an area with little research, which can be used to improve the international student experience.

This survey should take you approximately 15 minutes to complete. Your answers will remain anonymous. This research has been reviewed and approved by the Institutional Review Board at NJIT and Rutgers. At the end of the survey you have the option to submit your email for a chance to be in a drawing to win a \$10.00 gift card for the first 25 on campus and 25 off campus participants.

The consent form is attached to this email. Please read it and click the link at the bottom of the page to begin the survey.

If you would like counseling and support, please contact the NJIT Center for Counseling and Psychological Services (C-CAPS) www.njit.edu/counseling/ by calling (973) 596-3414 or going to Campbell Hall, Room 205.

If you have any questions about treatment or research procedures, contact the principal investigator at: sabrina.m.chase@rutgers.edu or (973) 353-5744.

Thank you,
Komal Chandra

Appendix C

Consent Form

**NEW JERSEY INSTITUTE OF TECHNOLOGY
323 MARTIN LUTHER KING BLVD.
NEWARK, NJ 07102**

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

I have been asked to participate in a research study under the direction of Dr. Sabrina Marie Chase.

TITLE OF STUDY:

The Impact of Housing Status on Acculturative Stress and Depression Among Chinese and Indian International College Students

PURPOSE:

The purpose of this study is to investigate whether there is a difference in the acculturative stress and depression levels of Chinese and Indian international students and to assess whether housing status (living on or off campus) acts as a moderator between acculturative stress and depression.

DURATION:

My participation in this study will last till the duration of this survey.

BENEFITS FOR SOCIETY AND THE SUBJECT:

I have been told that my participation in this research study is important for the success of the research and that the results of this research study are expected to produce the following benefits to society and for me as a subject:

- I have been told that the benefits of this study include informing universities on housing policy and environment for international students.
- There are no direct benefits for participants.

PROCEDURES:

I have been told that, during the course of this study, the following will occur:

- I will be asked to fill out a three-part survey which will take approximately 25 minutes.

PARTICIPANTS:

I will be one of at most 100 participants in this study.

EXCLUSIONS:

I will inform the researcher if any of the following apply to me:

- I am under the age of 18.
- If I am not an international student born in China or India.

RISKS/DISCOMFORTS:

I have been told that the study described above may involve the following risks and/or discomforts:

- There are no physical risks to this study; the researcher asks questions that may make the participant uncomfortable. In such cases, the participant may refuse to answer the question with no adverse consequences for them.
- There may also be risks and discomforts that are not yet known.

I fully recognize that there are risks that I may be exposed to by volunteering in this study which are inherent in participating in any study; I understand that I am not covered by NJIT's insurance policy for any injury or loss I might sustain in the course of participating in the study.

CONFIDENTIALITY:

I understand confidential is not the same as anonymous. Confidential means that my name will not be disclosed if there exists a documented linkage between my identity and my responses as recorded in the research records. Every effort will be made to maintain the confidentiality of my study records. If the findings from the study are published, I will not be identified by name. My identity will remain confidential unless disclosure is required by law.

PAYMENT FOR PARTICIPATION:

I have been told that I have the option to submit my email to be in a drawing to receive \$10.00 compensation for the first 25 on campus and first 25 off campus participants for this study.

RIGHT TO REFUSE OR WITHDRAW:

I understand that my participation is voluntary and I may refuse to participate, or may discontinue my participation at any time with no adverse consequence. I also understand that the investigator has the right to withdraw me from the study at any time.

INDIVIDUAL TO CONTACT:

If I have any questions about my treatment or research procedures, I understand that I should contact the principal investigator at: sabrina.m.chase@rutgers.edu or (973) 353-5744.

If I have any additional questions about my rights as a research subject, I may contact:

Horacio G. Rotstein, PhD - IRB Chair
 New Jersey Institute of Technology
 323 Martin Luther King Boulevard
 Newark, NJ 07102
 (973) 596-8460
irb@njit.edu /horacio@njit.edu (email is preferred)

E-SIGNATURE OF PARTICIPANT:

I have read this entire form, or it has been read to me, and I understand it completely. By clicking on the study link I agree to participate in this research study.

[CLICK HERE TO CONSENT AND BE TAKEN TO THE STUDY](#)

Appendix D

Survey Questionnaire

Part 1: Sociodemographic Questions

- 1) What is your Age in Years?
- 2) Gender?
 - a. Male
 - b. Female
 - c. Prefer not to say
 - d. Transgender
 - e. Other
- 3) Marital Status?
 - a. Single / b. Married
- 4) What degree are you currently pursuing?
 - a. Bachelors
 - b. Masters
 - c. Doctorate
 - d. Certificate
 - e. Other
- 5) Major?
- 6) Current semester number?
- 7) Home Country of Origin?
- 8) Home Sub Region of Asia?
 - a. (South, East, Southeast, Western, Central)
- 9) What is your housing status?
 - a. Live on campus
 - i. Which residence hall?
 1. (Cypress, Redwood, Laurel, Honors, Oak, Greek Village)
 - ii. What room type
 1. Single, Single with Suitemates, Shared room with Roommates
 - b. Live off campus
 - i. Live off campus with family
 - ii. Live off campus in a single space
 - iii. Live off campus with other international students
 - iv. Live off campus with other students (not international)
 - v. Live off campus with other individuals (Not students)
- 10) Major Source/s of Financial Support?
 - a. Scholarship Funding
 - b. Parents/Family
 - c. Personal Earnings
 - d. Loan
 - e. Savings (money saved/earned prior to commencing study)
- 11) How long have you been in the United States?
 - a. ____ years ____ months

Part 2: Acculturative Stress Scale for International Students (ASSIS)

The following questions are answered using a 5-point Likert scale with:

1 - strongly agree, 3 - not sure, and 5 - strongly disagree.

- 12) Homesickness bothers me.
- 13) I feel uncomfortable to adjust to new foods.
- 14) I am treated differently in social situations.
- 15) Others are sarcastic toward my cultural values.
- 16) I feel nervous to communicate in English.
- 17) I feel sad living in unfamiliar surroundings.
- 18) I fear for my personal safety because of my different cultural background.
- 19) I feel intimidated to participate in social activities.
- 20) Others are biased toward me.
- 21) I feel guilty to leave my family and friends behind.
- 22) Many opportunities are denied to me.
- 23) I feel angry that my people are considered inferior here.
- 24) Multiple pressures are placed upon me after migration.
- 25) I feel that I receive unequal treatment.
- 26) People show hatred toward me nonverbally.
- 27) It hurts when people don't understand my cultural values.
- 28) I am denied what I deserve.
- 29) I frequently relocate for fear of others.
- 30) I feel low because of my cultural background.
- 31) Others don't appreciate my cultural values.
- 32) I miss the people and country of my origin.
- 33) I feel uncomfortable to adjust to new cultural values.
- 34) I feel that my people are discriminated against.
- 35) People show hatred toward me through actions.
- 36) I feel that my status in this society is low due to my cultural background.
- 37) I am treated differently because of my race.
- 38) I feel insecure here.
- 39) I don't feel a sense of belonging (community) here.
- 40) I am treated differently because of my color.
- 41) I feel sad to consider my people's problems.
- 42) I generally keep a low profile due to fear.
- 43) I feel some people don't associate with me because of my ethnicity.
- 44) People show hatred toward me verbally.
- 45) I feel guilty that I am living a different lifestyle here.
- 46) I feel sad leaving my relatives behind.
- 47) I worry about my future for not being able to decide whether to stay here or to go back.

Part 3: Center for Epidemiologic Studies–Depression Scale (CED-S)

The following questions are answered by choosing the option the respondent most agrees with using a 5- point Likert scale of:

- 1) Not at all or less than 1 day last week
 - 2) One or two days last week
 - 3) Three to four days last week
 - 4) Five to seven days last week
 - 5) Nearly every day for two weeks
-
- 48) My appetite was poor.
 - 49) I could not shake off the blues.
 - 50) I had trouble keeping my mind on what I was doing.
 - 51) I felt depressed.
 - 52) My sleep was restless.
 - 53) I felt sad.
 - 54) I could not get going.
 - 55) Nothing made me happy.
 - 56) I felt like a bad person.
 - 57) I lost interest in my usual activities.
 - 58) I slept much more than the usual.
 - 59) I felt like I was moving too slowly.
 - 60) I felt fidgety.
 - 61) I wished I were dead.
 - 62) I wanted to hurt myself.
 - 63) I was tired all the time.
 - 64) I did not like myself.
 - 65) I lost a lot of weight without trying to.
 - 66) I had a lot of trouble getting to sleep.
 - 67) I could not focus on the important things.

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