DEVELOPMENT AND VALIDATION OF THE ACCULTURATIVE STRESS SCALE FOR CHINESE COLLEGE STUDENTS IN THE UNITED STATES (ASSCS)

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DEDICATION

To my husband, XU Nan, for his unending love
And
To my parents, for their unending support

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First and foremost, I would like to thank my chair, Professor Margaret Adamek. You not only guided me through PhD study, but also supported me like a family. I thank you very much and you will be a part of my life forever. I would also thank Professor James Daley and Cathy Pike for your knowledge and moral support through the project. I would like to extend my thanks to Professor Kevin Rand. Your humor and intelligence made my PhD life much more enjoyable. Last but not least, I would like to thank Professor Cecilia Chan. Although we never met, you did not hesitate to serve on my committee and provided helpful comments and suggestions. My dissertation journey won't be so smooth without the input from each committee member.

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ABSTRACT

Jieru Bai

DEVELOPMENT AND VALIDATION OF THE ACCULTURATIVE STRESS SCALE FOR CHINESE COLLEGE STUDENTS IN THE UNITED STATES (ASSCS)

Chinese students are the biggest ethnic group of international students in the United States. Previous studies have identified many unique problems of Chinese students during their acculturation process and a higher level of acculturative stress than international students from other countries. A systematic review of instruments that assess acculturative stress revealed that none of the existing scales apply to Chinese students in the United States, either because of language issues or validity problems. Thus, this study aims to develop a reliable and valid scale to accurately measure the acculturative stress of Chinese students in the United States.

A 72-item pool was generated by interviewing eight Chinese students and borrowing items from existing literature and scales. The item pool was sent online to 607 Chinese students and 267 of them completed the survey. Exploratory Factor Analysis was conducted to empirically derive the factor structure of the Acculturative Stress Scale for Chinese Students (ASSCS). The results produced a 32-item scale in five dimensions, which were Language Insufficiency, Social Isolation, Perceived Discrimination, Academic Pressure, and Guilt toward Family.

The ASSCS demonstrated high reliability (Cronbach's alpha = 0.939) and initial validity by predicting depression (*Beta* = 0.490, $p<.001$) and life satisfaction (*Beta* = -

0.505, $p<.001$). It was the first Chinese scale of acculturative stress developed and validated among a Chinese student sample in the United States. Further studies need to be conducted to provide empirical support and confirm the validity for the scale. In the future, the scale can be used as diagnosing tool and self-assessment tool.

Margaret E. Adamek, PhD, Chair

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CHAPTER ONE: INTRODUCTION

According to the Institute of International Education (IIE, 2010), the number of international students enrolled in U.S. higher education institutions totaled 690,923 in 2009-2010. Compared to 2008-2009, the number of international students increased 3%, which was mainly boosted by increases in undergraduate students from China. For the first time, China, taking the place of India, was ranked as the leading country of origin sending the most international students. The number of Chinese students in 2009-2010 was 127,628, an increase of 30% from 2008-2009. Still, the number of Chinese students was underestimated. In this paper, Chinese college students are defined as all the students enrolled in U.S. higher education institutions (with F-1 and J-1 visa status) from Mainland China (1^{st}, 127,628), Taiwan (5^{th}, 26,685), and Hong Kong (16^{th}, 8,034). The U.S. has been the primary destination of higher education for Chinese people ever since the Open Door policy was established in 1978.

Studying in a foreign country can impose numerous challenges on international students, including linguistic, accommodation, dietary, academic, financial, interpersonal, and intrapersonal problems (Lin & Yi, 1997; Mori, 2000; Pan, Yue, & Chan, 2010). Many international students experience “powerlessness, feelings of marginality, a sense of inferiority, loneliness, hostility, threats to cultural identity, and perceived alienation and discrimination” (Sandhu, Portes, & McPhee, 1996, p.16). They also report a variety of concerns related to social interaction, social connectedness, social support, homesickness, and other difficulties (Liu, 2009). It is estimated that 15% to 25% of all international students are at risk of experiencing psychological and psychiatric problems (Leong & Chou, 2002).

To facilitate the adjustment of international students, more and more studies have targeted this population. The studies point to acculturative stress as one of the top concerns. Previous studies have reported much higher stress levels among international students than domestic students. Many predictors of acculturative stress have been identified, such as English language proficiency, age of arrival, generational status, length of stay, educational level, socio-economic status (SES), marital status, ethnic identity, and involuntary vs. voluntary immigration status (Constantine, Okazaki, & Utsey, 2004; Kuo & Roysircar, 2004). Other studies focus on the consequences of acculturative stress and investigate how acculturative stress influences individuals' mental health, adaptation, and well-being (Lin & Yi, 1997; James, 1997; Suarez-Morales, Dillon, & Szapocznik, 2007; Zheng & Berry, 1991). Social support is another important area of interest. Many researchers try to investigate how social support buffers the influence of acculturative stress on mental health and well-being (Crockett et al., 2007; Han, Kim, Lee, Pistulka, & Kim, 2007; Frey & Roysircar, 2006; Poyrazli, Kavanaugh, Baker, & Al-Timimi, 2004; Ye, 2006; Yeh & Inose, 2003). However, there is little research on how international students cope with acculturative stress and how to help students with acculturative stress. There is little evidence-based practice recorded in the literature on interventions for students experiencing acculturative stress.

Compared with other subgroups, students from Asian countries experience more acculturative stress due to large cultural disparities and language barriers (Chiu & Ring, 1998; Lin, Endler, & Kocovski, 2001; Poyrazli et al., 2004). Previous researchers usually considered Asian people as a homogeneous group and the inter-group differences are often neglected (Chiu & Ring, 1998; Shen & Takeuchi, 2001). As the largest subgroup,

Chinese students receive little separate research attention. However, more and more studies show that the mental problems of Chinese students are underestimated (Lin et al., 2001; Sandhu, 1997; Sue & Sue, 2003; Uba & Sue, 1991). Chinese people are underrepresented in mental health services, and they have much lower rates of mental health service utilization than other groups (Blignault, Ponzio, Rong, & Eisenbruch, 2008; Chen, Sullivan, Lu, & Shibusawa, 2003; Chin, 1998; Frey & Roysircar, 2006; Lee & Zane, 1998; Mori, 2000; Shen & Takeuchi, 2001; Yeh & Inose, 2002). Moreover, there are many cultural constraints preventing Chinese students from recognizing acculturative stress and effectively coping with ensuing problems. The uniqueness of these problems suggests the need for targeted research attention for Chinese students.

This study specifically focused on the acculturative stress of Chinese college students. The ultimate goal of the study was to develop a culturally competent scale to accurately measure the acculturative stress of Chinese students. To achieve this goal, major theories, empirical studies, and instruments measuring acculturative stress were reviewed. One theoretical model was chosen to hypothesize the latent structure of acculturative stress. Items were generated from in-depth interviews and existing scales. Then the scale was validated among Chinese samples using their own language. The new scale can be used to assess the level of acculturative stress among Chinese students studying in the U.S. English instructions for using the scale will be developed to help social work practitioners in the U.S. to make culturally competent assessment and diagnosis.

CHAPTER TWO: DEFINITIONS AND HISTORIC BACKGROUND OF ACCULTURATION STUDIES

Acculturation was first studied by sociologists and anthropologists, who were mainly interested in group-level changes following migration (van de Vijver & Phalet, 2004). One of the earliest as well as the most influential definitions of acculturation was proposed by three anthropologists -- Redfield, Linton, and Herskovits -- in 1936: "Acculturation comprehends those phenomena, which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural patterns of either or both groups" (p.149). This definition is still the most widely used one in current studies on acculturation.

Later on, some psychological theories of acculturation were proposed by social psychologists, turning the study of acculturation to an individual level (Rudmin, 2003). Based on Redfield and his colleague's model, the Social Science Research Council added a psychological dimension to the definition of acculturation in the 1950s (Padilla & Perez, 2003). For individuals, acculturation was defined as "internal adjustment, a selective adaptation of value systems, the processes of integration and differentiation, the generation of development sequences, and the operation of role determinants and personality factors" (Social Science Research Council, 1954, p.974). In 1967, Graves first brought up the concept of psychological acculturation (Berry, 1997). Psychological acculturation refers to the internal process and the psychological changes resulting from individuals' acculturation processes (Berry, 1997; Padilla & Perez, 2003). Psychological acculturation may happen in six areas: language, cognitive style, personality, identity, attitudes, and acculturative stress (Berry, 1980).

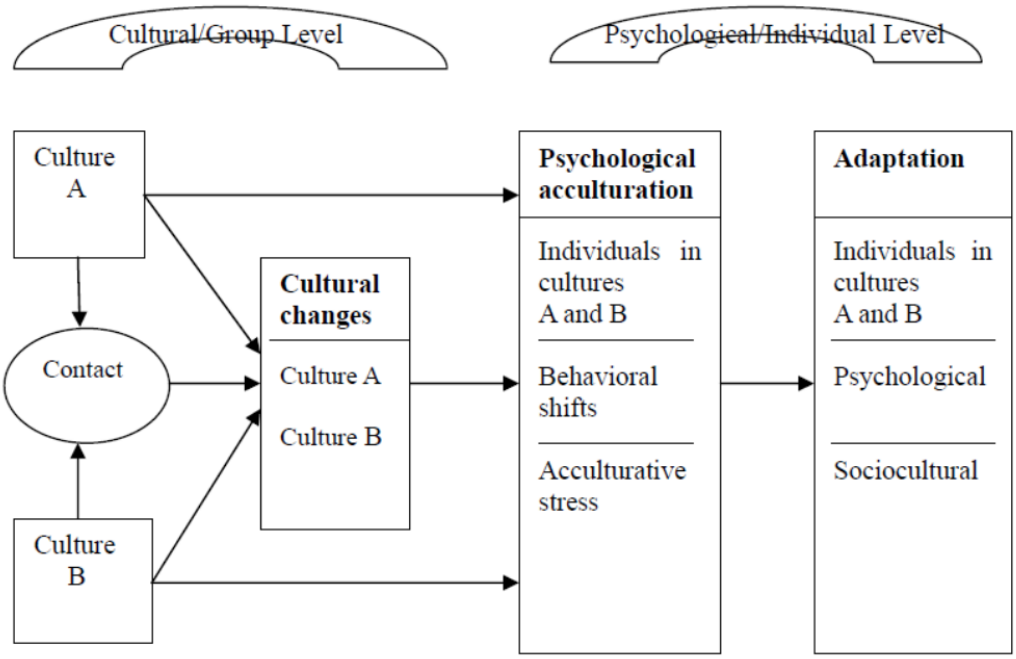
Much increased attention to acculturation happened after a mass migration from collectivist-oriented societies to individualist societies since 1965 (Schwartz & Zamboanga, 2008). In 1964, Gordon proposed a unidimensional model of acculturation, which influenced the acculturation research for several decades. However, the unidimensional model was critiqued for oversimplifying the acculturation process into a continuum of assimilation and ignoring the autonomy of individuals. In 1970, Berry first distinguished various modes of acculturation and proposed a bidimensional model of acculturation, which has dominated the acculturation studies until recently. Thereafter, several other scholars developed multidimensional models (Gracia & Lega, 1979; Padilla, 1980; Ryder, Alden, & Paulhus, 2000; Sanchez & Fernandez, 1993; Szapocznik, Kurtines, & Fernandez, 1980; Zak, 1973).

Acculturative stress is a negative side effect of acculturation (Schwartz & Zamboanga, 2008). Acculturative stress occurs when acculturation experiences cause problems for individuals (Berry, 2003). It can produce a reduction of individuals' physical, psychological, and social health (Berry, Kim, Minde, & Mok, 1987). The concept of acculturative stress was first introduced by Berry (1970) as an alternative term to culture shock for two reasons. First, acculturation can be both good and bad, while culture shock captures only the negative side. Second, acculturation involves two cultures, while culture shock implies only one culture. In contrast, stress can vary from positive to negative and better capture the range of acculturation. Also, stress has a well-developed theoretical background, while shock does not (Berry, 2006).

Berry (2003) provided a holistic framework for understanding acculturation and acculturative stress (see Figure 1). Acculturation happens at both a cultural level and a

psychological level (Berry & Sam, 1996). At the cultural level, acculturation brings changes to the cultures of both groups. At the psychological level, acculturation can affect individuals' behaviors, attitudes, cognitions, personalities, languages, values, relationships, and cultural orientations (Kim & Abreu, 2005). Acculturative stress is an important component in psychological acculturation.

Figure 1: Berry's Overall Model for Acculturation Study (Berry, 2003)



CHAPTER THREE: REVIEW OF THEORIES

In this part, two major theories related to acculturative stress will be reviewed -- acculturation theory and stress theory. For each theory, major models will be discussed in order of historical development. The strengths and weaknesses of each model will be demonstrated by examining important debates in the field. Finally, one best model will be chosen to analyze the acculturative stress of Chinese students.

Acculturation Theory

Unidimensional acculturation model

Unidimensional models assume the acculturation process as a single continuum, with total immersion in the person's original culture at one end and total immersion in the host culture on the other end (Cabassa, 2003). In the unidimensional model, acculturation has only one direction with the newcomers adapting to the mainstream culture. As individuals move toward the attitudes, values, and behaviors of the dominant culture, they give up those of their heritage cultures (Hwang & Ting, 2008).

The unidimensional model was seriously critiqued in past decades and has been nearly abandoned in the acculturation field. Some researchers argued that the model was based on some false assumptions. For example, it assumes that individuals need to have a reduction in one of their cultural domains (Cuellar, Arnold, & Maldonado, 1995), which may not be true because people may choose to maintain their heritage cultures in some aspects and also accept the new culture in some other aspects. Also, the model assumes that the acculturation process affects only the acculturating group, but not the dominant societies (Cabassa, 2003). As a matter of fact, the receiving society also changes as a result of contact with immigrant groups. Rudmin (1990) argued that acculturation should

be studied as a two-way process of cultural change and the influence of minority groups on the dominant society should be acknowledged. However, Schwartz and Zamboanga (2008) found that acculturation is often studied as a one-way process because the receiving group is always more powerful than the migrating groups and contributes more to the flow of cultural change.

Bidimensional acculturation model

Bidimensional models assume acculturation as an interactive, developmental, multi-factorial, and multi-dimensional process (Cuellar et al., 1995). The retention of heritage culture and the acquisition of new culture are perceived as relatively independent processes, which makes biculturalism possible (Hwang & Ting, 2008; Schwartz & Zamboanga, 2008). The most popular bidimensional model was proposed by Berry and his colleagues in the 1980s (see Table 1).

Table 1: Models of Acculturation (Berry et al., 1987)

		Cultural and identity maintenance	
		YES	NO
Contact with and participation in the host society	YES	Integration	Assimilation
	NO	Separation	Marginalization

Berry et al. (1987) proposed two questions that all individuals face during acculturation ①whether to maintain one's own culture and ②whether to accept the mainstream culture. By assembling the answers to these two questions, four modes of acculturation emerge. If one tries to maintain his original culture and also participate in

the host society, integration is manifested. If one tries to maintain his original culture and resist interaction with the local society, separation is manifested. If one does not want to maintain his original culture but tries to participate in dominant culture, assimilation is manifested. If one neither maintains his own culture nor interacts with local culture, marginalization is manifested. Usually, the integration strategy is considered the most successful adaptation strategy and marginalization is the least successful; whereas, assimilation and separation are intermediate (Berry, 1997).

Berry's model is still dominant in current acculturation studies. It has been widely tested among various cultures and acculturating groups. However, there is increasing criticism about this model. Three major problems that have emerged from previous debates are ①the validity problem; ②the context problem; and ③excessive focus on minorities.

Many scholars have questioned the validity of the four modes in Berry's model, especially the validity of marginalization (Cabassa, 2003; Rudmin, 2003). Some people doubted the existence of marginalization as an avenue of acculturation, but some others argued that the second or third generation youths of immigrants may experience marginalization: they do not feel related to the parental culture and they do not want to or are not allowed to immerse into the host culture because of racial discrimination or some other reasons (van de Vijver & Phalet, 2004).

Van de Vijver, Helms-Lorenz, and Feltzer (1999) used factor analysis to demonstrate that the four acculturation modes are actually in one dimension, with integration at one end and assimilation, separation and marginalization at the other end. Once people agree to the integration, they will disagree with the other acculturation

strategies. Rudmin and Ahmadzadeh (2001) argued that the fourfold constructs are not mutually exclusive and their null correlation is not zero. Schwartz and Zamboanga (2008) pointed out that the majority of studies using Berry's model have assumed the existence and equal validity of the four categories prior to analysis, but none of them have tested whether the four modes can be empirically derived.

Berry's model is also criticized for lack of contexts. Van de Vijver et al. (1999) argued that Berry's model assumes that an individual will choose the same acculturation strategy among all domains of life. In real life, people may choose different acculturation strategies in private and public contexts. For example, an international student may try to integrate or assimilate to the mainstream culture in school, but this same individual may endorse more separatist attitudes or behaviors in their private life. The lack of psychological and cultural contexts makes the model ineffective in explaining differences between groups or between individuals (Rudmin, 2003).

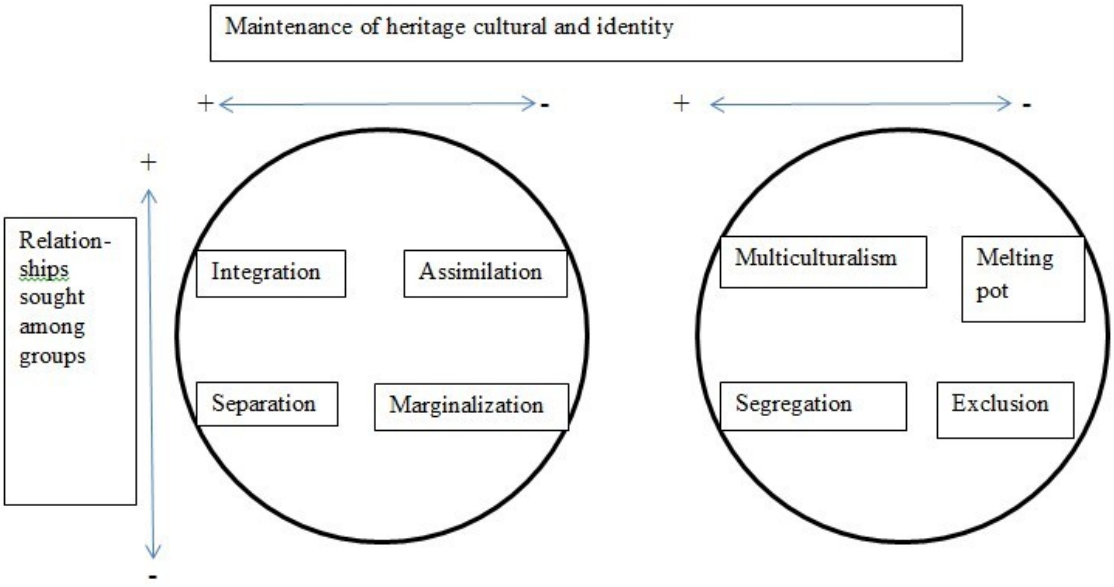
This concern has been taken into consideration by many researchers, including Berry himself (Berry, 1997, 2003). For example, Berry, Kim, Power, Young, and Bujaki (1989) developed the Acculturation Attitudes Scale (AAS). AAS requests the respondents to rate their agreement with each of the four strategies in five domains: marriage, cultural traditions, language, social activities, and friends. Van de Vijver et al. (1999) further extended the measurement to ten domains, which includes culture tradition, friends, food, games, books, language mastery and use, learning, culture of teacher, housing and work. Phalet and Swyngedouw (2004) proposed a contextual acculturation model and developed the Acculturation in Context Measures (ACM). ACM asks the same questions of acculturation orientation in home and family situations and in school

and work situations. The inclusion of the context in which the acculturation occurs can provide a richer understanding of the acculturation process (Cabassa, 2003).

Berry's model is further criticized as emphasizing minorities too much. It assumes that individuals are free to choose their own ways of acculturation (Berry, 1997, 1998; Berry & Sam, 1996). This notion was quite influential in the civil rights movement of immigrants in the 1980s. However, there may be a lot of societal elements that restrict the choice, such as racial discrimination, immigration policies, economic and political status, and so on. Ignoring those preexisting societal barriers for acculturation will result in a pathological perspective of studying the acculturation of newcomers.

Actually, Berry (1980) has addressed this challenge by adding a third question to his previous model: who has the right to decide acculturation strategies? He perceived that the right to choose acculturation strategies depends on the society's tolerance for cultural diversity (Berry, 1980). Berry discussed each of the four modes (individual's acculturation strategy) in two conditions: self-chosen or forced. For example, if the individual chooses to maintain his original culture and resist interaction with the local society, it is separation. But if one is forced to maintain his original culture and resist interaction with the local society, it is segregation. For another example, if one chooses to neither maintain his own culture nor interacts with local culture, it is marginalization. But if one is forced to do so, it is exclusion. Later on, Berry (2003) transformed the four modes of acculturation on forced condition into four modes of societal acculturation strategies (see Figure 2 Modes of Societal Acculturation). Some scholars have noticed that recent trends in acculturation research have begun to focus more on the process of mutual changes involving contact between both cultural groups (Constantine et al., 2004).

Figure 2: Modes of Societal Acculturation (Berry, 2003)



Stress Theory

Some scholars have advocated studying acculturative stress in a broader framework of stress theories. From this perspective, acculturative stress is defined as a reaction to the challenges encountered during the acculturation process (Berry, 2003). Potential difficulties in the acculturation process which may lead to acculturative stress include linguistic challenges, loss of social support and difficulty establishing new social ties, disruptions in family dynamics, difficulty finding jobs in the new country, value and role conflict, discrimination, and non-acceptance by the host culture (Crockett et al., 2007; Hwang & Ting, 2008; Gil, Vega, & Dimas, 1994; Padilla, Wagatsuma, & Lindholm, 1985).

Lazarus and Folkman's stress theory: Appraisal and coping

In the beginning of their development, stress studies were governed by a positivist paradigm. Theorists tried to study stress at the level of environmental conditions in an objective way. Stress was defined as a reaction to stressful stimuli and certain situations

were perceived as universally stressful for all people, such as natural disasters, illness, defeats, and losses. However, Lazarus and Folkman (1984) argued that it is impossible to define stress without reference to the psychological characteristics of individuals. The positivist approach failed to explain individual differences and what makes a stimulus stressful. Lazarus (1999) contended that stress depends on both the environmental condition and what makes a person vulnerable to it.

In 1984, Lazarus and Folkman proposed an appraisal model for stress, and they defined stress as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (Lazarus & Folkman, 1984, p.19). This model examines stress from a person-in-environment perspective. Individuals compare environmental demands with their psychological resources for dealing with them to determine whether an occurrence is stressful (Lazarus, 1999). This cognitive evaluation process is called appraisal, which reflects a subjective dimension of the model (Lazarus & Folkman, 1984).

While appraisal is a cognitive process, coping is an action to manage stress and the corresponding emotions (Lazarus & Folkman, 1984). Lazarus and Folkman categorized coping into problem-focused coping and emotion-focused coping. Problem-focused coping refers to managing the problem causing stress, whereas emotion-focused coping refers to governing emotions generated from the stressors (Kariv & Heiman, 2005). Later on, Endler and Parker (1990) identified a third coping strategy: avoidance-oriented coping, which means engaging in some tasks not related to the stressors to keep oneself out of a stressful situation. The way people actually cope depends on the resources they have and the constraints they confront (see Table 2). Both the resources

and constraints can be examined from two levels: a personal level and an environmental level. Personal coping resources include health and energy, positive beliefs, and problem-solving and social skills. Environmental coping resources include material resources and social support. Personal constraints include specific cultural values and beliefs that prohibit certain ways of coping. Environmental constraints include limited resources and institutional restrictions.

Table 2: Coping resources and constraints (Lazarus & Folkman, 1984)

	Coping resources	**Coping constraints**
Personal level	- health and energy - positive beliefs - problem-solving skills - social skills	- specific cultural values and beliefs that prohibit certain ways of coping
Environmental level	- material resources - social support	- limited resources - institutional restrictions

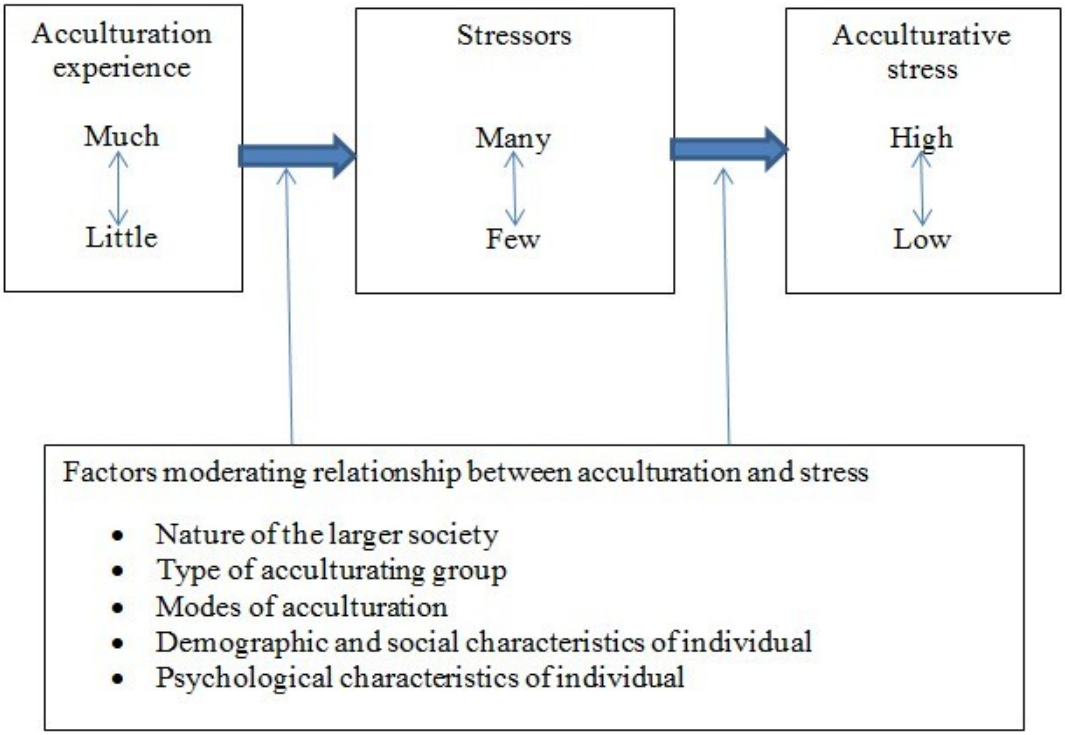
Lazarus and Folkman's (1984) theory is widely used in current stress studies and is considered to be a classic stress theory. The appraisal approach advances positivist stress studies by taking individual differences into account. Including a subjective dimension enables researchers to understand the variations in individuals' response under similar stressful conditions.

Berry's model for acculturative stress

Building on Lazarus and Folkman's work, Berry and his colleagues (1987, 1997) developed a framework for studying acculturation as a stress-coping phenomenon. In this framework, the relationship between acculturation, acculturative stress, and the final adaptation depends on a number of moderating factors. In the early model developed in 1987 (see Figure 3), Berry et al. propounded five moderating factors -- the nature of the

host society, modes of acculturation, type of acculturating group, demographic and social characteristics of the individual, and psychological characteristics of the individual.

Figure 3: Berry's Model of Acculturative Stress (Berry et al., 1987)



The first moderating factor is the nature of the host society. Studies show that immigrants are less stressed in a pluralist society than in an assimilationist society (Berry et al., 1987). This is because in an assimilationist society, there is pressure for the new-comers to conform to the mainstream culture. Individuals will be less motivated to attempt acculturation if their groups are discriminated against by the dominant society (Padilla & Perez, 2003).

The second moderating factor is the type of acculturating group. According to Berry and Kim (1988), there are five different acculturating groups, including immigrants, refugees, native peoples, ethnic groups, and sojourners. International students belong to

the group of sojourners. Berry et al. (1987) posited that international students have higher levels of acculturative stress and more mental health problems than those permanently settled because of their temporary stay and lack of constant social support.

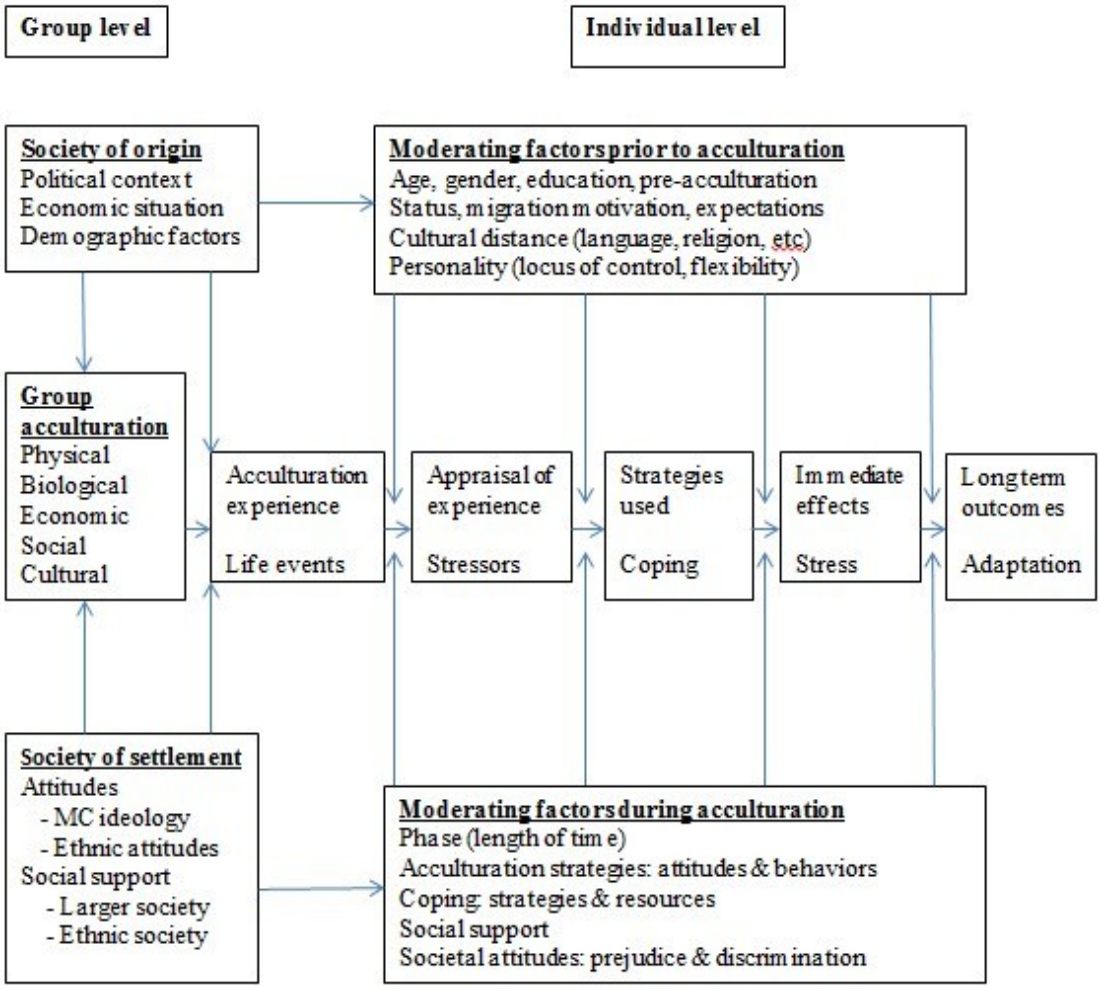
The third moderating factor is modes of acculturation, which includes integration, assimilation, separation, and marginalization. Usually, integration is the most successful strategy. People using this strategy have less acculturative stress and better adaptation to the new culture. Marginalization is the least favorable strategy and can lead to serious mental health problems for individuals.

The fourth and fifth moderating factors are a series of demographic, social and psychological characteristics. Many studies have identified those characteristics as predictors of acculturative stress, such as English language proficiency, age at arrival, generational status, length of stay, educational level, socio-economic status (SES), marital status, ethnic identity, involuntary vs. voluntary immigration status, and so on (Constantine et al., 2004; Kuo & Roysircar, 2004; Wei et al., 2007). Coping strategy is another important moderating factor. How individuals cope with stress determines how they adapt to the new cultures (Cabassa, 2003).

In Berry's new model (1997, see Figure 4), he divided the moderating factors into two categories according to the time order. Among moderating factors prior to acculturation, which are listed on the top of the figure, Berry included demographic variables, motivation and expectation, cultural distance and personality, with the latter two as new input. Among moderating factors during the process of acculturation, which are listed on the bottom of the figure, Berry included phase, acculturation strategy, coping, social support and societal attitudes. Coping and social support correspond to the

individual's demographic and social characteristics in the original model. Societal attitudes correspond to the nature of host society in the original model. This new model reflects a gradual improvement of Berry's theory and rectification of the criticism by shifting focus from only newcomers to both groups involved in acculturation.

Figure 4: Berry's Model of Acculturative Stress (Berry, 1997)



Despite the great work Berry offers, Lazarus (1999) pointed out two shortcomings of Berry's framework of acculturative stress. One is that Berry's model does not differentiate stress due to acculturation and stress as a part of everyday life. People

experience stress in daily life, whether they face acculturation or not. Acculturation may impose additional stress for individuals, but it may not add a corresponding amount to one's overall stress level. Hwang and Ting (2008) contended that acculturative stress is associated with mental health status above and beyond the effects of general stress. However, they did not mention how to measure this "above and beyond" part of stress. It is arguable whether it is necessary to differentiate acculturative stress from global stress because an individual experiences them as a whole rather than as two separate parts of life.

Another problem with Berry's model is that it is complicated and abstract. Therefore, it cannot accurately reflect the lived experiences of those acculturating groups. Lazarus (1999) commented that the model lacks "microanalytic and narrative sense" (p.187). However, this is a common dilemma of quantitative research methods rather than a problem with Berry's model. Berry (1997) suggested that acculturative stress researchers include all the key variables in his model, which is not feasible in real studies. More qualitative studies are needed to supplement Berry's model of acculturative stress.

In summary, acculturation theory and stress theory are two fundamental theories in acculturation research, cross-cultural studies, and ethnic minority studies. There are different schools of thought and different models of each theory. However, Berry's acculturation model and Lazarus and Folkman's appraisal theory are the dominant models. Lazarus and Folkman's appraisal theory is the classic stress theory. The concepts of appraisal and coping lay the basis for research on the acculturative stress of Chinese students. Grounded in Lazarus and Folkman's theory, Berry's model provides a holistic picture for acculturation studies. His model is comprehensive, considering all the aspects

of the acculturation process. Also, his model has been widely tested in empirical studies among different groups and cultures. Although it is facing a lot of criticism, no substitute model has gained equivalent influence or has been as widely used and tested as Berry's model. For several decades, Berry's model has been improved both in its conceptual framework and empirical support. Thus, it will be adopted to structure the following discussions in this paper. Related studies will be reviewed to provide empirical support for the chosen theories.

CHAPTER FOUR: REVIEW OF EMPIRICAL STUDIES

In this part, Lazarus and Folkman's stress theory and Berry's model are used to analyze the acculturative stress of Chinese students. Berry's model (see Figure 4) will be used to structure the literature review and all the key variables in his model will be addressed. The coping theory of Lazarus and Folkman and the concepts of coping resources and constraints will be used as a supplemental dimension to strengthen the discussion. Chinese culture will be used as a context to explain the results of empirical studies and what is unique about Chinese students.

Acculturative Stress and Demographic Characteristics

Demographic characteristics are those stable personal factors that barely change before or after acculturation. Researchers usually want to control these factors in order to differentiate their influence from other variables. Commonly examined demographic characteristics in acculturation studies include age, gender, generational status, education, and socio-economic status.

Previous studies have not found consensus in regard to whether gender predicts difference in acculturative stress. Some studies show that women may be more at risk for problems than males (Carballo, 1994). However, other studies show that international male students suffer higher levels of acculturative stress than females (Mori, 2000). Berry (1997) contended that whether gender makes a difference depends on the relative status of females in the two cultures. If there is a significant difference, women may have to resolve the role conflicts and therefore have more stress.

Padilla, Alvarez, and Lindholm (1985) found that age and generational status are significant predictors of acculturative stress. Late immigrants, those who immigrated

after the age of 14, endure a greater level of stress than those who immigrated at an early age. First and second generation immigrants tend to have more stress than third generation immigrants.

However, age and generational status may not be a significant predictor of acculturative stress of Chinese students. As college students, there is not much variation in their age and generational status. Most are first generation and at similar ages. Bai (2010) used undergraduate vs. graduate status of students, which reflect age differences, to predict acculturative stress, but found no significant difference between the two groups.

Education is a consistent negative predictor of acculturative stress (Berry, 1997). People with higher educational levels have more coping resources (Lazarus & Folkman, 1984) and better cognitive and problem-solving abilities (Berry et al., 1987), which make them less vulnerable to acculturative stress. Again, education may not be a significant predictor for student populations because they are at a similar education level.

Shen and Takeuchi (2001) found that higher socio-economic status (SES) is correlated with higher acculturation and lower depression symptoms. The SES of students usually depends on the SES of their parents. One way their parents' SES influences acculturation is reflected in financial support. Many studies have found that financial difficulty is an important stressor for international students (Lin & Yi, 1997; Liu, 2009; Mori, 2000; Pan et al., 2010). Their visa statuses limit their ability to apply for financial aid and employment opportunities (Thomas & Althen, 1989). Students with sufficient financial support from their parents may have less stress. Also, parents with higher SES may have a wider social network that can lend help to their children.

Acculturative Stress and Cultural Distance

According to Berry and Annis (1974), cultural distance between one's native culture and the host culture influences acculturation. Greater cultural distance implies greater possibility of cultural conflict and greater need for cultural learning, which will lead to a higher level of acculturative stress (Berry, 1997). Many researchers found that Asian students encounter more difficulties than other groups in adapting to American culture because of the large cultural distance (Chiu & Ring, 1998; Lin et al., 2001; Liu, 2009; Poyrazli et al., 2004). Yeh and Inose (2002) posited that Asian students are particularly challenged by the disparities regarding cooperation versus competition, collectivism versus individualism, and hierarchical relationships versus equality of relationships.

China is a collectivist country. Confucianism has been the dominant belief system for thousands of years (Hutchings & Taylor, 2007). Core values of Confucianism include reciprocity, filial piety, loyalty to one's family, respect for authority and experience, consensus, and harmony (Chan & Tsui, 1997; Chung, 1992; Hutchings & Taylor, 2007; Maki & Kitano, 2002). People are located in well-structured hierarchical social relationships with well-defined social roles and expectations for everyone. Individuals are never regarded as independent entities but always as a part of social relationships, among which kinship is the major bond (Yip, 2004). Chinese people are usually group-oriented and attempt to maintain harmonious relationships with others. The common good is emphasized instead of individual well-being. In contrast, the U.S. is an individualist country, where independent characters and social roles are emphasized. The social

structure is horizontal. The relationships among people are equal and competitive (Chung, 1992).

Such a wide cultural distance creates a lot of conflicts regarding values, behaviors and norms for Chinese students, especially when they interact with local people (James, 1997). Unfamiliar with the cultures and values in the U.S., Chinese students may not be clear about the expectations of certain behaviors and their roles. Studies have shown that many Chinese students have interpersonal problems, which become one of the main stressors during acculturation (Pan et al., 2010).

Language is another important dimension of cultural distance. Many studies have reported that Asian students have insufficient English proficiency (e.g., Constantine et al., 2004; Kuo & Roysircar, 2004; Mori, 2000; Yeh & Inose, 2002). In China, children begin to learn English from primary school or even earlier. Those who come to the United States might have been studying English for more than ten years. However, the English teaching in China is critiqued for too heavily emphasizing reading, writing, and grammar. Spoken English is ignored, which may create serious problems for daily communication.

Language ability is found to be negatively correlated with acculturative stress (Kuo & Roysircar, 2004). Lack of English proficiency not only negatively affects students' academic performance, but also reduces their opportunities for receiving scholarships and assistantships (Liu, 2009). Poor spoken English obstructs their communication with local students and faculty. The language barrier also makes Chinese students reluctant to seek professional help (Blignault et al., 2008; Frey & Roysircar, 2006; Shen & Takeuchi, 2001). As a result, Chinese students often have to endure acculturative stress without sufficient support from others.

Acculturative Stress and Student Status, Motivation, and Expectation

Many studies have found that student sojourners have a higher level of acculturative stress compared to other acculturating groups (Berry et al., 1987; Kuo & Roysircar, 2004; Liu, 2009; Zheng & Berry, 1991). Zheng and Berry (1991) reported that Chinese sojourners in Canada have more problems related to work, family and children, language and communication, homesickness, and loneliness than settled down Chinese immigrants. One of the reasons that international students have more stress is due to school-based stress. In addition to general acculturation issues, student sojourners have to deal with academic stress. Coming from different educational backgrounds, many international students find it difficult to adapt to the unfamiliar American education system, such as independent library research, frequent “pop” quizzes, making oral presentations, and expectations for active participation in informal class discussions (Mori, 2000; Pan et al., 2010). International students may also encounter racist educational policies (both subtle and overt) and culturally insensitive curricula and instructors (Chiu & Ring, 1998). All this school-based stress adds extra burden on their acculturation process. However, international students may have limited resources to deal with these varied stressors (Poyrazli et al., 2004). Many resources, such as student loans and scholarships, may be available only to American students (Sandhu & Asrabadi, 1998).

Acculturative stress is related to motivation and expectation (Berry, 1997). Those who voluntarily enter the acculturation process have lower stress than involuntary individuals. For some Chinese students, coming to the U.S. for further education is not a personal choice. It may be a family decision that honors the whole family. In Chinese culture, family honor is placed above individual development. Chinese children are

expected to comply with family wishes, even to the point of giving up their own personal desires and ambitions (Maki & Kitano, 2002). Some Chinese students go abroad only to realize family wishes or maintain the family honor, rather than to pursue their own dreams. Those students are involuntarily involved in the acculturation process and may experience higher stress than those who are voluntarily involved. Nevertheless, the motivation of Chinese students has been barely studied in previous research.

Meanwhile, Chinese students are found to bear unrealistic expectations toward academic performance (Wang, Slaney, & Rice, 2007; Wei et al., 2007). In Chinese culture, academic achievement is one of the most important criteria of success. Chinese parents usually demand a high level of academic achievement from their children (Crystal et al., 1994). At the same time, the whole society places high expectations on those who go abroad for further education and consider them to be the best educated students (Thomas & Althen, 1989). With those social expectations, Chinese students usually have a greater fear of academic failure than students from other countries (Liu, 2009). Unfortunately, facing the new environment, many students find it difficult to maintain as good performance as they were accustomed to, and those students with maladaptive perfectionism tend to attribute the discrepancy to personal failure (Wei et al., 2007). The pressure to succeed and the collapse of perfectionism impose extra stress on Chinese students and make them vulnerable to many mental health problems.

Acculturative Stress and Mental Health

Acculturative stress has a great influence on individuals' mental health status. A high level of acculturative stress increases the risk for developing mental health problems, particularly in the initial stage of acculturation (Zheng & Berry, 1991). Mental health

problems commonly found among acculturating people include depression, anxiety, bipolar disorder, and a high risk for suicide (Lin & Yi, 1997; James, 1997; Suarez-Morales et al., 2007). Poor mental health is usually related to important life changes during acculturation, such as loss of one's previous social role or avocation, the need to rebuild one's social network, and separation from family supports (Organista, Organista, & Kurasaki, 2003).

Studies on the mental health of Chinese students are scanty. One reason is that Chinese people, together with other Asian groups, have been considered as "model minorities" because of their high educational and economic achievement (Chen et al., 2003; Chiu & Ring, 1998; Fong, 1992; Green, 1999; Khinduka, 1992). Some researchers contended that Asian Americans as a group actually have better mental health status because some aspects of their culture, such as family integration and community cohesiveness, help to reduce psychological disorders (Chen et al., 2003).

Another reason is that "mental health" is actually a modern western concept which does not exist in the traditional Chinese culture. The modern concept of mental health originates from the separation of body and mind. However, in traditional Chinese culture, body and mind are integrated. There is no distinction between physical and mental illness (Lin & Yi, 1997). That is why many studies have found that Chinese students tend to somatize their problems (Chin, 1998; Liu, 2009; Maki & Kitano, 2002). They may not realize some of the physical symptoms, such as sleeping disturbance, eating problems, fatigue, stomachache, and headache, actually stem from psychological stressors (Lin & Yi, 1997). Chen (1977) found that Chinese Americans consider only very serious symptoms, such as psychotic and violent actions, as mental health problems.

People with minor symptoms are perceived as being “abnormal” or “bad” rather than “mentally ill.”

However, more and more studies demonstrate that Chinese students suffer higher levels of acculturative stress than other ethnic groups (Chiu & Ring, 1998; Lin et al., 2001; Poyrazli et al., 2004). The mental health problems of Chinese students are underestimated (Lin et al., 2001; Sandhu, 1997; Sue & Sue, 2003; Uba & Sue, 1991). They are found to underreport their levels of psychological distress because of cultural values related to emotional restraint (Sandhu, 1997; Sue & Sue, 2003).

To better understand the Chinese concepts of mental health, many scholars have looked at the influence of Confucianism on mental health. Yip (2005) contended that Confucianism has both internal and external requirements for a mentally healthy individual. He stated that:

> Internally, a mentally healthy individual is a self-cultivated individual with a purified mind, a well-disciplined manner and mild expression of emotion. Externally, he/she is humane, righteous, faithful and forgiving in interaction with others. He/she is fully aware of his/her rights and responsibilities in his/her social roles and status. (p.394)

In all, Chinese people are encouraged to restrain emotion and suppress individual desires to avoid interpersonal conflict and maintain harmony with other people as well as the law of nature (Liu, 2009; Yip, 2005).

This is very different from modern western concepts of mental health, which emphasize self-actualization and self-assertion. Individuals are regarded as independent entities. A mentally healthy person is supposed to fulfill his potential, feel self-worth, satisfy with one’s social roles, and adjust well to society (American Psychiatric

Association, 1994). However, in a collectivist country like China, an individual's sense of self is always influenced by others, especially authorities and families (Yang, 1995). Chinese people are found to be overly sensitive to others' evaluations (Xie & Leong, 2008), and their behaviors are more likely to be determined by contextual factors than by personality traits (Church, 2000; Hsu, 1971). Maintaining good relationships with others is considered more important than feeling good about themselves. People always sacrifice their own rights to compromise with others and try every way to avoid conflicts (Yip, 2005). These Chinese perceptions may lead to the ignorance or misunderstanding of mental health problems in western cultures, which further influences people's coping strategies and help-seeking behaviors. It is very important to consider these unique perceptions when assessing and diagnosing the mental health status of Chinese students.

Acculturative Stress and Coping

Studies on the coping strategies of Chinese students are even fewer. Since their mental health problems are rarely exposed to professionals, there may be little research attention and scarce empirical resources that scholars can draw upon. However, under-exposure does not indicate non-existence of problems. Conversely, it is possible that low exposure of problems will exacerbate the vulnerability of Chinese students undergoing acculturation. Fortunately, in recent years, there are an increasing number of publications on counseling Chinese Americans (Maki & Kitano, 2002). Those studies identify some personal constraints, mainly stemming from cultural beliefs, which prevent Chinese students from effectively coping with acculturative stress.

Self-control

In a comparative study of coping strategies among Chinese, Japanese, and Korean immigrant students, Yeh and Inose (2002) reported that when Asian immigrant students have problems, they tend to keep to themselves (33.2%) or endure (16.8%) rather than confront (10.9%). As mentioned, self-control is valued in Chinese culture. People are required to show stoicism, patience, an uncomplaining attitude toward adversity, and tolerance under painful conditions (Maki & Kitano, 2002). In facing challenges and difficulties, Chinese people tend to keep all things to themselves. Especially for emotional disturbance or stress, Chinese people believe that they should use inner resources, such as willpower, to resolve problems (Wei et al., 2007). Yue (2001) framed this coping strategy as self-cultivation and self-transcendence. Self-cultivation means Chinese students tend to change themselves rather than change the environment to cope with stress (Lam & Zane, 2004), while self-transcendence is a kind of avoidance coping. Frey and Roysircar (2006) contended that avoidant behaviors are an inherent part of Asian culture.

However, not all problems, such as discrimination and institutional barriers, can be resolved by inner power. Often, acculturative stress may be too overwhelming to manage alone. Self-control and withholding expression can result in denial of problems and deterioration of mental health status among Chinese students.

Loss of face and stigma

Self-control is closely related to loss of face, which has been identified as a key feature of interpersonal dynamics in East Asian cultures (Ho, 1976). Chinese people feel shame or loss of face if they expose vulnerabilities to others (Maki & Kitano, 2002; Sue

& Morishima, 1982). Thus, emotional expression can be problematic in interpersonal relationships among Chinese people (Yeh, 2000).

Loss of face is similar to the concept of stigma in western cultures. Stigma is a negative belief about a group (stereotype), which incurs negative emotional reactions (prejudice) and behavioral responses (discrimination) toward the group (Corrigan, 2005). Although stigma associated with mental illness exists in all cultures, it is much more severe among Asians than among white Europeans and Americans (Chen et al., 2003; Fogel & Ford, 2005). One of the reasons is that mental illness not only causes loss of face for individuals, it can also make the entire family lose face and be socially shamed. This is not desirable in a collective culture where family honor is more important than individuals' well-being. The family may attempt to hide the mental illness of their family members and discourage the individuals from seeking help for mental illnesses (Fogel & Ford, 2005).

Barriers to psychotherapy and counseling

Maki and Kitano (2002) described a typical help-seeking pattern for Asian Americans. Firstly, Asian Americans will attempt to handle issues by themselves. If this is insufficient, they will turn to family members or friends for help. If this also fails, they will consult with community figures. The last choice, which is usually avoided by Asian Americans, is to seek help from mental health professionals.

Of all the help-seeking behaviors, professional help is ranked as the last choice for Asian Americans. As previously discussed, mental health is not a heritage concept and there is no cultural analogy to psychological therapy in traditional Chinese culture (Leong, Lee, & Chang, 2008). Thus, Chinese students may not know how mental health problems

can be treated by professionals. In their mind, professional mental health services are not a treatment option.

Many studies have found that Chinese people are underrepresented in mental health services and they have much lower rates of mental health service utilization than other groups (Blignault et al., 2008; Chen et al., 2003; Chin, 1998; Frey & Roysircar, 2006; Lee & Zane, 1998; Mori, 2000; Shen & Takeuchi, 2001; Yeh & Inose, 2002). Instead of seeking professional mental health services, Chinese students often seek medical help or academic help for their physical complaints (Lin & Yi, 1997). Even if they come to see mental health workers, they may not be familiar with the process of psychotherapy and counseling services, which is full of self-disclosure and sharing. Many Chinese students are reluctant to disclose their inner thoughts because of confidentiality concerns (Blignault et al., 2008). They may worry about whether their stories will be known to other Chinese cohorts or whether mental illness will influence their immigration and visa status. Last but not least, Chinese students have financial concerns about how much they have to pay to get professional services (Blignault et al., 2008; Mori, 2000).

However, attributing the low utilization rate among Chinese people only to cultural differences or personal concerns may lead to neglect of institutional factors. There are many environmental constraints that influence Chinese peoples' attitudes toward professional services and help-seeking behaviors. Many researchers have questioned the availability and accessibility of existing mental health services to ethnic minorities in the U.S. (Blignault et al., 2008; Frey & Roysircar, 2006). Lack of culturally

sensitive services creates substantial institutional barriers for ethnic minorities to access mental health services.

Shen and Takeuchi (2001) studied the help-seeking behaviors among 1,000 East and Southeast Asian immigrants in Canada and found that Chinese people perceive less access to culturally, linguistically, and gender-appropriate services. Since most of the professionals in the United States are white people, Chinese students may not expect to get good services or may adopt a mistrustful attitude toward white counselors due to potential cultural differences (Mori, 2000). Language is another significant barrier. Students with lower English proficiency may find it more difficult to communicate with counselors. Meanwhile, lower English proficiency is usually related to a lower level of acculturation and more stress, which means greater need for professional interventions. As a result, Chinese students may be trapped in such a desperate loop: less acculturated, less likely to seek mental health services, poorer treatment outcomes, and more acculturative stress (Sue, Zane, & Young, 1994). Although there exist services provided by Chinese staff members in some big cities like Los Angeles, they are mainly Cantonese speakers who originate from Hong Kong and Guangdong (Blignault et al., 2008; Shen & Takeuchi, 2001). There are an insufficient number of Mandarin-speaking mental health professionals who can serve people from mainland China.

Acculturative Stress and Social Support

Lazarus and Folkman (1984) identified social support as an important coping resource for stress. Social support refers to the provision of psychological and material resources from others to help the person in stress (Crockett et al., 2007). Social support can alleviate acculturative stress and help people achieve a better mental health status

(Han et al., 2007). People with more social support tend to experience lower levels of acculturative stress. Social support is sometimes confused with social network, which means a set of social connections surrounding an individual. Lazarus and Folkman (1984) pointed out that having social relationships does not necessarily infer getting support from them. Social support should also be appraised from the individual's perception.

In coming to a new environment, Chinese students lose their original social support network (Lin et al., 2001), not only because of geographic distance, but also because of cultural constraints. In collectivistic cultures, people are encouraged to forbear personal concerns in order to not burden others (Markus & Kitayama, 1991). Even if Chinese students experience stress in foreign countries, they may not talk to family members or friends because of a fear of burdening others (Constantine et al., 2004). Instead, they try to hide their problems and only share good news or even tell white lies.

Also, intergenerational conflicts are quite serious in Chinese families (Chan & Leong, 1994). In Chinese culture, children are required to show high respect for and obedience to parents (Maki & Kitano, 2002). The parent-child interaction flows essentially from parents to children (Chung, 1992). As a result, many Chinese children find it difficult to communicate with their parents. Chinese students may not want to share their concerns with their families.

Being in a new environment, Chinese students cannot get enough social support from local society, either. Berry et al. (1987) contended that student sojourners do not have a full-scaled social network in the host society and often lack social support when in need. Some studies have found that developing social networks with American students helps international students in making successful adjustments (Abe, Talbot, & Geelhoed,

1998). Students who primarily socialize with American students experience less acculturative stress (Poyrazli et al., 2004). However, Frey and Roysircar (2006) found that most Chinese students do not have American friends, either because they do not prefer to make friends with American people or because of lack of opportunities. Chung (1992) explained that Asian culture requires a high level of commitment in social relationships, while Americans treat human relationships on a conditional basis. Many international students perceive friendship in western culture to be less sincere (Mori, 2000) and thus tend to socialize only with cohorts from their own countries (Yeh & Inose, 2003).

In summary, empirical studies have shown that Chinese students have higher levels of acculturative stress. The reasons include large cultural disparities, language barriers, academic burden, high expectations from home countries, and others. In addition, because mental health is not a heritage concept in Chinese culture, it is usual for Chinese people to have misunderstandings or underestimations of their mental health problems. There are many cultural beliefs that restrict the coping of Chinese people, such as uncomplaining attitudes, self-control, and loss of face. There are also many environmental constraints that prevent Chinese people from effectively coping with acculturative stress, such as lack of social support, limited resources available to Chinese people, and culturally insensitive services. These studies provide empirical support for Berry's acculturative stress model and Lazarus and Folkman's coping theory. The results explain what makes Chinese students more vulnerable in the face of acculturative stress and why acculturative stress is a particular problem for Chinese students. The facts

signify an urgent need for separate research attention to Chinese students who are experiencing acculturative stress.

CHAPTER FIVE: MAJOR INSTRUMENTS MEASURING ACCULTURATIVE STRESS

As evidenced by the literature, Chinese students are in danger of acculturative stress and related mental health problems. A first step to help them is developing a culturally appropriate assessment tool to measure their stress levels. Several tools have been developed in acculturation studies and most of them measure acculturation on a general level. Acculturative stress, as a specific psychological issue, has received little research attention. Also, most of the existing scales have been developed for Hispanic Americans and African Americans with few made specifically for Asian/Pacific Islanders (Zane & Mak, 2003). Corresponding to the theories reviewed earlier, the following section will discuss two categories of measurements related to acculturative stress: acculturation measurements and stress measurements.

Acculturation Measurements

Acculturation is usually operationalized in relation to the following variables: place of birth, generational status, length of residence in the US, language usage, food preference, self-assessment of ethnic identity and distance between cultures, degree of loyalty toward heritage culture, ethnicity of friends, and so on (Cortes, 1994). Among those, language is always the most important indicator and is often overemphasized (Zane & Mak, 2003). Cortes (1994) contended that measurements based on language usage have high internal consistency reliability but low content validity. By reviewing the major acculturation measurements (see Appendix A), Zane and Mak (2003) found that few of the existing measures have content overlap across different ethnic groups, or even within the same ethnic group. The content validity of the measurements was questioned.

The researchers doubted whether the measures are assessing the same acculturation phenomena.

Moreover, critics pointed out that most of the existing measurements are still in a unidimensional continuum which forces the respondents to choose between valuing either the ethnic culture or the host culture (Cortes, 1991; Zane & Mak, 2001). Some scholars argued that the limitations of the measures are due to the validity problem of the theory those measurements are based on. As mentioned previously, although Berry and many other scholars have proposed influential bidimensional models of acculturation, the validity of the four-fold modes is criticized. Van de Vijver et al. (1999) maintained that the four acculturation modes are actually in one dimension, with integration at one end and assimilation, separation and marginalization at the other end. Rudmin and Ahmadzadeh (2001) argued that the fourfold constructs are not mutually exclusive and their null intercorrelation is not zero.

Rudmin and his colleagues have extended the criticism of the bidimensional model to question all the acculturation measurements and studies. Rudmin (2003) summarized all the taxonomies on acculturation and criticized the paradigm for poor psychometrics, incorrect statistical analyses, and problematic logics. Rudmin and Ahmadzadeh (2001) repeated a study on Korean acculturation in Canada with four different populations, including Koreans experiencing acculturation in Canada; Koreans who had self-selected for acculturation but not yet experienced it; Koreans who had no interest in experiencing Canada; and Norwegians who had little knowledge of either Korea or Canada. Ironically, the results from the four different populations were nearly

identical. Thus, they concluded that the fourfold scales are not measuring acculturation at all, but only a composition of response bias artifacts (Rudmin, 2003).

Cabassa (2003) posited that the dynamic nature of the acculturation process would be lost during the translation of theories to measurements and/or applied in cross-sectional research designs, and therefore all acculturation measurements may not be meaningful. Rudmin (2003) argued that acculturation research has hindered rather than helped acculturating minorities because it shifts the attention away from their rights and needs. He even recommended dismissal of acculturation measures.

In the face of these arguments, Zane and Mak (2003) suggested deconstructing acculturation into more specific psychological elements and developing measurements on the deconstructed elements, such as acculturative stress. Leong, Chang, and Lee (2007) noticed that research on specific psychological issues has become a trend in recent research on acculturation. Harwood (1994) suggested researchers redefine acculturation by taking into consideration the impact of globalization, which has blended the borders of different cultures.

Stress Measurements

Although there are several scales measuring stress, few specifically measure acculturative stress. One of the reasons is that it is difficult to differentiate stress due to acculturation and stress as a part of everyday life (Lazarus, 1999). Hwang and Ting (2008) suggested that acculturative stress is above and beyond the effects of general stress. However, they did not discuss how to measure the “above and beyond” part. It might be advisable to conduct a comparative study between individuals’ stress level before and

after acculturation. However, there was no such empirical study found in the literature review.

Nevertheless, there are several scales which specifically measure the acculturative stress of international students. The first one is the Acculturative Stress Scale for International Students (ASSIS) developed by Sandhu and Asrabadi (1994) (see Appendix B). The scale contains 36 items on seven subscales, which are perceived discrimination (8 items), homesickness (4 items), perceived hate/rejection (5 items), fear (4 items), stress due to change/culture shock (3 items), guilt (2 items), and nonspecific items (10 items). The responses are in a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The total score of the scale varies from 36 to 180, with a higher score indicating a higher level of acculturative stress. The authors set 109, two standard deviations above the mean score (66.32), as an alert line for counseling and psychological intervention.

Although Sandhu and Asrabadi (1998) reported that the ASSIS attracted the attention of worldwide scholars, and 29 studies using ASSIS were in progress as of 1998, not many published studies using their scale were found in the literature review. Ansari (1996) studied the validity of the ASSIS by examining the difference in acculturative stress between American and international students. As predicted, they found that the two groups were significantly different on the linear combination of the seven subscales (F (7, 96) = 5.59, $p < 0.001$). International students had significantly higher scores on the following three subscales: perceived discrimination, perceived hate/rejection, and items on the nonspecific scale, including language ability, social interaction, and other criteria.

Ansari (1996) also reported high internal consistency reliability of the ASSIS with a Cronbach's coefficient alpha of 0.87.

Kaul (2001) examined the relationship between acculturative stress and positive adaptation. He used the ASSIS to measure acculturative stress and considered each of the factors of ASSIS as a predictor. A significant relationship between acculturative stress and positive adaptation was found and the combination of the seven predictors accounted for 24.6% of the variance in positive adaptation (F (7,287) = 13.341, $p < 0.001$). Among the seven predictors, three were significant: fear (t = -2.298, $p < 0.05$), stress due to change/culture shock (t = -3.304, $p < 0.001$), and nonspecific factors (t = -2.204, $p < 0.05$). Kaul found higher internal consistency reliability of the ASSIS, with a Cronbach's alpha of 0.93. The negative relationship between acculturative stress and positive adaptation supported the construct validity of the ASSIS. However, Kaul (2001) criticized the ASSIS for not including academic stressors, which have been identified as one of the greatest challenges for international students (Mori, 2000).

Constantine et al. (2004) investigated whether self-concealment behaviors and social self-efficacy skills mediated the relationship between acculturative stress and depression among international students from Africa, Asia, and South America. They used the ASSIS to measure level of acculturative stress and found high internal consistency reliability with a Cronbach's alpha of 0.92. However, they maintained that the scale had limited conceptual relevance and validity for international students. They did not discuss the validity problem in detail.

Wei et al. (2007) examined whether maladaptive perfectionism and length of time in the U.S. moderated the relationship between acculturative stress and depression among

Chinese international students. They translated the ASSIS into Chinese and provided both the English and Chinese versions to the participants. The participants could choose either version (46% chose the English version, 54% chose the Chinese version). The researchers reported Cronbach's alphas of 0.93 for the English version and 0.91 for the Chinese version, which meant both versions of the ASSIS had high internal consistency reliability.

The biggest problem of using ASSIS is that the instrument is in English. Sandhu and Asrabadi (1998) stated that an eighth-grade reading level is required for responding to the ASSIS. However, for most international students, English is not their first language. They may find it challenging or frustrating to participate in a survey using a language they are not familiar with. Although Wei et al. (2007) translated the ASSIS into Chinese, it was a word-to-word translation without cultural reevaluation and modification. They still found a low response rate (39%) and a high dropout rate (those who opened the survey but did not finish) (22%) among Chinese students.

Many scholars have discussed the complexity of translating instruments. Shiraev and Levy (2010) posited that simple language translation is not enough because some identical words may have different meanings and some words may not have equivalents in other languages. Van de Vijver and Leung (1997) further framed this phenomenon as construct inequivalence or construct bias, which means the definitions of constructs across cultures do not completely overlap. In cross-cultural research, it is very easy to have construct bias because participants may understand the same scale in very different ways. Thus it is questionable whether the ASSIS is measuring the same acculturative stress among people from different cultural backgrounds. Although previous studies

show high internal consistency reliability of the ASSIS, the validity of the scale needs to be further studied.

The second scale is the Index of Life Stress for Asian Students (ILS) developed by Yang and Clum (1995). This scale does not differentiate acculturative stress from general stress. Instead, it assesses the level of stress experienced by Asian students as a whole. The ILS contains 31 items on five areas of stressors which were identified from a literature review, including language difficulty, cultural adjustment, academic concerns, financial concerns, and outlook for the future. The answers are in a 4-point Likert scale ranging from 0 (never) to 3 (often), with higher scores indicating higher levels of life stress.

The scale was validated on a sample of 101 Asian international students in the United States. Internal consistency reliability was reported with KR-20 as 0.86. Twenty participants were randomly selected to complete the ILS one month later to inspect the test-retest reliability of the scale. The correlation between the two sets of responses was 0.87, which means the scale had acceptable stability. Factor analysis was conducted to explore the construct validity and the five factors generated basically corresponded to the five areas of stressors identified from previous literature. Concurrent validity was examined using correlations between the ILS and the Life Experience Survey (LES), which measures the life stress of the general population. The Pearson r was -0.46 at a significant level ($p < 0.001$). Finally, the authors conducted hierarchical regression to investigate the incremental validity of the ILS. They found that the ILS added significantly to the prediction of depression and hopelessness above and beyond the LES.

Although the authors of the ILS reported comprehensive psychometric data for the instruments, no data were found from other empirical studies using the ILS. The scale is in English, which may create language and validity problems. Also, the scale is targeted to Asian international students as an entire group, while the within-group differences among Asian students are neglected. The authors observed differences in stress levels between their sample and the normative data of American college students. They attributed the differences to the effect of acculturative stress which international students experience in addition to the daily stress everyone experiences. But they did not provide the normative data from American college students and did not use any statistical test to examine whether the difference was statistically significant. Thus, this scale may not be a suitable tool to detect acculturative stress.

The third and also the newest scale is the Acculturative Hassles Scale for Chinese Students (AHSCS) developed by Pan and her colleagues (2008, 2010) (see Appendix C). AHSCS was first mentioned as Acculturative Stressor Scale for Chinese Students (ASSCS) as an 18-item scale with four factors, including language deficiency, cultural difference, academic work, and social interaction (Pan et al., 2008). Later on, Pan et al. (2010) further developed and validated the final AHSCS as a 17-item scale with four factors, including language deficiency, academic work, cultural difference, and social interaction. The newer scale has one less item than the original one and the same amount of factors, although the order of the factors is different with academic work coming in front of cultural difference. They substituted “stressors” with “hassles” because they believed that daily hassles as “micro-stressors” could reflect everyday transaction in the context of acculturation (Pan et al., 2010). Daily hassles may appear less irritating than

major life changes, but they can be very stressful when they accumulate to a certain degree in chronic or recurrent conditions (Lazarus, 1999).

AHSCS is a Chinese scale. The response is rated on a 4-point Likert scale ranging from 0(not at all or not applicable), 1 (a little), and 2 (moderate), to 3(a lot). The total score is obtained by summing the scores of each item and then dividing by the total number of items. A higher score indicates a higher level of acculturative stressors. The scale was developed and validated in a sample of 400 mainland Chinese students from six universities in Hong Kong.

Pan et al. (2010) reported satisfactory internal consistency reliability of the AHSCS with a Cronbach's alpha of .88 and Guttman split-half reliability of 0.86 for the overall scale. They also reported the Cronbach's alpha for the four subscales, which were 0.81 for language deficiency, 0.74 for academic work, 0.76 for cultural difference, and 0.74 for social interaction. They evaluated the convergent validity of the AHSCS by examining the association of the AHSCS with the criterion measurement (Chinese Affect Scale and Satisfaction with Life Scale), which were reported to be related to acculturative stress in previous research. They found that the scores of the AHSCS were positively correlated with negative affect at a significant level, which meant the higher level of acculturative stress people experienced, the more negative emotions they would have. The scores of the AHSCS were negatively correlated with positive affect and life satisfaction at a significant level, which meant the lower level of acculturative stress people experienced, the more positive emotions they would have and the more satisfied they would feel about their lives. The significant correlations with the criteria measurement in expected directions demonstrates the convergent validity of the AHSCS.

The AHSCS is more relevant to Chinese students because it is in Chinese. Chinese students will find it easier to understand and respond to the scale. The scale is developed and validated in the context of Chinese culture, which may cover more relevant domains of acculturative stress experienced by Chinese students and enhance the validity of the scale. However, since the scale was developed for the mainland Chinese students in Hong Kong, it is questionable whether the scale can be generalized and applied to Chinese students in other areas, such as the United States. Pan et al. (2010) admitted that two important domains of acculturative stressors reported in most western measures, perceived discrimination (Sandhu & Asrabadi, 1994) and financial concern (Yang & Clum, 1995), are missing in the AHSCS. These missing dimensions may undermine the content validity of the scale. From another point of view, it may be compromised because Hong Kong is culturally and geographically closer with mainland China compared to western countries. Students may not feel discriminated against because they appear the same as Hong Kong people and share similar culture with the mainstream society; while in western countries, they are easily identified by appearance and belong to minorities. Studies show that people easily identified as different will feel more discrimination and acculturative stress (Mori, 2000). Pan et al. (2010) also mentioned that confirmatory factor analysis is needed to test the stability of the factor structure of the AHSCS. Since the scale is brand new, more empirical studies are needed to examine the test-retest reliability and validity of the scale.

The above three scales are the most relevant scales to measure the acculturative stress of Chinese students in the United States. Each has its own strengths and weaknesses. The ASSIS is more influential and has more empirical support, but may

suffer validity problems because it requires students from different cultures to respond to the same English statements. The ILS is validated by the authors but lacks empirical support from other studies. Also, it does not differentiate acculturative stress from general stress which is experienced by everyone. The AHSCS is the most relevant to Chinese students because it is in Chinese. However, it is developed among Chinese students in Hong Kong and may not apply to Chinese students in the United States.

The purpose of this study was to develop a reliable and valid scale to measure the acculturative stress of Chinese college students in the United States. The scale was developed and validated among Chinese samples using their own language. To achieve this purpose, the following research objectives were established:

(1) Use factor analysis to determine the factor structure of acculturative stress.

(2) Examine the reliability of the scale by checking its internal consistency.

(3) Examine the criterion-related validity by using the scale to predict students' depression and life satisfaction.

(4) Define acculturative stress in a culturally sensitive way.

(5) Develop an instruction manual for American users.

CHAPTER SIX: METHODS

Definition of Acculturative Stress and Hypothesized Factor Structure

Based on Lazarus and Folkman's (1984) appraisal theory, Berry (2003) defined acculturative stress as a stress reaction to the challenges encountered during the acculturation process. Acculturative stress happens when the acculturation experiences are appraised by the person as taxing or exceeding his or her resources resulting in a reduction of individuals' physical, psychological, and social health (Berry et al., 1987). This definition is widely used in empirical studies. However, there is not much discussion regarding domains of the construct. Pan et al. (2010) critiqued the current acculturative stress measurements for conceptual confusion. They divided the current measurements into two categories: impact measurements and resource measurements. The impact measurements measure the psychological and physical symptoms caused by acculturative stress; while the resource measurements assess the "stressors" which lead to acculturative stress. Pan et al. (2010) claimed to adopt a process-oriented definition of acculturative stress and view stress as "a process in which acculturative stressors have significant impact on stress response in terms of physical and psychological well-being" (p.4). However, they did not discuss how they applied their definition in developing scales or how their definition helped to address the conceptual confusion in acculturative stress measurement.

In this study, Berry's definition of acculturative stress was embraced. Acculturative stress was defined in a broad way that anything stressful during acculturation process is acculturative stress. Berry's model was used to develop the domains of the construct. According to Berry (1997), the relationship between

acculturation, acculturative stress, and the final adaptation depends on a number of moderating factors. Those moderating factors include demographic characteristics, cultural distance, student status, coping, and social support. The effect of those factors on acculturative stress of Chinese students was well supported by empirical studies. No matter if they are the stressors which cause the stress, or the reactions caused by the stress, they happen along with the whole acculturation process and influence students' stress level. Thus, those factors can be used to measure the level of acculturative stress of Chinese students.

In addition, the clusters of those factors cover almost all of the domains of the ASSIS and AHSCS. In ASSIS, there are seven domains: perceived discrimination (8 items), homesickness (4 items), perceived hate/rejection (5 items), fear (4 items), stress due to change/culture shock (3 items), guilt (2 items), and nonspecific items. In AHSCS, there are four domains： language deficiency, academic work, cultural difference, and social interaction. According to Pan et al. (2010), two important domains of acculturative stressors reported in most western measures, perceived discrimination (Sandhu & Asrabadi, 1994) and financial concern (Yang & Clum, 1995) are absent from the AHSCS.

Thus, based on the theoretical model and the literature, the hypothesized structure of the present scale will be: language deficiency, academic pressure, financial concerns, cultural difference, social interaction, perceived discrimination, and other negative feelings. However, this study was empirically driven. The hypothesized structure of acculturative stress was only used to generate item pool rather than define the dimension of the scale.

Research Design

The purpose of this study was measurement development. Items were generated from two resources: in-depth interviews and existing scales. The existing scales referred to in this study include the ASSIS and AHSCS. Twenty-two items were borrowed from ASSIS and eleven items were borrowed from AHSCS. Other items were deleted due to repetition.

In order to identify any missing item or domain that has not been covered by the existing scales and literature, in-depth interviews were conducted. Eight Chinese students at Indiana University Purdue University Indianapolis (IUPUI) were interviewed. In the interviews, students were asked to talk about their acculturation experiences and any stressful situations during their adjustment to life in America. The interviews were conducted in Chinese and lasted approximately one hour. The interviews were audio-taped and transcribed. Through content analysis of the transcribed interviews, 39 new items were identified. Most of the items were able to be categorized into the hypothesized structures. Nevertheless, the interviews suggested two dimensions which were not fully covered by previous research. The two dimensions were safety and health, and feelings toward family.

Informed by the existing scales and the in-depth interviews, a 72-item pool was generated for the scale, named the Acculturative Stress Scale for Chinese Students (ASSCS). The items described possible situations that Chinese international students may encounter during their acculturation process and that may cause stress. The items were categorized into nine subscales, which were academic pressure (14 items), language deficiency (10 items), cultural difference (9 items), social interaction (14 items),

perceived discrimination (11 items), financial concerns (3 items), safety and health (5 items), feelings towards families (4 items), and others (2 items) (see Appendix D). Six of the subscales were consistent with the hypothesized factors. The other three subscales were newly developed, which were safety and health, feelings towards families and others. Some of the items of the new subscales were suggested by the interviews, and others were borrowed and reorganized from existing scales. The item construction was enlightened by theories, empirical studies, and interviews. Thus, it improved the content validity of the scale (DeVellis, 2003).

A Likert Scale was adopted as the response format. This format allowed respondents to indicate the frequency of encountering each stressful situation. The response ranged from 1 as “Never” to 7 as “All the time.” A higher score indicates a higher frequency of encountering stressful situations and consequently a higher level of acculturative stress.

Five Subject Matter Experts (SME) were invited to check the face validity and content validity of the scale. Those SMEs were experts in scale development and international affairs. They checked whether the item pool appeared to measure acculturative stress and whether the item pool covered the range of the concept (Rubin & Babbie, 2008). A trial sample of three Chinese students was used to check the readability and comprehensiveness of the scale. After revision, the item pool was sent online to a sample of 267 Chinese college students in the United States.

Exploratory Factor Analysis (EFA) was used to empirically derive the factor structure of the scale. EFA is the appropriate statistical test when developing a new scale and the researcher has no theory regarding the relationships among items and their

corresponding factors (DeVellis, 2003). The scale was further revised and shortened to a 32-item scale based on the results of factor analysis. The reliability of the scale was examined by checking the internal consistency. Criterion-related validity was examined by correlating the scale to the Chinese Self-rating Depression Scale.

Criterion-related validity refers to the empirical association between one measurement and a criterion measurement which taps the same or similar research interests (Schultz & Whitney, 2005). In this study, criterion-related validity was examined by using the scale to predict students' depression and life satisfaction. Previous studies have demonstrated that people with higher levels of acculturative stress would have a higher probability of depression symptoms (Lin & Yi, 1997; James, 1997; Suarez-Morales et al., 2007). Chinese students' depression was measured by Zung's Self-Rating Depression Scale (SDS, 1965). Zung's Self-Rating Depression Scale was a well-established and widely used depression scale. Many researchers have translated it into Chinese (see Appendix E) and validated it among Chinese samples (e.g. Lee et al., 1994; Liu, Ma, Kurita, & Tang, 1998). Previous studies also indicated that students with higher levels of acculturative stress would have lower levels of life satisfaction (Pan et al., 2008; Pan et al., 2010). Students' life satisfaction was measured by one question "Overall, what is your satisfaction degree with your life in the U.S. as an international student?" The answer was in a 5-point Likert scale with 1 as "very unsatisfied" to 5 as "very satisfied."

Sampling and Data Collection

For an unfunded doctoral research study, feasibility and availability was the first priority in the sampling strategy. Probability sampling was not used in this study because it was hard to get an exhaustive list of all the Chinese college students in the United

States. To recruit participants for in-depth interviews, availability sampling and snowball sampling were used. The researcher spread a flyer (see Appendix F) through her personal network. After getting the initial interviewees, more students were recruited through their network. All eight interviewees were graduate students at IUPUI. Three were female and five were male. Their ages ranged from 23 to 35. Three were married and five were single.

For the online survey, convenience sampling was used. Participants were selected because of their convenient accessibility to the researcher. In this study, the accessibility was not a geographic concept, but rather internet accessibility. The online survey link was distributed through two channels. One was through international offices at universities. A staff in the Office of International Affairs (OIA) at IUPUI helped to send an invitation letter (see Appendix G) to the mail list of international offices at other universities. However, only one university (Shawnee State University) agreed to send out the survey link to their Chinese students.

The other channel was through Chinese students' associations. In most of the American universities which have Chinese students, there are Chinese Student & Scholar Associations (CSSA), which are informal self-support organizations among Chinese international students. Many CSSAs have email lists or online forums. The researcher registered in 12 CSSA email lists which were open to the public and emailed the survey link to their members. The researcher also registered in 21 online forums and posted the survey link. After the initial email/post, two to three reminder emails/posts were sent out over a course of one month, with a one week interval between each reminder email/post.

It was hard to estimate the response rate in this study because the CSSA email lists and online forums did not have strict membership registration. It was impossible to estimate how many Chinese students the survey link had been sent to. In order to make sure the survey only went to Chinese college students who were on F-1 and J-1, a screening question was added at the beginning of the questionnaire. Only those who chose F-1 or J-1 visa status could access the survey. If respondents chose "Other" visa status, they were directed to the end of the survey.

The data collection took place from March to May, 2012, with a total of 607 people who opened the survey link. Two hundred and fifty cases were deleted because they only responded to the first visa question. Sixty-seven cases were deleted because they skipped large portions of the survey. The inclusion criterion was that the respondent should complete at least the first part of the survey, which was the 72- item pool for the ASSCS. Twenty-three cases were deleted because their answers were in strange patterns. The exclusion criterion was that the respondent gave the same answers to almost all questions, or successive 30 questions. Ultimately, 267 cases were kept for data analysis.

The demographic characteristics of the participants are presented in Table 3. Most of the participants were female, single, and graduate students. The average age was 26 years old with a standard deviation of 4.04. The average length of stay in the U.S. was 35 months (nearly 3 years) with a standard deviation of 28.09. The majority of students were on F-1 visa status rather than J-1 status, which meant they were self-supported students rather than visiting students/scholars sent by the Chinese government.

Table 3: Demographic Characteristics of Participants

		Number	Percentage
Gender	Female	172	64.4%
	Male	79	29.6%
	Missing	16	6%
Visa type	F-1	249	93.3%
	J-1	14	5.2%
	Missing	4	1.5%
Educational level	Graduate	206	77.2%
	Undergraduate	45	16.9%
	Missing	16	5.9%
Marital status	Single	188	70.4%
	Married	64	24%
	Divorced	1	0.4%
	Missing	14	5.2%
Age (years)	19 - 25	117	43.8%
	26 - 30	106	39.7%
	31 - 43	28	10.4%
	Missing	16	6.4%
Major	Sciences	59	22.1%
	Social sciences	59	22.1%
	Engineering	46	17.2%
	Business and management	38	14.2%
	Computer and information	20	7.5%
	Health profession	18	6.7%
	Others	9	3.4%
	Missing	18	6.8%
Length of stay in the US	< 1 year	62	23.2%
	1 - 2 years	49	18.4%
	2 - 3 years	48	18%
	3 - 4 years	36	13.5%
	4 - 5 years	26	10%
	> 5 years	29	10.9%
	Missing	18	6%

Ethical Considerations

This study was approved by the Institutional Review Board (IRB) at Indiana University. Because the study only involved interview and survey procedures, participants were exposed to minimal or no risk. Thus, the study qualified for an exempt review.

For in-depth interviews, a Study Information Sheet (see Appendix H) was given to participants before the interview. Interviews were conducted in independent library study rooms so the privacy of the participants was protected. The researcher treated participants with high respect during the interview process. After the interviews, participants received $5 grocery gift cards to compensate their time.

For the online survey, a cover letter (see Appendix I) was sent to Chinese students with the online survey link. The cover letter explained the goal of the study, the principle of voluntary participation, and the right to withdraw from the study at any time without consequence. No personal identifiable information was collected through the online system. Thus, the anonymity of participants was ensured. Privacy and confidentiality of all the participants was strictly protected.

The whole data collection process was conducted in Chinese. The researcher has provided all the necessary information in both English and Chinese versions, so that the IRB officers and committee members could monitor the data collection. A bilingual person was invited to check the translation and make sure the two versions were equivalent.

CHAPTER SEVEN: RESULTS AND DISCUSSION

Preliminary Factor Analysis

Exploratory Factor Analysis (EFA) was conducted to empirically derive the factor structure of the ASSCS. Because participants who did not finish the ASSCS were eliminated, there were minor missing data in the factor analysis (1%-7%). Individual's mean scores on the ASSCS were used to substitute their own missing data. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.927 and the Bartlett's test of sphericity was statistically significant (*Chi-square* = 12461.225, *df* = 2211, $p < 0.05$), which meant the data were appropriate to conduct EFA.

Five items with low communalities were removed from the final analysis. Communality is the percentage of variance that each item is explained by all the factors. Items with communalities lower than 0.40 indicated they are not related to other items (Costello & Osborne, 2005). There were five items with low communalities: "I feel uncomfortable to adjust to new foods and/or eating habits" (0.256), "I feel guilty that I am living a different lifestyle here" (0.312), "I worry about my future for not being able to decide" (0.357), "I regret my decision to come to the U.S". (0.368), and "I feel scared that American people have guns" (0.364).

Maximum Likelihood (ML) was used as the extraction method. ML was recommended by many researchers (Costello & Osborne, 2005; Fabrigar, Wegener, MacCallum, & Strahan, 1999) instead of conventional Principle Component Analysis (PCA) because PCA focuses on total variance and does not differentiate between shared and unique variance among observed variables. On the other hand, ML focuses only on accounting for shared variance and thus would not inflate the estimation of variance.

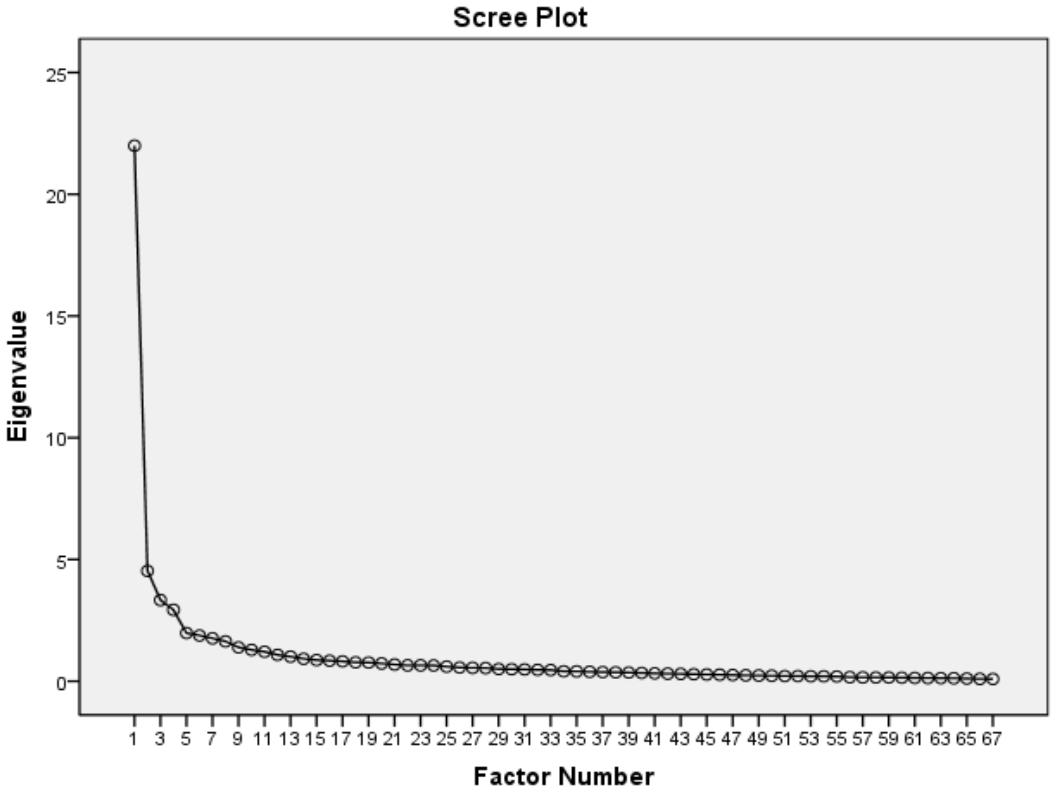
Oblique rotation (promax) was used as the rotation method. Shultz and Whitney (2005) recommended oblique rotation instead of conventional orthogonal rotation because orthogonal rotation does not allow factors to correlate with each other. In contrast, oblique rotation allows the factors to correlate with each other, which is more reasonable in social science research. Moreover, oblique rotation will produce similar results with orthogonal rotation if the factors are truly uncorrelated (Costello & Osborne, 2005; Shultz & Whitney, 2005). Previous research has suggested associations among language insufficiency, academic pressure, and social integration (Liu, 2009; Blignault et al., 2008; Frey & Roysircar, 2006; Shen & Takeuchi, 2001). Thus, the independence of the factors of the ASSCS was not assumed in this study. Oblique rotation was a better choice.

In order to decide the optimal number of factors and items to be retained for the ASSCS, multiple rules were used. Kaiser's rule of eigenvalues was the first step. According to Kaiser's rule, components with eigenvalues greater than 1 should be retained (Kaiser, 1970). Kaiser's rule tends to extract a large number of factors (Shultz & Whitney, 2005) and thus could be used for preliminary selection of the factors. In this study, the EFA extracted 13 components which had eigenvalues greater than 1. Those 13 components accounted for 61.14% of the total variance. However, the first factor itself accounted for 32.193% of the total variance, while other factors accounted for very small proportions. Kaiser's rule has the problem of substantial overfactoring (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Other rules should be considered.

Secondly, a scree test was conducted. Scree test plots the eigenvalues of the correlation matrix in order of descending values (Cattell, 1966). The number of dots on the left of the natural break point indicates the number of factors to be retained (Costello

& Osborne, 2005). Scree-plot (see Figure 5) suggested four factors in the ASSCS. However, locating the natural break point is subjective, which makes the scree test arguable (Costello & Osborne, 2005). A scree test would be used as an important reference rather than the determinant for the number of factors in the ASSCS.

Figure 5: Scree Plot Derived from EFA



Thirdly, the pattern matrix was examined. The pattern matrix described the partial correlations between items and factors when the correlations among factors are controlled. The pattern matrix is recommended when interpreting oblique rotation (Costello & Osborne, 2005; Tabachnick & Fiedell, 2001). By examining the pattern matrix (see Table 4), items with factor loadings greater than 0.60 after rotation and factors with at least 3 such items were retained. Enders and Bandalos (2001) defined a factor loading of 0.60 as the medium level of loading. Costello and Osborne (2005) suggested that a factor with

less than 3 high-loaded items is weak and a factor with 5 high-loaded items is desirable and solid. As a preliminary analysis at this stage, 3-items was used as the threshold. Cross-loaded items, which loaded above 0.32 on two or more factors (Tabachnick & Fiedell, 2001) were deleted.

As a result, six factors were generated. Factor 1 "Language Insufficiency" consisted of 10 items and accounted for 32.193% of the variance. Factor 2 "Social Isolation" consisted of six items and accounted for 6.217% of the variance. Factor 3 "Perceived Discrimination" consisted of seven items and accounted for 3.748% of the variance. Factor 4 (three items) accounted for 4.309% of the variance and Factor 5 (three items) accounted for 2.492% of the variance. Both were labeled "Academic Pressure" since both of them described stress related to school. They were expected to merge in the final scale. Factor 6 "Guilt toward Family" consisted of three items and accounted for 2.037% of the variance. The combination of six factors explained 50.997% of the total variance.

Table 4: Pattern Matrix for ASSCS without Restriction

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Factor 1: Language Insufficiency						
I cannot express myself very well when using English.	**0.871**	0.037	-0.044	-0.062	-0.082	-0.024
It is hard for me to follow the lectures and conversations in classes.	**0.851**	-0.097	-0.030	0.127	-0.104	0.030
I hesitate to participate in class discussion and seminar.	**0.811**	0.049	0.038	-0.180	0.125	0.003

I feel nervous to communicate in English.	**0.761**	-0.134	-0.035	-0.086	-0.118	-0.034
I feel frustrated that I am not able to participate in class discussions.	**0.731**	0.030	0.073	0.042	-0.005	-0.002
I lack confidence when I have to do presentations in English.	**0.704**	0.021	-0.014	-0.130	0.044	0.017
My vocabulary is so small that I always feel short of words.	**0.673**	0.018	-0.096	-0.002	0.025	0.053
I am not use to the English way of thinking.	**0.672**	0.027	0.075	-0.075	0.116	-0.017
I shy away from social situations due to my limited English.	**0.638**	0.006	-0.058	-0.009	-0.054	0.104
Language insufficiency makes me feel inferior.	**0.618**	0.004	0.118	0.045	-0.104	0.043
Factor 2: Social Isolation						
My social circles shrank after I come to the U.S.	-0.082	**1.070**	-0.083	-0.121	-0.067	0.099
I do not have many friends in the U.S.	0.012	**1.061**	-0.008	-0.065	0.034	-0.006
I do not have new social network here.	0.052	**0.704**	0.005	-0.141	0.096	0.026
I feel helpless.	0.036	**0.659**	-0.025	-0.004	0.061	-0.060
I have limited social life.	-0.009	**0.609**	-0.056	0.031	0.036	-0.012
I don’t feel a sense of belonging (community) here.	0.018	**0.604**	0.005	0.026	-0.041	0.071
Factor 3: Perceived Discrimination						
I am treated differently because of my race.	-0.030	-0.167	**0.880**	0.065	0.045	-0.008

People from some other ethnic groups show hatred toward me.	-0.068	-0.075	**0.878**	-0.082	0.015	0.066
I feel that I receive unequal treatment.	0.096	-0.047	**0.835**	-0.012	0.159	0.052
I feel that my people are discriminated against.	-0.051	0.053	**0.782**	0.091	-0.079	-0.010
I feel that others are biased toward me.	0.082	-0.228	**0.716**	-0.087	0.001	0.080
I feel some people don't associate with me because of my ethnicity.	-0.024	0.150	**0.711**	-0.078	-0.061	-0.018
I feel angry that my people are considered inferior here.	-0.043	0.041	**0.662**	0.131	-0.116	0.063
Factor 4: Academic Pressure						
I often have to work overtime in order to catch up.	0.102	-0.168	-0.049	**0.828**	0.128	0.038
Study occupies most of my time.	-0.210	0.002	0.027	**0.762**	-0.167	0.000
I feel a lot of academic pressure.	0.211	-0.165	-0.061	**0.634**	0.239	0.024
Factor 5: Academic Pressure						
I feel it hard to meet the expectations of my advisor.	0.077	0.077	0.050	-0.137	**0.862**	-0.025
My advisor gave me a lot of pressure.	-0.144	-0.067	0.107	0.101	**0.722**	0.059
I am worried whether I can graduate on time.	-0.024	-0.077	-0.067	0.097	**0.620**	0.052
Factor 6: Guilt toward Family						
I feel guilty that I cannot take care of my parents.	0.041	0.087	0.040	0.007	0.025	**0.898**
I worry about my parents.	0.006	-0.031	0.040	-0.045	0.027	**0.808**
I feel guilty to leave my family and friends behind.	-0.016	0.062	0.101	-0.040	0.047	**0.680**

Although six factors were retained as a result of preliminary factor analysis, the quality of those factors was questionable. The first three factors, Language Insufficiency, Social Isolation, and Perceived Discrimination, were solid factors with more than five high-loaded items as well as theoretical support. The other three were weak factors and only accounted for a very small amount of the total variance. It is arguable whether the later three factors came together because of error or as meaningful latent structures. For this situation, many researchers (i.e., Costello & Osborne, 2005; Fabrigar et al., 1999) suggested running multiple factor analyses with a range of number of factors and then comparing the properties of each model. The most desired model would constitute a substantial improvement in fit over the model with one fewer factor and produce no/little improvement when adding one more factor.

Factor Analysis with Restricted Number of Factors

In order to achieve the ideal model fit, factor analysis was conducted multiple times with a restricted number of factors. Since Factor 4 and Factor 5 were expected to merge as one factor, it was anticipated that there would be four or five factors in the final scale. Thus, factor analyses were conducted with restricted factors ranging from three to six. Then the factor structures were compared with each other. The factor structure of a scale should not only be statistically grounded, but also theoretically sound. It is always important to refer to relevant theories and empirical studies to inform the latent factor structure of a scale. The final factor structure should be chosen according to its theoretical and empirical meanings.

Factor Analysis Restricted to Three Factors

Table 5 shows the results of factor analysis when restricted to three factors. Maximum likelihood and oblique rotation were used. Again, items with factor loadings above 0.60 were retained, and cross-loaded items were excluded. The resulting three factors were basically clear in theoretical meaning. The first factor contained 12 items and described Language Insufficiency. There was only one item that did not stick to the theme very well, which was "I have few opportunities to communicate with American people." This could be due to language barriers. But other reasons may also explain this, such as social withdrawal and perceived discrimination. The item did not reflect language insufficiency directly. The second factor contained 11 items and most of the items described Social Isolation. However, there were more items that were hard to categorize under the same theme. For example, "I worry about my mental health" was related to personal health, and "I feel guilty that I cannot take care of my parents" described feelings toward family. The third factor contained seven items, and all items fit well with the theme Perceived Discrimination.

Although the three-factor model has a high Cronbach's alpha at 0.960, it did not discriminate the latent factor structure clearly. There were several items that did not support the factor in theoretical meaning. More importantly, some dimensions, such as academic pressure, were missing. Previous researchers (Kaul, 2001; Mori, 2000; Pan et al., 2010) have identified academic pressure as one of the major sources of acculturative stress for Chinese students. Fabrigar and his colleagues (1999) argued that underfactoring introduced much more error than overfactoring. The absence of important factors may affect the construct validity of the scale. Thus, further analysis was needed.

Table 5: Pattern Matrix for ASSCS Restricted to Three Factors

Item	Factor 1	Factor 2	Factor 3
Factor 1: Language Insufficiency			
I hesitate to participate in class discussion and seminar.	**0.961**	-0.222	-0.011
It is hard for me to follow the lectures and conversations in classes.	**0.896**	-0.238	-0.052
I feel frustrated that I am not able to participate in class discussions.	**0.847**	-0.075	-0.092
I cannot express myself very well when using English.	**0.839**	-0.098	-0.086
I am not used to the English way of thinking.	**0.817**	-0.156	0.116
I lack confidence when I have to do presentations in English.	**0.793**	-0.007	-0.063
It is a big pressure for me to publish academic paper in English.	**0.777**	-0.173	-0.013
I feel nervous to communicate in English.	**0.765**	-0.164	-0.003
I shy away from social situations due to my limited English.	**0.736**	0.103	-0.059
My vocabulary is so small that I always feel short of words.	**0.712**	-0.022	-0.111
Because of language insufficiency, I have to spend extra time on studying.	**0.703**	0.016	-0.056
I have few opportunities to communicate with American people.	**0.636**	-0.039	0.038
Factor 2: Social Isolation			
My social circles shrank after I come to the U.S.	0.042	**0.877**	-0.194
I feel lonely in the U.S.	0.003	**0.801**	-0.052
I miss the country and people of my national origin.	-0.201	**0.703**	-0.085
I do not have many friends in the U.S.	0.217	**0.679**	-0.152
I feel bored here.	-0.019	**0.675**	-0.028
I feel helpless.	0.193	**0.647**	0.049
I have limited social life.	0.198	**0.638**	-0.135
I worry about my mental health.	-0.127	**0.624**	0.143
I feel guilty that I cannot take care of my parents.	-0.134	**0.623**	-0.039
I don’t feel a sense of belonging (community) here.	0.045	**0.622**	0.026
I feel like a strange in the U.S.	0.143	**0.601**	-0.001
Factor 3: Perceived Discrimination			
I am treated differently because of my race.	-0.041	-0.157	**0.942**
I feel that I receive unequal treatment.	0.124	-0.191	**0.840**
People from some other ethnic groups show hatred toward me.	-0.072	-0.105	**0.827**
I feel that my people are discriminated against.	-0.090	0.020	**0.772**

I feel that others are biased toward me.	0.010	-0.169	**0.746**
I feel some people don't associate with me because of my ethnicity.	0.018	-0.001	**0.672**
I feel angry that my people are considered inferior here.	-0.010	0.133	**0.650**

Factor Analysis Restricted to Four Factors

Table 6 shows the results of factor analysis when restricted to four factors. Maximum likelihood and oblique rotation were used. Again, items with factor loadings above 0.60 were retained, and cross-loaded items were excluded. The resulting four factors were clearer than the three-factor model. The first factor included 10 items which defined Language Insufficiency. The second factor included eight items which defined Social Isolation. The third factor included seven items which defined Perceived Discrimination. The fourth factor included four items which defined Academic Pressure.

The four-factor model had a high Cronbach's alpha of 0.939. It was strongly supported by theories and empirical studies. The four factors were discriminant from each other and made much sense in interpretation. Thus, this model was considered as a candidate for the final scale.

Table 6: Pattern Matrix for ASSCS Restricted to Four Factors

Item	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1: Language Insufficiency				
I hesitate to participate in class discussion and seminar.	**0.901**	-0.116	0.008	-0.040
It is hard for me to follow the lectures and conversations in classes.	**0.840**	-0.173	-0.046	0.017
I cannot express myself very well when using English.	**0.793**	-0.010	-0.069	-0.035
I feel frustrated that I am not able to participate in class discussions.	**0.788**	-0.012	0.102	0.019
I feel nervous to communicate in English.	**0.762**	-0.013	0.055	-0.218

I am not use to the English way of thinking.	**0.749**	-0.115	0.107	0.075
I lack confidence when I have to do presentations in English.	**0.737**	0.028	-0.062	0.060
It is a big pressure for me to publish academic paper in English.	**0.704**	-0.207	-0.048	0.205
I shy away from social situations due to my limited English.	**0.702**	0.219	-0.022	-0.109
My vocabulary is so small that I always feel short of words.	**0.654**	-0.032	-0.131	0.139
Factor 2: Social Isolation				
My social circles shrank after I come to the U.S.	0.007	**0.948**	-0.175	-0.049
I do not have many friends in the U.S.	0.180	**0.773**	-0.130	-0.073
I feel lonely in the U.S.	-0.019	**0.770**	-0.042	0.066
I feel bored here.	-0.031	**0.710**	-0.003	-0.045
I miss the country and people of my national origin.	-0.183	**0.693**	-0.057	-0.038
I have limited social life.	0.161	**0.677**	-0.124	0.005
I don’t feel a sense of belonging (community) here.	0.044	**0.667**	0.063	-0.086
I feel like a stranger in the U.S.	0.127	**0.608**	0.022	0.002
Factor 3: Perceived Discrimination				
I am treated differently because of my race.	-0.029	-0.163	**0.950**	-0.022
I feel that I receive unequal treatment.	0.122	-0.192	**0.844**	0.001
People from some other ethnic groups show hatred toward me.	-0.059	-.098	**0.838**	-0.046
I feel that others are biased toward me.	0.052	-0.110	**0.798**	-0.188
I feel that my people are discriminated against.	-0.090	0.003	**0.773**	0.016
I feel some people don’t associate with me because of my ethnicity.	0.010	0.018	**0.681**	-0.024
I feel angry that my people are considered inferior here.	-0.036	0.083	**0.634**	0.114
Factor 4: Academic Pressure				
I feel a lot of academic pressure.	0.229	-0.168	-0.060	**0.734**
I often have to work overtime in order to catch up.	0.094	-0.110	-0.074	**0.719**
The intensive study makes me sick.	-0.197	0.127	0.131	**0.718**
Academic pressure has lowered the quality of my life.	0.188	-0.113	0.011	**0.674**

Factor Analysis Restricted to Five Factors

Table 7 shows the results of factor analysis when restricted to five factors. Maximum likelihood and oblique rotation were used. Again, items with factor loadings above 0.60 were retained, and cross-loaded items were excluded. The resulting five factors were basically the same as the four-factor model except that it added a fifth factor, Guilt toward Family. The fifth factor only had 3 high-loaded items and accounted for 2.555% of the total variance. One of the items "I feel guilty to leave my family and friends behind" was borrowed from the ASSIS. In the ASSIS, it was categorized under "Guilt." The other two items, "I feel guilty that I cannot take care of my parents" and "I worry about my parents," were identified from the interviews. Thus, they did not have empirical support from previous studies. It is arguable whether Guilt toward Family qualifies as a factor. Other than that, the factor structure of the five-factor model was clear and meaningful as well. It was also considered as a candidate for the final scale.

Table 7: Pattern Matrix for ASSCS Restricted to Five Factors

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Factor 1: Language Insufficiency					
I hesitate to participate in class discussion and seminar.	**0.840**	-0.005	0.003	-0.036	-0.069
It is hard for me to follow the lectures and conversations in classes.	**0.830**	-0.049	-0.040	0.008	0.024
I cannot express myself very well when using English.	**0.773**	0.021	-0.063	-0.046	0.025
I feel nervous to communicate in English.	**0.753**	0.009	0.066	-0.234	0.026
I feel frustrated that I am not able to participate in class discussions.	**0.749**	0.047	0.106	0.109	-0.109
I am not used to the English way of thinking.	**0.709**	-0.405	0.104	0.075	-0.028

I lack confidence when I have to do presentations in English.	**0.701**	0.080	-0.059	0.059	-0.007
I shy away from social situations due to my limited English.	**0.682**	0.220	-0.018	-0.119	0.094
My vocabulary is so small that I always feel short of words.	**0.663**	-0.057	-0.121	0.122	0.086
It is a big pressure for me to publish academic paper in English.	**0.661**	-0.117	-0.049	0.209	-0.087
Factor 2: Social Isolation					
My social circles shrank after I come to the U.S.	-0.070	**0.999**	-0.190	-0.037	0.039
I do not have many friends in the U.S.	0.075	**0.907**	-0.152	-0.053	-0.081
I feel bored here.	-0.083	**0.749**	-0.003	-0.029	-0.033
I have limited social life.	0.095	**0.740**	-0.134	0.018	-0.015
I feel lonely in the U.S.	-0.039	**0.729**	-0.034	0.071	0.089
I feel helpless.	0.048	**0.674**	0.013	0.231	-0.076
I do not have new social network here.	0.137	**0.616**	-0.014	-0.075	-0.014
I don't feel a sense of belonging (community) here.	0.039	**0.613**	0.075	-0.093	0.109
Factor 3: Perceived Discrimination					
I am treated differently because of my race.	-0.025	-0.168	**0.951**	-0.020	-0.012
I feel that I receive unequal treatment.	0.124	-0.199	**0.844**	-0.002	0.021
People from some other ethnic groups show hatred toward me.	-0.061	-0.106	**0.833**	-0.043	0.022
I feel that others are biased toward me.	0.093	-0.189	**0.819**	-0.208	0.099
I feel that my people are discriminated against.	-0.104	0.018	**0.772**	0.024	-0.035
I feel some people don't associate with me because of my ethnicity.	-0.026	0.073	**0.675**	-0.011	-0.068
I feel angry that my people are considered inferior here.	-0.045	0.067	**0.633**	0.121	0.031

Factor 4: Academic Pressure					
The intensive study makes me sick.	-0.235	0.150	0.122	**0.752**	-0.068
I feel a lot of academic pressure.	0.247	-0.216	-0.053	**0.735**	0.041
I often have to work overtime in order to catch up.	0.125	-0.190	-0.067	**0.719**	0.086
Academic pressure has lowered the quality of my life.	0.150	-0.062	0.002	**0.699**	-0.084
Factor 5: Guilt toward Family					
I feel guilty that I cannot take care of my parents.	0.030	0.016	-0.033	0.096	**0.884**
I worry about my parents.	0.023	0.017	0.011	0.128	**0.746**
I feel guilty to leave my family and friends behind.	-0.063	0.023	0.163	-0.023	**0.670**

Factor Analysis Restricted to Six Factors

Table 8 shows the results of factor analysis when restricted to six factors. Maximum likelihood and oblique rotation were used. Again, items with factor loadings above 0.60 were retained and cross-loaded items were excluded. The resulting six factors were basically the same as the five-factor model except that it added a sixth factor. However, there was only one high-loaded item in the sixth factor, "I feel sad living in unfamiliar surroundings here." One item could not make a meaningful and solid factor. Thus, the six-factor model did not produce improvement over the five-factor model.

Table 8: Pattern Matrix for ASSCS Restricted to Six Factors

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Factor 1: Language Insufficiency						
I hesitate to participate in class discussion and seminar.	**0.848**	0.015	0.017	-0.039	-0.067	-0.056

It is hard for me to follow the lectures and conversations in classes.	**0.837**	-0.044	-0.139	0.000	0.022	-0.025
I cannot express myself very well when using English.	**0.784**	-0.054	0.030	-0.046	0.028	-0.052
I feel nervous to communicate in English.	**0.760**	0.000	-0.060	-0.253	0.008	0.180
I feel frustrated that I am not able to participate in class discussions.	**0.758**	0.086	0.028	0.013	-0.021	0.043
I am not use to the English way of thinking.	**0.715**	0.121	-0.006	0.076	-0.024	-0.084
I lack confidence when I have to do presentations in English.	**0.711**	-0.048	0.075	0.058	-0.005	-0.025
I shy away from social situations due to my limited English.	**0.699**	0.016	0.229	-0.115	0.107	-0.087
My vocabulary is so small that I always feel short of words.	**0.670**	-0.105	-0.038	0.121	0.089	-0.072
It is a big pressure for me to publish academic paper in English.	**0.667**	-0.055	-0.106	0.203	-0.091	-0.012
Factor 2: Perceived Discrimination						
I am treated differently because of my race.	-0.025	**0.917**	-0.139	-0.013	-0.003	0.015
People from some other ethnic groups show hatred toward me.	-0.061	**0.870**	-0.033	-0.028	0.044	-0.138
I feel that I receive unequal treatment.	0.124	**0.816**	-0.158	0.005	0.031	-0.016

I feel that my people are discriminated against.	-0.104	**0.767**	0.043	0.035	-0.023	-0.013
I feel that others are biased toward me.	0.089	**0.734**	-0.229	-0.216	0.095	0.178
I feel some people don't associate with me because of my ethnicity.	-0.026	**0.717**	0.139	0.005	-0.048	-0.129
I feel angry that my people are considered inferior here.	-0.042	**0.680**	0.126	0.139	0.055	-0.140
Factor 3: Social Isolation						
My social circles shrank after I come to the U.S.	-0.073	-0.126	**0.990**	-0.020	0.055	-0.051
I do not have many friends in the U.S.	0.075	-0.078	**0.924**	-0.036	-0.067	-0.092
I have limited social life.	0.103	-0.043	**0.768**	0.040	0.008	-0.160
I feel bored here.	-0.077	-0.037	**0.632**	-0.028	-0.036	0.215
Factor 4: Academic Pressure						
The intensive study makes me sick.	-0.231	0.127	0.149	**0.754**	-0.063	0.007
I feel a lot of academic pressure.	0.250	-0.101	-0.243	**0.722**	0.029	0.095
I often have to work overtime in order to catch up.	0.124	-0.109	-0.212	**0.704**	0.073	0.089
Academic pressure has lowered the quality of my life.	0.154	0.002	-0.043	**0.694**	-0.084	-0.020
Factor 5: Guilt toward Family						
I feel guilty that I cannot take care of my parents.	0.031	-0.003	0.013	0.097	**0.915**	-0.111
I worry about my parents.	0.024	0.069	0.050	0.137	**0.786**	-0.192
I feel guilty to leave my family and friends behind.	-0.063	0.112	-0.056	-0.034	**0.680**	0.127

Factor 6						
I feel sad living in unfamiliar surroundings here.	-0.030	0.010	0.112	-0.029	-0.098	**0.791**

Final decision: ASSCS with Five Factors

Based on the previous discussion, the three-factor and six-factor models were not chosen because they lack theoretical and empirical trustworthiness compared to the four-factor and five-factor models. The major decision was between the four-factor and five-factor models, and the essential argument was whether Guilt toward Family qualified as a latent dimension of acculturative stress for Chinese students.

Since this study is grounded on Lazarus and Folkman's (1984) appraisal theory, acculturative stress is examined from a person-in-environment perspective. As stated previously, anything that happens along with the acculturation process and is appraised by the students as taxing their well-being is defined as acculturative stress. In the ASSIS, Sandhu and Asrabadi (1994) identified Homesickness and Guilt as two dimensions of acculturative stress. Homesickness refers to missing one's home country and people, while guilt refers to a bad feeling about leaving their family and friends. Many studies (i.e., Liu, 2009; Zheng & Berry, 1991) have found that homesickness and guilt are common sources of stress among international students. These facts provided theoretical and empirical support for the dimension of Guilt toward Family.

Culturally, it makes sense that Guilt toward Family becomes a stressor for Chinese students in their acculturation process. In Chinese culture, filial piety is one of the most important principles, and adult children have the obligations to take care of their parents (Chan & Tsui, 1997). This cultural value has been transformed into legislation to enforce the family's responsibility to take care of individuals and an individual's

obligation to the family (Leung, 2001). Most participants in this study were aged around 20-30, which meant they are probably the only child in their families and caregiver of their parents. When they choose to come to the U.S., they have to leave their parents and thus cannot take care of them. This violates the Chinese traditional value. Confucius said, "when parents are alive, you are not supposed to travel faraway." This culture explains why Chinese students feel guilty toward family and why it contributes to their stress during the acculturation process.

The factor Guilty toward Family contained three items, which were "I feel guilty that I cannot take care of my parents," "I worry about my parents," and "I feel guilty to leave my family and friends behind." The first two items were identified from interviews. In the interviews, one student said, "I feel so bad that I am not with my parents when they are sick." Another student said, "I cannot afford any emergency happening to my parents because I am too far away from them…The worry about my parents makes me feel anxious." The factor Guilt toward Family combined the two dimensions of Homesickness and Guilt in the ASSIS and took a further step. Chinese students have more complex feelings about leaving their parents. Thus, theoretically, Guilt toward Family, could stand as an independent dimension.

After all these considerations, Guilt toward Family was kept as a factor, and the five-factor model was chosen to make the ASSCS a culturally competent scale. The final ASSCS had 32 items in five dimensions (see Table 9):

Table 9: ASSCS Factors and Items

Factor 1: Language Insufficiency (10 items)
I hesitate to participate in class discussion and seminar.
It is hard for me to follow the lectures and conversations in classes.
I cannot express myself very well when using English.
I feel nervous to communicate in English.
I feel frustrated that I am not able to participate in class discussions.
I am not used to the English way of thinking.
I lack confidence when I have to do presentations in English.
I shy away from social situations due to my limited English.
My vocabulary is so small that I always feel short of words.
It is a big pressure for me to publish academic paper in English.
Factor 2: Social Isolation (8 items)
My social circles shrank after I come to the U.S.
I do not have many friends in the U.S.
I feel bored here.
I have limited social life.
I feel lonely in the U.S.
I feel helpless.
I do not have new social network here.
I don’t feel a sense of belonging (community) here.
Factor 3: Perceived Discrimination (7 items)
I am treated differently because of my race.
I feel that I receive unequal treatment.
People from some other ethnic groups show hatred toward me.
I feel that others are biased toward me.
I feel that my people are discriminated against.
I feel some people don’t associate with me because of my ethnicity.
I feel angry that my people are considered inferior here.
Factor 4: Academic Pressure (4 items)
The intensive study makes me sick.
I feel a lot of academic pressure.
I often have to work overtime in order to catch up.
Academic pressure has lowered the quality of my life.
Factor 5: Guilt toward Family (3 items)
I feel guilty that I cannot take care of my parents.
I worry about my parents.
I feel guilty to leave my family and friends behind.

The five-factor ASSCS had an overall Cronbach’ alpha of 0.939, which indicated high internal consistency of the scale. Deleting any of the items would reduce the

reliability of the scale. The combination of the five factors explained 48.215% of the total variance. The factor correlation matrix showed that the five factors were moderately but not highly correlated with each other (see Table 10), which supported the rationale for using oblique rotation.

Table 10: Correlations Among Factors

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Factor 1	1.00				
Factor 2	0.659	1.00			
Factor 3	0.432	0.590	1.00		
Factor 4	0.515	0.572	0.484	1.00	
Factor 5	0.216	0.384	0.249	0.269	1.00

The first factor, Language Insufficiency, had 10 items and a Cronbach's alpha of 0.922. It accounted for 31.995% of the total variance. Language Insufficiency is the biggest barrier for Chinese students when they adjust to American life. Many studies have supported this fact (e.g., Constantine et al., 2004; Kuo & Roysircar, 2004; Mori, 2000; Yeh & Inose, 2002). Lack of English proficiency was correlated with academic pressure (r = 0.515). This was reflected in many items, such as "I hesitate to participate in class discussion and seminar," "It is hard for me to follow the lectures and conversations in classes," "I feel frustrated that I am not able to participate in class discussions," and "It is a big pressure for me to publish academic paper in English." Language insufficiency was also related to social isolation (r = 0.659), which was reflected in the item "I shy

away from social situations due to my limited English." Although Zane and Mak (2003) stated that too much emphasis was put on language usage in acculturation measurement, this study supported that language insufficiency contributed the most to the acculturative stress of Chinese students.

The second factor, Social Isolation, had eight items and a Cronbach's alpha of 0.907. It accounted for 5.999% of the total variance. Social isolation reveals the lack of a social network and social support in the new society, as indicated in the items "I do not have friends" and "My social circles shrank after I come to the U.S." Berry et al. (1987) pointed out that lack of a social network was the main reason for international students' higher levels of acculturative stress compared to other acculturating groups. Sandhu and his colleagues (1996) found that feelings of loneliness, helplessness, and no sense of belonging were very common among international students as a result of social isolation. Liu (2009) reported that many international students had concerns about social interaction, social connectedness, and social support.

The third factor, Perceived Discrimination, had seven items and a Cronbach's alpha of 0.898. It accounted for 3.564% of the total variance. Previous studies have recorded perceived discrimination among international students and the resulting mental health problems (Hwang & Ting, 2008; Sandhu et al., 1996). Especially, Mori (2000) reported the racist educational system as a unique barrier for international students to survive in academic settings. Researchers have also investigated perceived discrimination and adjustment among Chinese immigrant families and adolescents (Benner & Kim, 2009; Chan, Tran, & Nguyen, 2012). Perceived discrimination would severely obstruct individuals' acculturation process and increase their stress levels (Padilla & Perez, 2003).

The fourth factor, Academic Pressure, had four items and a Cronbach's alpha of 0.827. It accounted for 4.101% of the total variance. Although Chinese students are considered as a "model minority" with high academic achievement, academic pressure is still overwhelming for them. Mori (2000) identified unfamiliarity with the American education system as a significant barrier for international students. Wei and his colleagues (2007) found that Chinese students were highly demanding toward their own academic performance because their families and cultural values expect superb academic achievement. Also, language difficulty is devastating, as reflected in the item "I often have to work overtime in order to catch up."

The fifth factor, Guilt toward Family, had three items and a Cronbach's alpha of 0.843. It accounted for 2.555% of the total variance. As debated at the beginning of this chapter, although there were not a lot of empirical studies supporting this factor, it made sense theoretically and culturally for Chinese students.

Nevertheless, there are two dimensions of acculturative stress covered by previous literature missing in this study. One is financial concern. Previous studies have found that financial difficulty could make the acculturation process very stressful and sometimes even threaten students' survival (Lin & Yi, 1997; Liu, 2009; Yang & Clum, 1995). However, in this study, 67.6% of the graduate students received scholarships from their colleges/universities which covered their tuition and living expenses. Almost all of the undergraduate students (97.7%) were supported by their families. With the economic development in China, studying in the U.S. is becoming more affordable for Chinese families (Gribble, 2008). Finance is no longer a major concern for most Chinese students.

This fact was support by Pan and her colleagues (2010). In their scale, financial concerning was also not supported.

The other missing dimension is cultural difference. In the ASSIS, there is a factor "Stress due to Change/Culture Shock." It contains three items: "I feel uncomfortable to adjust to new foods," "multiple pressures are placed upon me after migration," and " I feel uncomfortable to adjust to new cultural values." In the AHSCS, there is a factor "Cultural Difference." There are four items: "there are great cultural differences between Hong Kong and the Mainland which make me feel maladaptive," "there is a huge gap between my expectation about Hong Kong and the actual situation," "I feel uncomfortable when I was trying to adapt to a new culture and values," and "I worry that Hong Kong people will discriminate against people from the Mainland." One possible reason for the absence of cultural difference may be the impact of globalization, which has blended the borders of cultures (Harwood, 1994). Students know a lot about American culture through mass media before they come here. Thus, they do not feel as much culture shock as before when international communication was not so prevalent. Another possible reason is that cultural differences have merged into each factor rather than stood out as a separate factor. For example, students could feel cultural differences at schools and thus have academic pressure. They may not want to adjust to the new culture and values in social life, which makes them feel isolated from local people and communities. Some of the items in the ASSIS and AHSCS under cultural differences were reorganized into different factors in the ASSCS, such as Social Isolation and Perceived Discrimination.

Criterion-related Validity

Criterion-related validity was examined using the sum score of the 32-item ASSCS to predict students' depression and life satisfaction. Students' depression was measured by the Chinese edition of Zung's Self-Rating Depression Scale. Students' life satisfaction was measured by one question: "Overall, what is your satisfaction degree with your life in the U.S. as an international student?" Responses were in a 5-point Likert scale with 1 as "very unsatisfied" to 5 "very satisfied". According to previous research, it was hypothesized that acculturative stress would be a positive predictor of depression and a negative predictor of life satisfaction.

In order to investigate the unique contribution of acculturative stress in predicting depression and life satisfaction, demographic variables were added and controlled via hierarchical regression. Demographic variables included age, gender, and length of stay in the U.S. (in months). Correlations, means, and standard deviations of all variables are presented in Table 11. The results showed that acculturative stress had very low correlations with demographic variables, such as gender, age, and length of stay. Thus, there was no multicollinearity problem among independent variables. Acculturative stress was significantly correlated with depression ($r = 0.468$, $p < 0.005$) and life satisfaction ($r = -0.493$, $p < 0.005$).

Table 11: Correlations Among Independent and Dependent Variables

	Gender	Age	Length of Stay	Acculturative Stress	Depression	Life Satisfaction
Gender	1.00					
Age	0.058	1.00				
Length of Stay	-0.090	0.430*	1.00			
Acculturative Stress	0.117	0.037	-0.109	1.00		
Depression	0.088	-0.044	-0.009	0.468*	1.00	
Life Satisfaction	-0.070	0.101	0.123	-0.493*	-0.552*	1.00
Mean		26.39	35.35	104.354	38.031	3.61
Standard Deviation		4.039	28.090	31.061	8.585	0.886
*Correlation is significant at the 0.01 level.						

Since there were two criterion measurements, two hierarchical regressions were conducted. In each hierarchical regression, demographic variables, gender, age, and length of stay in the U.S., were entered at the first step. Gender was included because it was coded as a dummy variable and can be used in regression. Next, acculturative stress was entered to differentiate its contribution from demographic variables.

In the prediction of depression, the unique variance accounted for by each step and the regression coefficients of each variable are presented in Table 12. Gender, age, and length of stay did not account for a significant amount of variance in depression (R^2 = 1.7%). Acculturative stress added a significant amount of variance (R^2 = 23.3%) and was a significant predictor of depression (B = 0.135, *Beta* = 0.490, t = 8.582, p <0.001). When the scores of acculturative stress increased 1 point, there would be a 0.135 point increase in the scores of depression.

Table 12: Hierarchical Regression for Depression

	R^2	ΔR^2	P	Variables	Beta	p
Step 1	0.017	0.017	0.263	Gender	0.074	0.258
				Age	-0.004	0.952
				Length of Stay	-0.097	0.177
Step 2	0.250	0.233	0.000	Gender	0.034	0.550
				Age	-0.048	0.447
				Length of Stay	-0.023	0.699
				Acculturative Stress	0.490	0.000

In the prediction of life satisfaction, the unique variance accounted for by each step and the regression coefficients of each variable are presented in Table 13. Again, gender, age, and length of stay did not account for a significant amount of variance in life satisfaction (R^2 = 2.1%). Acculturative stress added a significant amount of variance (R^2 = 24.8%) and was a significant predictor of life satisfaction (*B* = -0.014, *Beta* = -0.505, *t* = -9.022, p <0.001). For each 1 point increase in acculturative stress, there is a 0.014 point decrease in life satisfaction.

Table 13: Hierarchical Regression for Life Satisfaction

	R^2	ΔR^2	p	Variables	Beta	p
Step 1	0.021	0.021	0.159	Gender	-0.062	0.334
				Age	0.063	0.373
				Length of Stay	0.089	0.210
Step 2	0.269	0.248	0.000	Gender	-0.103	0.810
				Age	0.107	0.084
				Length of Stay	0.020	0.742
				Acculturative Stress	-0.505	0.000

The hierarchical regression results provided evidence for criterion-related validity for the ASSCS. The two criterion measurements were in different directions, which could detect people's different reactions to acculturative stress. According to Lazarus and Folkman's appraisal theory (1984), different people have different reactions to the same stress because they evaluate the situation from their own perspectives. Berry et al. (1987) conveyed that for some people acculturative stress is so overwhelming that they cannot handle it, while for other people, acculturation may represent life-changing opportunities. The criterion measurement depression reflected the negative reaction to acculturative stress. When acculturative stress is too overwhelming for students and exceeds their coping resources, students may develop mental health problems. The regression results confirmed that acculturative stress was a significant positive predictor of depression. Greater acculturative stress results in more depression. When students treat acculturative stress as opportunities, they feel "good" stress and are satisfied with their lives. The

results also confirmed that acculturative stress was a negative predictor of life satisfaction. Less acculturative stress leads to higher life satisfaction.

The empirical association between acculturative stress and depression and life satisfaction supported the validity of the ASSCS. The scale tapped five different dimensions of acculturative stress and was empirically related to external criteria that were believed to be other indicators of acculturative stress. Therefore, the ASSCS was measuring what it was supposed to measure.

CHAPTER EIGHT: CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

With the development of globalization, more and more Chinese students are coming to the U.S. for higher education. In recent years, a significant number of Chinese undergraduate students have flowed into the U.S., which has boosted the largest percentage increase in the number of international students since 1980 (IIE, 2010). It is important to study the acculturative stress of Chinese students since they are the biggest subgroup among all international students.

The mental health problems of Chinese students were neglected in previous literature. However, this study indicated severe mental health problems among Chinese students. According to Zung (1965), a score of 50-60 from SDS indicates mild depression, a score of 60-70 indicates moderate depression, and a score of 70 and above indicates severe depression. The results of this study showed that 20.1% of the participants had mild depression, 14.1% had moderate depression, and 2% had severe depression. The results signified urgent need for research attention focused on the mental health of Chinese students.

The purpose of this study was to develop a culturally competent scale to measure the acculturative stress of Chinese students in the United States. It was the first attempt to focus on Chinese students. The ASSCS was the first Chinese scale of acculturative stress developed and validated among a Chinese student sample in the United States. The scale was targeted to a specific population, language, and culture. Therefore, it was culturally appropriate and relevant to Chinese students. The new scale will help social work researchers and practitioners, as well as the whole society, know more about Chinese people and redefine their social images.

In order to develop a new scale from scratch, an item pool was generated by interviewing Chinese students and borrowing items from existing literature and scales. After that, the 72-item pool was sent online to Chinese students together with other criterion measurements, including depression and life satisfaction. Demographic information was also collected.

Exploratory Factor Analysis was conducted to empirically derive the factor structure. The results showed that there were five dimensions in the ASSCS, which were Language Insufficiency, Social Isolation, Perceived Discrimination, Academic Pressure, and Guilt toward Family. The first four dimensions were consistent with previous literature. Language Insufficiency explained the most variance in acculturative stress. Language insufficiency created huge barriers for Chinese students in academic performance, social interaction, and many other aspects of their lives in the U.S. (Liu, 2009; Blignault et al., 2008; Frey & Roysircar, 2006; Shen & Takeuchi, 2001). Social Isolation reflected that Chinese students lacked a social network and social support in coming to a new environment (Liu, 2009; Sandhu et al., 1996). Perceived Discrimination described environmental obstacles in Chinese students' acculturation process (Benner & Kim, 2009; Chan, Tran, & Nguyen, 2012; Hwang & Ting, 2008). Academic Pressure was significant for Chinese students, especially when excellent academic performance was expected in Chinese culture (Mori, 2000; Pan et al., 2010; Wei et al., 2007). In contrast, the last factor, Guilt toward Family, was newly developed in the ASSCS. It lacked empirical support, but it made sense theoretically and culturally.

The five-factor ASSCS demonstrated high internal consistency with a Cronbach's alpha of 0.939. Each subscale also had high levels of reliability. The study provided

preliminary evidence for the validity of the scale. The ASSCS was found to be a significant positive predictor of depression and a significant negative predictor of life satisfaction. The associations with the two criterion measurements support that the ASSCS measured acculturative stress.

Implications

The final ASSCS has been prepared in both Chinese and English versions with instructions (Appendix J). Thus, people with single language mastery can still use the scale. The items were mixed together so that test-takers would not feel repetition. The instructions specify which items belong to which factor. The final score can be obtained by simply adding up the individual scores for all items. Higher scores signify higher levels of acculturative stress.

The ASSCS can be used in two ways. First, it can be used as a diagnostic tool for mental health workers working with Chinese students. The ASSCS will help mental health workers to make a culturally competent assessment and diagnosis. Mental health workers can look at the total score to determine an individual's stress level. They can also look at the scores in each subscale to detect which aspects contribute most to the acculturative stress of an individual. Then mental health workers can make necessary interventions targeted to those areas. Staff members working at international offices can use the ASSCS as a preliminary screening tool and refer Chinese students to mental health workers when necessary.

Second, the ASSCS can be used as a self-assessment tool for Chinese students in the United States. As mentioned previously, Chinese people are not familiar with mental health issues. They may not realize what mental health problems they have and how

those problems can be addressed by mental health professionals. The researcher hopes that the ASSCS can raise Chinese students' awareness of mental health problems and care for their own mental health status.

Strengths and Limitations

There were several strengths to this study and the resulting scale.

First, the ASSCS was written in Chinese and the entire data collection process was in Chinese. Using the students' own language made it easier and less challenging for them to understand and respond to the study. Information was more accurately communicated between the researcher and the participants. The data collected in the participants' first language was more reliable and meant what it was supposed to mean. Therefore, construct bias was reduced and the validity of the scale was strengthened (van de Vijver & Leung, 1997).

Second, this study used a combination of qualitative and quantitative methods. Qualitative interviews were conducted to inform the quantitative study. Through in-depth interviews, 39 new items were identified and added to the item pool. In this way, the item pool covered a wide range of potential dimensions of acculturative stress. The merit of the qualitative method reinforced the construct validity of the ASSCS.

Third, the ASSCS was developed and validated among a Chinese student sample in the United States and thus may be more culturally competent compared to previous scales. The entire research process was conducted in Chinese and within the context of Chinese culture. Therefore, it was culturally appropriate and relevant to Chinese students. The ASSCS not only covered dimensions of acculturative stress suggested by previous research and scales, it also added a fifth factor, Guilt toward Family. Guilt toward Family

was strongly related to the Chinese belief that adult children have the obligation to take care of their parents. When Chinese students choose an acculturation process, they violate the traditional cultural values. Also, they have to face realistic problems such as how to take care of their parents when they are the only child in their families. All of these add to their acculturative stress and are concerns during the entire acculturation process. Including this dimension made the ASSCS more culturally competent in measuring the acculturative stress of Chinese students in the United States.

Despite these strengths, there were several limitations to this study.

First, the sample size was small. There are many arguments about the adequate sample size for factor analysis. According to Comrey and Lee (1992), for factor analysis, a sample of 100 is poor, 200 is fair, 300 is good, and 500 and more is very good. The sample size in this study was 267 and qualified as a fairly good size under their rule. Gorsuch (1983) contended that factor analysis studies should have at least 100 participants and five participants per item (observed variables). Since there were 72 items in the item pool, this study was supposed to have 360 participants. Thus, the sample size of 267 was not adequate according to Gorsuch's rule. Costello and Osborne (2005) suggested that researchers enlarge their sample size as much as they can. The sample size will directly influence how powerful the statistics can be (DeVellis, 2003). However, for an unfunded doctoral research, it was hard to effectively expand sample size without any incentives.

Second, the sampling strategy in this study was questionable. The original plan of sending surveys through international offices did not work. Many big universities rejected the researcher's request. Most of the excuses were there were too many requests

and priority was given to researchers from their own campuses. The alternative method of sending surveys through CSSAs did not work well, either. Few CSSAs responded to the request to distribute the survey. Finally, the researcher had to rely on email lists and online forums. The representativeness of the online sample was debatable. It was hard to tell whether people on the email lists and online forums represent the whole Chinese population or whether people who chose to respond to the survey represent the online participants. The gender of the sample was unbalanced. The ratio of female to male participants was about 2:1. Also, the ratio of graduate students to undergraduate students was about 5:1 which may not reflect the real ratio of educational levels in the population of Chinese students in the United States.

Third, when developing the item pool, the number of items in each dimension was not equal. Fabrigar et al. (1999) suggested including at least four measured variables for each common factor that is expected to emerge. However, in the item pool for Financial Burden, there were only three items. It is arguable whether the lack of support for this dimension was due to the real lack of financial concerns or the inadequate number of items in the pool.

Finally, the survey was too lengthy. There were a total of 102 questions in this survey, which included 72 items for the ASSCS, 20 items for Zung's Depression Scale, and 10 other questions. Although the survey was in Chinese, it was obvious that the length of the survey exhausted the test-takers. The dropout rate was 52%. Only half of those who opened the survey link completed the survey.

Recommendations

Future Research

This study was a preliminary scale development. More studies are needed to evaluate and improve the psychometric properties of the ASSCS. Researchers can repeat this study in more Chinese student samples. Strategies should be used to obtain a more representative sample and larger samples. For example, researchers have to make sure the survey is responded to by both gender and education levels (undergraduate and graduate students). Researchers can select samples of Chinese students in different states and different sizes of universities. Incentives can be provided in order to improve the response rate. The design of the survey should be improved to reduce the dropout rate. Collaboration with international offices is still encouraged since international offices have direct email lists of all Chinese international students.

Future studies could use Confirmatory Factor Analysis (CFA) to determine the stability of the current five-factor structure. CFA is used when the researcher knows the theoretical connections between items and factors (DeVellis, 2003). The ASSCS can achieve greater validity if it is administered in different samples to more Chinese students. CFA will check whether the five-factor model can fit in more data sets as the relationships predicted in this study.

More validity studies are needed to further support the ASSCS. Researchers can administer the ASSCS with other measurements and investigate different types of validity. For example, convergent validity can be examined by whether the ASSCS corresponds to the results of other measurements for acculturative stress. Discriminant

validity can be examined by whether the ASSCS corresponds to measurements of unrelated concepts.

After the ASSCS has been validated, more empirical studies should attempt to establish the average score of ASSCS of the Chinese student population in the U.S. and the alert line for mental health problems and interventions. In this way, mental health workers and Chinese students will have more points of reference. The average score for the 32-item ASSCS in this study was 104.35 with a standard deviation of 31.06. This could be used as an initial reference when a 7-point Likert Scale is used as a response format. However, the researcher is not clear what should be the cutoff point for mental health problems. More empirical studies are needed to explore the best way to use the ASSCS.

With this initial attempt of focusing on Chinese international students, similar scales could be developed for Chinese immigrant children, adolescents, adults, and other Chinese populations. Longitudinal studies and cross-cultural studies are advisable to compare the acculturative stress among different generations and acculturation groups.

Previous studies on acculturation mainly focus on predictors and consequences of acculturative stress and how social support influences individuals' well-being. Coping strategies are not well studied. People with different coping strategies may have different levels of acculturative stress even though they encounter the same problems in acculturation. It would be meaningful to study coping strategies and compare their effectiveness. Qualitative methodology is suggested because there is little literature in this area. Studies on coping strategies of Chinese students can help social work and

college counselors practitioners better understand students' struggles and design necessary interventions.

Evidence-based practice

Although many researchers and practitioners have discussed the skills in counseling Chinese Americans (e.g., Leong et al., 2008; Maki & Kitano, 2002), few studies evaluate the existing practice models and services. Thus, it is difficult to prove the effectiveness of social work practice. Discussing skills in a loose way cannot reinforce those skills in social work practice. There should be a systematic way to learn, implement, and evaluate those skills. It is important to conduct more empirical studies to evaluate the effectiveness of the existing helping models used with Chinese students. An evidence-based practice model should be adopted. Examining what is effective and ineffective will help to reinforce culturally competent practice with Chinese students.

One of the reasons for the lack of evidence-based practice is the absence of professional personnel serving international students. Most of the organizations serving international students are academic and administrative organizations, which often do not take on service roles. Social workers should be involved and help to design systematic practice models for international students.

Policy advocacy

Social work researchers and practitioners should adopt a critical perspective and find the institutional, political, and historical reasons that contribute to high levels of acculturative stress among Chinese students. Social workers should try to remove the institutional barriers preventing Chinese students from approaching mental health services. Social workers should advocate for including more culturally diversified

personnel in helping professions and establishing a comprehensive service system for international students, from the federal level to the local level, equivalent to the systems for immigrants and refugees.

On a larger scale, social work has an obligation to address the oppression and other forms of social injustice for Chinese Americans. Social workers should help to improve the availability, accessibility, affordability, quality, and cultural sensitivity of mental health services for international students and other newcomers. By advocating for social and economic justice, social workers can help to create a more tolerant environment in the U.S. for people from other countries and enhance their well-being.

APPENDIX A: ACCULTURATION MEASUREMENTS

(adapted from Zane & Mak, 2003)

Population	**Scale**	**Author**	**Remarks**
General population	Societal Attitudinal, Familial and Environmental, Acculturative Scale (SAFE)	Mena, Padilla, Maldonado, 1987	Based on Berry's theoretical framework
	Cultural Integration-Separation Index (CIS)	Ward & Kennedy, 1992	
	Stephenson Multigroup Acculturation Scale (SMAS)	Stephenson, 2000	
Hispanic	Behavioral Acculturation Scale (BAS)	Szapocznik, Scopetta, Kurtines, de los Angeles Aranalde 1978,	Cuban Americans
	Value Acculturation Scale (VAS)	Szapocznik et al., 1978	Cuban Americans
	Bicultural Involvement Questionnaire (BIQ)	Szapocznik, Kurtines, & Fernandez, 1980	
	Acculturation Rating Scale for Mexican Americans (ARSMA)	Cuellar, Harris, & Jasso, 1980	Most widely used among Mexican Americans
	Biculturalism / Multiculturalism Experience Inventory (B/MEI)	Ramirez, 1983	
	Media-based Acculturation Scale for Mexican Americans (MAS)	Ramirez, Cousins, Santos, & Supik, 1986	
	Short Acculturation Scale for Hispanics (SAS)	Marin, Sabogal, VanOss Marin, Otero-Sabogal, & Perez-Stable, 1987	
	Cultural Life Styles Inventory	Mendoza, 1989	

	Acculturation Rating Scale for Mexican Americans II (ARSMA-II)	Cuellar, Arnold, & Maldonado, 1995	Based on Berry's theoretical framework
	Bidimensional Acculturation Scale (BiAS)	Marin & Gamba, 1996	
	Brief Acculturation Scale (BrAS)	Norris, Ford, & Bova, 1996	
Hispanic Children	Children's Acculturation Scale (CAS)	Franco, 1983	
	Children's Hispanic Background Scale (CHBS)	Martinez, Norman, & Delaney, 1984	
African American	African American Acculturation Scale (AAAS)	Landrine & Klonoff, 1994	
	African American Acculturation Scale (AfAAS)	Snowden & Hines, 1999	
Asian	Suinn-Lew Asian Self-Identity Acculturation Scale (SL-ASIA)	Suinn, Rickard-Figueroa, Lew, & Vigil, 1987	Mostly widely used among Asian Americans
	Acculturation Scale for Southeast Asians (AS-SEA)	Anderson et al., 1993	Southeast Asians (Cambodian, Laotian, and Vietnamese)
	Asian Values Scale (AVS)	Kim, Atkinson, & Yang, 1999	East Asians
	The Multidimensional Chinese Acculturation Measure (MCAM)	Hsu, 2005	Chinese

APPENDIX B: ASSIS

ASSIS-English Edition (Sandhu & Asrabadi, 1994)

Acculturative Stress Scale for International Students

As foreign students have to make a number of personal, social, and environmental changes upon arrival in a strange land, this *cultural-shock* experience might cause them acculturative stress. This scale is designed to assess such acculturative stress you personally might have experienced. There are no right or wrong answers. However, for the data to be meaningful, you must answer each statement given below as honestly as possible.

For each of the following statements, please circle the number that BEST describes your response. 1= Strongly Disagree, 2= Disagree, 3= Not Sure, 4= Agree, 5= Strongly Agree.

Because of my different cultural background as a *foreign* student, I feel that:

1) Homesickness for my country bothers me.	1	2	3	4	5
2) I feel uncomfortable to adjust to new foods and/or to new eating habits.	1	2	3	4	5
3) I am treated differently in social situations.	1	2	3	4	5
4) I feel rejected when people are sarcastic toward my cultural values.	1	2	3	4	5
5) I feel nervous to communicate in English.	1	2	3	4	5
6) I feel sad living in unfamiliar surroundings here.	1	2	3	4	5
7) I fear for my personal safety because of my different cultural background.	1	2	3	4	5
8) I feel intimidated to participate in social activities.	1	2	3	4	5
9) Others are biased toward me.	1	2	3	4	5
10) I feel guilty to leave my family and friends behind.	1	2	3	4	5
11) Many opportunities are denied to me.	1	2	3	4	5
12) I feel angry that my people are considered inferior here.	1	2	3	4	5
13) I feel overwhelmed that multiple pressures are upon me after my migration to this society.	1	2	3	4	5
14) I feel that I receive unequal treatment.	1	2	3	4	5

15) People from some ethnic groups show hatred toward me nonverbally.	1	2	3	4	5
16) It hurts when people don't understand my cultural values.	1	2	3	4	5
17) I am denied what I deserve.	1	2	3	4	5
18) I have to frequently relocate for fear of others.					
19) I feel low because of my cultural background.	1	2	3	4	5
20) I feel rejected when others don't appreciate my cultural values.	1	2	3	4	5
21) I miss the country and people of my national origin.	1	2	3	4	5
22) I feel uncomfortable to adjust to new cultural values.	1	2	3	4	5
23) I feel that my people are discriminated against.	1	2	3	4	5
24) People from some other ethnic groups show hatred toward me through their actions.	1	2	3	4	5
25) I feel that my status in this society is low due to my cultural background.	1	2	3	4	5
26) I am treated differently because of my race.	1	2	3	4	5
27) I feel insecure here.	1	2	3	4	5
28) I don't feel a sense of belonging (community) here.	1	2	3	4	5
29) I am treated differently because of my color.	1	2	3	4	5
30) I feel sad to consider my people's problems.	1	2	3	4	5
31) I generally keep a low profile due to fear from other ethnic groups.	1	2	3	4	5
32) I feel some people don't associate with me because of my ethnicity.	1	2	3	4	5
33) People from some other ethnic groups show hatred toward me verbally.	1	2	3	4	5
34) I feel guilty that I am living a different lifestyle here.	1	2	3	4	5

35) I feel sad leaving my relatives behind.	1	2	3	4	5
36) I worry about my future for not being able to decide whether to stay here or to go back.	1	2	3	4	5

ASSIS-Chinese Edition (adapted from Wei et al., 2007)

留学生跨文化适应压力量表

当国际学生进入一个新的环境时，会面临很多文化的冲击，从而产生跨文化适应的压力。这个量表描述了一系列你可能会遇到的产生压力的情景，请选择最能描述你的经验的答案。

1= 强烈不同意，2= 不同意，3= 不确定， 4= 同意，5= 强烈同意。

因为我的不同文化背景，我觉得：

1) 对祖国的思念让我感到困扰。	1	2	3	4	5
2) 在适应新食物及（或）新饮食习惯上，我感到不舒服。	1	2	3	4	5
3) 在社会情况中，我受到不同的对待。	1	2	3	4	5
4) 当他人讥讽我的文化价值时，我感到被拒绝。	1	2	3	4	5
5) 我用英文沟通时会感到很紧张。	1	2	3	4	5
6)我因为生活在不熟悉的环境中而感到悲伤。	1	2	3	4	5
7) 因为我的不同文化背景, 我对我的个人安全感到担心。	1	2	3	4	5
8)我对参加社交活动感到恐惧。	1	2	3	4	5
9) 其他人对我有偏见。	1	2	3	4	5
10) 我对离开我的家人和朋友，感到罪恶感。	1	2	3	4	5
11) 很多机会我都被拒绝。	1	2	3	4	5
12) 我为我的同胞在这里低人一等而感到愤怒。	1	2	3	4	5
13) 在迁移到这个社会后，多重压力落在我身上，使我感到无法承受。	1	2	3	4	5
14) 我感到我受到了不平等的待遇。	1	2	3	4	5
15) 有一些种族的人用非语言的行为对我表现出憎恨。	1	2	3	4	5
16) 当其他人不理解我的文化价值时，我感到很受伤。	1	2	3	4	5
17)我不能得到我应该得到的东西。	1	2	3	4	5
18) 我因为害怕别人不得不常常搬家。					
19) 我为我的文化背景感到情绪低落。	1	2	3	4	5
20) 当别人不能欣赏我的文化价值时我感到被拒绝。	1	2	3	4	5
21) 我想你我出生的国家以及那里的人们。	1	2	3	4	5
22) 在适应新的文化价值时，我感到不舒服。	1	2	3	4	5
23) 我觉得我的同胞被歧视。	1	2	3	4	5
24) 有一些种族的人，用行动表现出对我的憎恨。	1	2	3	4	5
25) 因为我的文化背景，我觉得我在这个社会中的身份地位比较低。	1	2	3	4	5
26)因为我的种族，我受到不同的对待。	1	2	3	4	5
27)我在这里感到不安全。	1	2	3	4	5
28)我在这里没有归属感。	1	2	3	4	5
29)因为我的肤色，我受到不同的对待。	1	2	3	4	5

30) 当我想到同胞的问题时，我感到悲伤。	1	2	3	4	5
31) 由于害怕其他种族的群体，我通常保持低调。	1	2	3	4	5
32) 我觉得有一些人因为我的种族背景而不与我交往。	1	2	3	4	5
33) 有一些种族的人用言语表现出对我的憎恨。	1	2	3	4	5
34) 我为我在这里生活方式的变化而感到罪恶。	1	2	3	4	5
35) 我为离开亲戚而感到伤心。	1	2	3	4	5
36) 我担心我的未来，因为我不知道应该留在这里还是回去。	1	2	3	4	5

APPENDIX C: AHSCS

AHSCS-Chinese Edition (Pan et al., 2010)

中国学生跨文化适应压力量表

以下的描述是有关内地学生在适应香港的生活和学习的过程中可能会遇到的困难或压力情境，请判断你在多大程度上正在或曾经经历过这些困难，请在符合你实际情况的选项上打钩。

0= 没有或不适用，1= 有点， 2= 适中， 3= 很多

1) 刚来香港的时候，我不知道该从哪里着手开始我的学习。	0	1	2	3
2) 在香港我没有新的社会网络。	0	1	2	3
3) 我不能很自如的用英语表达自己的想法。	0	1	2	3
4) 用英文发表学术文章让我感到压力很大。	0	1	2	3
5) 在香港，我的社会空间很小，不是在办公室，就是在家里。	0	1	2	3
6) 我感到很难达到导师的期望。	0	1	2	3
7) 我很难融入香港人的生活圈子里去，我和香港人的关系都是一般的工作关系。	0	1	2	3
8) 我不习惯英文的思维方式。	0	1	2	3
9) 我担心香港人会歧视内地人。	0	1	2	3
10) 我经常担心我是否能按时毕业。	0	1	2	3
11 香港和内地的 文化差异很大，这让我觉得不太适应。	0	1	2	3
12) 上课或参加研讨会的时候我不敢用英文发言。	0	1	2	3
13) 我对香港的期望和实际情况有很大的差距。	0	1	2	3
14) 我很难真正融入香港本地的文化中去。	0	1	2	3
15) 和周围的同学相比我会觉得有压力。	0	1	2	3
16) 我的英文词汇量不足，要用的时候总觉得不够用。	0	1	2	3
17) 我在适应新的文化和价值观的时候觉得不舒服。	0	1	2	3

AHSCS-English Edition (translated by the researcher)

Acculturative Hassles Scale for Chinese Students

The following items describe possible difficulties or stressful situations that mainland students will meet in HK. Please reflect your own experiences and choose the answers that best describe your situation.
0= not at all or not applicable, 1= a little bit, 2=some time, 3= a lot

1) When I first came to Hong Kong, I did not know where to start my study.	0	1	2	3
2) I do not have new social network in HK.	0	1	2	3
3) I cannot express myself very well when using English.	0	1	2	3
4) It is a big pressure for me to publish academic paper.	0	1	2	3
5) I have small social space in HK, either at school, or at home.	0	1	2	3
6) I feel it hard to meet the expectation of my advisor.	0	1	2	3
7) I feel it hard to integrate to HK people. I can only establish a working relationship with HK people.	0	1	2	3
8) I am not use to the English way of thinking.	0	1	2	3
9) I am afraid that HK people will discriminate people from mainland China.	0	1	2	3
10) I am always worried whether I can graduate on time.	0	1	2	3
11) I feel hart to adjust to HK culture because it is very different from the culture of mainland China.	0	1	2	3
12) I am hesitated to participate in class discussion and seminar.	0	1	2	3
13) There is huge distance between my expectation toward HK and the reality.	0	1	2	3
14) It is hard for me to integrate to HK culture.	0	1	2	3
15) I feel a lot of pressure because I compare myself to people around me.	0	1	2	3
16) My vocabulary is so small that I always feel short of words.	0	1	2	3
17) I feel uncomfortable to adjust to the new culture and values.	0	1	2	3

APPENDIX D: ITEM POOL FOR ASSCS

Preliminary ASSCS- 72 Items in 9 Subscales - English Edition

Subscales	**Items**	**Sources**
Academic pressure (14)		
	15. It is a big pressure for me to publish academic paper in English.	AHSCS
	27. I feel it hard to meet the expectations of my advisor.	AHSCS
	42. I am worried whether I can graduate on time.	AHSCS
	30. I hesitate to participate in class discussion and seminar.	AHSCS
	41. I feel a lot of academic pressure.	Interview
	29. Academic pressure has lowered the quality of my life.	Interview
	9. My advisor gave me a lot of pressure.	Interview
	54. The intensive study makes me feel sick.	Interview
	36. I do not know how to balance study and life.	Interview
	62. I am not used to the class format here.	Interview
	67. I have the pressure to succeed.	Interview
	68. I worry about my time management skills.	Interview
	47. I often have to work overtime in order to catch up.	Interview
	23. Studying occupies most of my time.	Interview
Language deficiency (10)		
	3. I feel nervous to communicate in English.	ASSIS
	25. I cannot express myself very well when using English.	AHSCS
	28. I am not use to the English way of thinking.	AHSCS
	17. My vocabulary is so small that I always feel short of words.	AHSCS
	38. Language insufficiency makes me feel inferior.	Interview
	40. Because of language insufficiency, I have to spend extra time on studying.	Interview
	20. It is hard for me to follow the lectures and conversations in classes.	Interview
	53. I feel frustrated that I am not able to participate in class discussions.	Interview
	64. I lack confidence when I have to do presentations in English.	Interview

	50. I shy away from social situations due to my limited English.	Interview
Cultural difference (9)		
	1. I feel uncomfortable to adjust to new foods and/or to new eating habits.	ASSIS
	4. I feel sad living in unfamiliar surroundings here.	ASSIS
	39. It hurts when people don't understand my cultural values.	ASSIS
	21. I feel guilty that I am living a different lifestyle here.	ASSIS
	31. There is huge distance between my expectation toward the U.S. and the reality.	AHSCS
	65. It is hard for me to integrate to the new culture.	AHSCS
	33. I feel uncomfortable to adjust to the new culture and values.	AHSCS
	46. I feel like a stranger in the US.	Interview
	70. The unfamiliarity with American society and culture reduced my confidence level.	Interview
Social interaction / participation (14)		
	6. I feel intimidated to participate in social activities	ASSIS
	19. I don't feel a sense of belonging (community) here.	ASSIS
	24. I do not have new social network here.	AHSCS
	34. I do not know how to establish friendships with American people.	Interview
	44. I feel lonely in the US.	Interview
	14. I have few opportunities to communicate with American people.	Interview
	48. I feel trapped in small groups of Chinese people.	Interview
	52. I feel bored here.	Interview
	12. I do not know how to communicate with people from different cultural backgrounds.	Interview
	55. I do not have many friends in the US.	Interview
	56. I feel helpless.	Interview
	57. My social circles shrank after I come to the US.	Interview
	69. I do not know where to seek help when I have problems.	Interview
	71. I have limited social life.	Interview

Perceived discrimination (11)		
	2. I feel rejected when people are disrespectful toward my cultural values.	ASSIS
	7. I feel that others are biased toward me.	ASSIS
	51. I feel angry that my people are considered inferior here.	ASSIS
	26. I feel that I receive unequal treatment.	ASSIS
	10. I feel that I am denied what I deserve.	ASSIS
	35. I feel that my people are discriminated against.	ASSIS
	43. People from some other ethnic groups show hatred toward me.	ASSIS
	16. I feel that my status in this society is low due to my cultural background.	ASSIS
	32. I am treated differently because of my race.	ASSIS
	60. I feel some people don't associate with me because of my ethnicity.	ASSIS
	66. Chinese people are marginalized in the US.	Interview
Financial concerns (3)		
	13. I have big financial pressure.	Interview
	59. I feel I am a burden to my parents because I have to rely on their financial support.	Interview
	72. I worry about that my financial resources will run out before I graduate.	Interview
Safety and health (5)		
	5. I fear for my personal safety.	ASSIS
	18. I feel insecure here.	ASSIS
	37. I worry about my physical health.	Interview
	63. I worry about my mental health.	Interview
	61. I feel scared that American people can have guns.	Interview
Feelings toward family (4)		
	8. I feel guilty to leave my family and friends behind.	ASSIS
	11. I miss the country and people of my national origin.	ASSIS
	45. I feel guilty that I cannot take care of my parents.	Interview
	49. I worry about my parents.	Interview
Others (2)		
	22. I worry about my future for not being able to decide.	ASSIS
	58. I regret my decision to come to US.	Interview

Preliminary ASSCS- 72 Items in 9 Subscales - Chinese Edition

类别	条目	来源
学业压力(14)		
	15. 用英文发表学术文章让我感到压力很大。	AHSCS
	27. 我感到很难达到导师的期望。	AHSCS
	42. 我担心我是否能按时毕业。	AHSCS
	30. 上课或参加研讨会的时候我不敢用英文发言。	AHSCS
	41. 我感到学业压力很大。	采访
	29. 学业上的压力使我的生活质量下降。	采访
	9. 我的导师给我很大压力。	采访
	54. 高强度的学习损害了我的身体健康。	采访
	36. 我不知道如何平衡学习和生活。	采访
	62. 我不习惯这里的上课方式。	采访
	67. 我有必须成功的压力。	采访
	68. 我担心我的时间管理能力。	采访
	47. 我常常需要超时学习。	采访
	23. 学习占用了我的大部分时间。	采访
语言障碍(10)		
	3. 我用英文沟通时会感到很紧张。	ASSIS
	25. 我不能很自如的用英语表达自己的想法。	AHSCS
	28. 我不习惯英文的思维方式。	AHSCS
	17. 我的英文词汇量不足，要用的时候总觉得不够用。	AHSCS
	38. 语言障碍给我带来弱势感。	采访
	40. 因为语言障碍，我需要在学习上花很多时间。	采访
	20. 上课的时候我很难听懂老师和同学的对话。	采访
	53. 我因为无法参加课堂讨论而感到挫败。	采访
	64. 当我需要用英语做报告时，我感到不自信。	采访
	50. 因为英语不好，我试图逃避社交场合。	采访
文化差异(9)		
	1. 在适应新食物及（或）新饮食习惯上，我感到不舒服。	ASSIS
	4. 我因为生活在不熟悉的环境中而感到悲伤。	ASSIS
	39. 当其他人不理解我的文化价值时，我感到很受挫。	ASSIS
	21. 我为自己在美国生活方式的变化而感到罪恶。	ASSIS
	31. 我对美国的期望和实际情况有很大的差距。	AHSCS
	65. 我很难真正融入美国文化中去。	AHSCS
	33. 我在适应新的文化和价值观的时候觉得不舒服。	AHSCS
	46. 我在美国有很强的陌生感。	采访
	70. 对美国社会和文化的不熟悉让我感到不自信。	采访

社会交往/参与 (14)		
	6. 我对参加社交活动感到恐惧。	ASSIS
	19. 我在美国没有归属感。	ASSIS
	24. 在美国我没有新的社会网络。	AHSCS
	34. 我不知道如何与美国人交朋友。	采访
	44. 我在美国感到非常孤单。	采访
	14. 我很少有机会和美国人交流。	采访
	48. 我感到被困在中国人的小圈子里。	采访
	52. 我觉得美国的生活很无聊。	采访
	12. 我不知道如何与不同文化背景的人交流。	采访
	55. 在美国我的朋友很少。	采访
	56. 我感到很无助。	采访
	57. 来美之后，我的社交圈子越来越小。	采访
	69. 当我遇到困难时，我不知道如何求助、向谁求助。	采访
	71. 我的社会生活很少。	采访
种族歧视(11)		
	2. 当他人不尊重我的文化价值时，我感到被拒绝。	ASSIS
	7. 其他人对我有偏见。	ASSIS
	51. 我为我的同胞在这里低人一等而感到愤怒。	ASSIS
	26. 我感到我受到了不平等的待遇。	ASSIS
	10. 我不能得到我应该得到的东西。	ASSIS
	35. 我觉得我的同胞被歧视。	ASSIS
	43. 有一些种族的人对我表现出厌恶。	ASSIS
	16. 因为我的文化背景，我觉得我在这个社会中的身份地位比较低。	ASSIS
	32. 因为我的种族背景我受到了不同的待遇。	ASSIS
	60. 我觉得有一些人因为我的种族背景而不与我交往。	ASSIS
	66. 中国人在美国被边缘化。	采访
经济压力 (3)		
	13. 来美学习给我带来很大的经济压力。	采访
	59. 父母支付我来美学习的费用让我感觉到我是他们的负担。	采访
	72. 我担心毕业之前失去经济资助。	采访
安全与健康(5)		
	5. 我对我的个人安全感到担心。	ASSIS
	18. 我在这里感到不安全。	ASSIS
	37. 我为我的身体健康感到担心。	采访
	63. 我为我的精神健康感到担心。	采访

	61. 我对美国人可以持枪感到很恐惧。	采访
家庭(4)		
	8. 我对离开我的家人和朋友，感到内疚。	ASSIS
	11. 我想念我出生的国家以及那里的人们。	ASSIS
	45. 我为不能照顾我的父母感到愧疚。	采访
	49. 我很担心我的父母。	采访
其他(2)		
	22. 我担心我的未来，因为我不知道应该留在这里还是回去。	ASSIS
	58. 我后悔来美的决定。	采访

APPENDIX E: SELF-RATING DEPRESSION SCALE

Self-rating Depression Scale (Zung, 1965)

Asks half of questions positively and half negatively

- Negative Example: "I notice that I am losing weight"
- Positive Example: "I eat as much as I used to"

	1	2	3	4
	Minimal: None or a little of the time			Severe: Most or all of the time
Depressed mood	1	2	3	4
Morning symptoms	1	2	3	4
Insomnia	1	2	3	4
Crying	1	2	3	4
Diminished Appetite	1	2	3	4
Weight loss	1	2	3	4
Sexual interest	1	2	3	4
Constipation	1	2	3	4
Palpitations	1	2	3	4
Fatigue	1	2	3	4
Clouded reasoning	1	2	3	4
Difficulty with completing tasks	1	2	3	4
Difficult decision making	1	2	3	4
Restlessness	1	2	3	4
Lack of hope	1	2	3	4
Irritability	1	2	3	4
Diminished self esteem	1	2	3	4
Life satisfaction	1	2	3	4
Suicidal Ideation	1	2	3	4
Anhedonia	1	2	3	4

Interpretation

1. Raw score converted to 100 point scale (SDS Index)
    1. SDS Index = (Raw Score / 80 total points) x 100
    2. SDS Index = Raw Score x 1.25
2. SDS Index Score
    1. Score <50: Normal
    2. Score <60: Mild depression
    3. Score <70: Moderate or Marked Major Depression
    4. Score >70: Severe or Extreme Major Depression

Chinese Self-rating Depression Scale

请根据您近一周的感觉来进行评分， 1=从无， 2=有时， 3=经常， 4=持续				
我感到情绪沮丧，郁闷。	1	2	3	4
*我早晨心情很好。	1	2	3	4
我常常哭泣或想哭。	1	2	3	4
我夜间睡眠不好。	1	2	3	4
*我胃口和往常一样好。	1	2	3	4
*我的性欲正常。	1	2	3	4
我的体重有很大变化（骤减或骤增）。	1	2	3	4
我为便秘烦恼。	1	2	3	4
我的心跳比平时快。	1	2	3	4
我无故感到疲劳。	1	2	3	4
*我的头脑象往常一样清楚。	1	2	3	4
*我做事情的能力和往常一样好。	1	2	3	4
我坐卧不安，难以保持平静。	1	2	3	4
*我对未来充满希望。	1	2	3	4
我比平时更容易激怒。	1	2	3	4
*我觉得做决定很容易。	1	2	3	4
*我感到自己是有用的和不可缺少的人。	1	2	3	4
*我的生活很有意义。	1	2	3	4
我有自杀的念头或行动。	1	2	3	4
*我仍旧喜爱自己平时喜爱的东西。	1	2	3	4

使用说明：

1. 将标有*号的条目反向编码（1→4，2→3，3→2，4→1）。
2. 将 20 个项目的各个得分相加，即得粗分。将粗分乘以 1.25 后的整数部分为标准分。
3. 评判结果：
    1. <50：正常，无抑郁。
    2. 50-60：轻度抑郁。
    3. 60-70：中度抑郁。
    4. >70：重度抑郁。

APPENDIX F: FLYER FOR RECRUITING INTERVIEW SUBJECTS

Flyer for Recruiting Interview Subjects---English edition

Flyer for Recruiting Interview Subjects---Chinese edition

APPENDIX G: INVITATION LETTER TO INTERNATIONAL OFFICES

SCHOOL OF SOCIAL WORK

INDIANA UNIVERSITY

Jieru Bai, PhD Candidate
Indiana University School of Social Work
Email: baij@iupui.edu

Dear Colleagues in International Offices

I am a PhD candidate at the Indiana University School of Social Work. I would like to invite you to assist in my study on the acculturative stress of Chinese international students. In my dissertation, I will develop a Chinese scale to measure acculturative stress and create an English manual for American users. I need your help to connect with your Chinese students.

In 2009, I conducted a study on the acculturative stress of international students with the cooperation of the OIA at IUPUI (Indiana University Purdue University Indianapolis). The study results helped the OIA staff better understand the situation of international students and improve their services. However, some participants shared that it was hard for them to respond to the English scale with complicated wording and some unrelated items. Thus, I decided to develop a language-specific scale in Chinese.

Your assistance in this study will only take a few minutes of your time. If you agree to assist me, you will send out the online survey link through your email system to all your Chinese students with F-1 or J-1 visa status and then resend about 4 reminder emails with the survey link within two months (March & April, 2012).

http://www.surveymonkey.com/s/2WGMXSQ

I will also need the basic statistics of the Chinese students on your campus (eg, total number, percentage of all international students). This study has been approved by the Institutional Review Board at Indiana University (study # 1111007398).

Thanks very much for reading this email and I look forward to hearing from you. I will write you in the acknowledgement of my dissertation and will send you my final questionnaire and English instruction for using the scale. Please feel free to use the attached recruiting email when you send out the survey.

Thanks again!

Sincerely, Jieru Bai

Education/Social Work Building 902 W. New York Street Indianapolis, IN 46202-5156 (317)274-8605 Fax (317)274-8630

Indiana University-Purdue University Indianapolis

APPENDIX H: STUDY INFORMATION SHEET

Study Information Sheet – English Version

INDIANA UNIVERSITY INFORMED CONSENT STATEMENT FOR

Acculturative Stress of Chinese International Students in the United States

You are invited to participate in a research study on the acculturative stress of Chinese international students in the United States. You were selected as a possible interview subject because you have enrolled in IUPUI/IUB and hold a F-1 or J-1 visa status. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

The study is being conducted by Jieru Bai from Indiana University School of Social Work. It is a non-funded PhD dissertation. The study has been approved by the Institutional Review Board at Indiana University (study # 1111007398).

STUDY PURPOSE

The purpose of this research is to study the stress of Chinese students during their adjustment to American life. The researcher wants to develop a scale to accurately measure the stress of Chinese students caused by the acculturation process.

PROCEDURES FOR THE STUDY:

If you agree to be in the study, you will be asked to talk about your acculturation experiences, which means adjustment from your original culture to the new culture. You will be asked to elaborate any stressful situations during your adjustment to life in America. The interview will last 40-60 minutes. The interviews will be conducted in Chinese, and will be audio-taped and transcribed.

CONFIDENTIALITY

Efforts will be made to keep your personal information confidential. Your identity will be held in confidence in reports in which the study may be published. As for the audiotape of your interview, only the research will have the access to it. It will be destroyed after the researcher completes her dissertation.

Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the study investigator and her research associates, as well as the Indiana University Institutional Review Board.

PAYMENT

You will receive a $5 grocery gift card for taking part in this study. You will receive the gift card only if you agree to participate and complete the interview.

CONTACTS FOR QUESTIONS OR PROBLEMS

For questions about the study, contact the researcher Jieru Bai by e-mail sent to baij@iupui.edu. If you cannot reach the researcher during regular business hours (i.e. 8:00AM-5:00PM), please call the IU Human Subjects Office at (317) 278-3458 [for Indianapolis] or (812) 856-4242 [for Bloomington] or (800) 696-2949.

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, contact the IU Human Subjects Office at (317) 278-3458 or [for Indianapolis] or (812) 856-4242 [for Bloomington] or (800) 696-2949.

VOLUNTARY NATURE OF STUDY

Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty or loss of benefits to which you are entitled. Your decision whether or not to participate in this study will not affect your current or future relations with IUPUI/IUB.

Study Information Sheet – Chinese Version

印第安纳大学研究信息表
研究名称：在美中国留学生的跨文化适应压力

台端获邀参加在美中国留学生的跨文化适应压力研究。您获得此邀请是因为您注册于 IUPUI/IUB，并持有 F-1 或 J-1 签证。请您在同意参加此研究之前，认真阅读条款，并欢迎提出任何问题。
此项研究是印第安纳大学社会工作系柏洁如女士的博士论文研究。
（研究已通过印第安纳大学伦理委员会的审查。查询编号：1111007398）。

研究目的

此项研究的目的是考察中国留学生在适应美国文化的过程中产生的压力。本研究将致力于开发一个能够准确测量中国留学生跨文化压力的量表。

研究的步骤

如果您同意参加研究，您需要接受研究员的访问，讲述来美之后的跨文化适应经历，尤其是那些让您产生压力的情景。访问过程大约会持续 40-60 分钟。整个访问过程将使用中文，并会被录音。

保密原则

您的个人信息将会被严格保密，最后的研究报告中不会透露您的任何个人信息。访问的录音将会在研究员完成博士论文后销毁。

除了研究员本人之外，她的博士论文指导委员会，以及印第安纳大学伦理委员会将有可能看到您的资料和访问内容。

报酬

作为对您的感谢，您将会在访问结束时得到价值 5 美金的超市礼券一张。您只有在同意参加此项研究并完成访问内容之后才会得到礼券。

如有问题请联系

如果您有关于此项研究的任何问题，请联系研究员柏洁如女士，邮箱 baij@iupui.edu. 如果您无法联系到她，请联系印第安纳大学伦理委员会（人物被试）办公室电话 (317) 278-3458 [Indianapolis] 或者(812) 856-4242 [Bloomington] 或者(800) 696-2949.

如果您对自己作为此项研究的参与者的权利有疑问，或者要对此项研究进行投诉，查询信息，意见和建议，请联系请联系印第安纳大学伦理委员会（人物被试）办公室电话 (317) 278-3458 [Indianapolis] 或者 (812) 856-4242 [Bloomington] 或者 (800) 696-2949.

自愿参与

此项研究本着自愿参与的原则。您有权利参加或不参加，或者随时中断参与。拒绝参加或者中途退出不会给您带来任何惩罚或者损失。您的决定也不会影响到您和印第安纳大学的关系。

APPENDIX I: EMAIL TO ONLINE SURVEY PARTICIPANTS

Email to Online Survey Participants – English Version

Dear Chinese student:

I am a Ph.D. student of social work and I come from China. I want to invite you to participate in my dissertation research: Acculturative Stress of Chinese College Students.

https://www.surveymonkey.com/s/2WGMXSQ

As an international student, we may encounter a lot of challenges after coming to a new environment. This project aims to study the stress of Chinese international students when they adapt to the new culture and life in U.S.

The questionnaire is expected to take 15-20 minutes. In the survey, you will be asked for your life experiences in the U.S., a self-assessment of your mental health, andsome background information. Participation in this project is voluntary. All your information will be kept anonymous and the data collected will be used for research purposes only.

The study will be significant in improving adaptation of Chinese international students. Your participation will help future Chinese international students.

Best wishes for your life in the United States!

Yours sincerely,

Jieru Bai

Email to Online Survey Participants – Chinese Version

致在美的中国留学生：

我是印第安纳大学社会工作学院的博士生。非常真诚的邀请大家参加我的博士毕业论文调查：在美中国留学生的跨文化适应压力。

https://www.surveymonkey.com/s/2WGMXSQ

作为留学生，我们从踏入美国的那一刻就会面临很多挑战，尤其是中美文化差异带来的适应困难。这种由于文化差异而带来的压力被称为跨文化适应压力，是我的博士 论文研究的主旨。我的毕业论文课题是设计一份测量中国留学生跨文化适应压力的中文量表，帮助中国留学生评估自身的精神健康状况，并给美国的精神卫生工作者 提供有效的诊断工具。

您大概需要 15-20 分钟来完成这份问卷。在调查中，你将会被问及在美国生活的经历，您对自己精神健康的评估，以及一些背景问题。本项研究本着自愿的原则，您的所有信息将会被严格保密，您的所有答案也将仅用于学术研究。

谢谢您的参与。祝您在美国的学习、生活一切顺利。

柏洁如

APPENDIX J: ASSCS

ASSCS-Chinese Edition

在美中国留学生跨文化适应压力量表
这个量表描述了中国留学生来到美国后可能遇到的产生压力的情景。这些情境发生在您的生活中过吗？1=从未发生---2---3=偶尔---4---5=经常---6---7=一直存在。
1. 上课或参加研讨会的时候我不敢用英文发言。
2. 来美之后，我的社交圈子越来越小。
3. 我感到我受到了不平等的待遇。
4. 我感到很无助。
5. 我感到学业压力很大。
6. 因为我的种族背景我受到了不同的待遇。
7. 上课的时候我很难听懂老师和同学的对话。
8. 我不能很自如的用英语表达自己的想法。
9. 在美国我的朋友很少。
10. 我在美国没有归属感。
11. 有一些种族的人对我表现出厌恶。
12. 我很担心我的父母。
13. 我用英文沟通时会感到很紧张。
14. 其他人对我有偏见。
15. 我常常需要超时学习。
16. 我觉得美国的生活很无聊。
17. 我觉得我的同胞被歧视。
18. 我因为无法参加课堂讨论而感到挫败。
19. 我为离开我的家人和朋友而感到内疚。
20. 我不习惯英文的思维方式。
21. 我的社会生活很少。
22. 我为我的同胞在这里低人一等而感到愤怒。
23. 当我需要用英语做报告时，我感到不自信。
24. 高强度的学习损害了我的身体健康。
25. 我为不能照顾我的父母感到愧疚。
26. 我的英文词汇量不足，要用的时候总觉得不够用。
27. 我在美国感到非常孤单。
28. 我觉得有一些人因为我的种族背景而不与我交往。
29. 用英文发表学术文章让我感到压力很大。
30. 因为英语不好，我试图逃避社交场合。
31. 在美国我没有新的社会网络。
32. 学业上的压力使我的生活质量下降。

使用指南：

(1) 将每题得分相加即是最后得分。

(2) 本量表包含了 5 个子量表：

- 子量表 1 语言障碍：条目 1, 7, 8, 13, 18, 20, 23, 26, 29, 30.
- 子量表 2 社会隔离：条目 2, 4, 9, 10, 16, 21, 27, 31.
- 子量表 3 种族歧视：条目 3, 6, 11, 14, 17, 22, 28.
- 子量表 4 学业压力：条目 5, 15, 24, 32.
- 子量表 5 对家庭的愧疚感：条目 12, 19, 25.

ASSCS-English Edition

Acculturative Stress Scale for Chinese Students This scale describes some stressful situations that might occur to you after you come to the U.S. Please circle the number that BEST describes your experience, using following scale: 1=never---2---3=sometimes---4---5=often---6---7=all the time.
1. I hesitate to participate in class discussion and seminar.
2. My social circles shrank after I come to the U.S.
3. I feel that I receive unequal treatment.
4. I feel helpless.
5. I feel a lot of academic pressure.
6. I am treated differently because of my race.
7. It is hard for me to follow the lectures and conversations in classes.
8. I cannot express myself very well when using English.
9. I do not have many friends in the U.S.
10. I don't feel a sense of belonging (community) here.
11. People from some other ethnic groups show hatred toward me.
12. I worry about my parents.
13. I feel nervous to communicate in English.
14. I feel that others are biased toward me.
15. I often have to work overtime in order to catch up.
16. I feel bored here.
17. I feel that my people are discriminated against.
18. I feel frustrated that I am not able to participate in class discussions.
19. I feel guilty to leave my family and friends behind.
20. I am not used to the English way of thinking.
21. I have limited social life.
22. I feel angry that my people are considered inferior here.
23. I lack confidence when I have to do presentations in English.
24. The intensive study makes me sick.
25. I feel guilty that I cannot take care of my parents.
26. My vocabulary is so small that I always feel short of words.
27. I feel lonely in the U.S.
28. I feel some people don't associate with me because of my ethnicity.
29. It is a big pressure for me to publish academic paper in English.
30. I shy away from social situations due to my limited English.
31. I do not have new social network here.
32. Academic pressure has lowered the quality of my life.
Instructions: (1) Final score equals the sum of scores on each item. (2) There are five subscales: - Subscale 1 Language Insufficiency: Item 1, 7, 8, 13, 18, 20, 23, 26, 29, 30.

- Subscale 2 Social Isolation: Item 2, 4, 9, 10, 16, 21, 27, 31.
- Subscale 3 Perceived Discrimination: Item 3, 6, 11, 14, 17, 22, 28.
- Subscale 4 Academic Pressure: Item 5, 15, 24, 32.
- Subscale 5 Guilt toward Family: Item 12, 19, 25.

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CURRICULUM VITAE

Jieru Bai

EDUCATION

2012	**Doctor of Philosophy** School of Social Work Indiana University, Indiana, U.S.A. *Minors*: Education and Statistics
2007	**Master of Social Science in Social Work** Department of Social Work The Chinese University of Hong Kong, Hong Kong
2005	**Bachelor of Arts** School of Journalism and Communication Peking University, Beijing, China

HONORS AND AWARDS

2011	Educational Enhancement Grant, Indiana University
2010	Doctoral Student Esprit Award, Indiana University
2009	Travel Fellowship, Indiana University
2007-2009	Graduate Research Assistantship, Indiana University
2006	Student Service Award, The Chinese University of Hong Kong
2005-2007	Distinguished Academic Scholarship, The Chinese University of Hong Kong
2003&2004	Dean's award for study excellence, Peking University

PUBLICATIONS

Folaron, G., **Bai, J.**, & Schneider, R. (2011). Empowering fathers: Changing practice in public child welfare. *Protecting Children,* 26(2), 43-52.

Thoennes , N., Harper, C.J., Folaron, G., Malm, K., McLaughlin, O., **Bai, J.** & Kaunelis, R. (2011). Where are the Dads? Identifying, locating, contacting, and engaging nonresident fathers of children in foster care. *Protecting Children,* 26(2), 29-42.

MANUSCRIPTS IN PROGRESS

Bai, J. (under review). What is the role of social work in China? A multi-theoretical analysis. *International Social Work.*

Bai, J. (under review). Perceived support as a predictor of acculturative stress among international college students in the United States. *Journal of College Counseling.*

Bai, J. (under review). Reflections on teaching a social work and health care course in China: A cross-cultural experience. *Journal of Social Work Education.*

Bai, J., & Dalay, G.J. (under review). Current status of social work education in China. *Journal of Social Work Education.*

PRESENTATIONS

Bai, J., & Larimer, S. (2011, June). China & U.S. health care issues: A cross-cultural comparison. *The 10th Hawaii International Conference on Social Science*, Honolulu, HI.

Bai, J., & Larimer, S. (2011). China & U.S. health care issues: A cross-cultural comparison. *The 15th Annual PhD Spring Symposium*, Indiana University School of Social Work, Indianapolis, IN.

Bai, J. (2010, April). A brief introduction to epistemological issues in China: Implications for social work. *The 14th Annual PhD Spring Symposium*, Indiana University School of Social Work, Indianapolis, IN.

Bai, J. (2009, May). Acculturative stress of international students in the United States. *National Association of Foreign Student Advisers (NAFSA) 2009 Annual Conference*, Los Angeles, CA.

Bai, J. (2009, April). What is the role of social work in China? A multi-theoretical analysis. *The 13th Annual PhD Spring Symposium*, Indiana University School of Social Work, Indianapolis, IN.

Bai, J. (2008, April). A survey of acculturative stress of Chinese students in IUPUI. *The 12th Annual PhD Spring Symposium*, Indiana University School of Social Work, Indianapolis, IN.

RESEARCH EXPERIENCES

01/2011-04/2011 **Research Assistant,** School of Social Work, Indiana University
- Project: *Engaging Non-Resident Fathers*, funded by the American Humane Organization with a subcontract through the Indiana Department of Child Services.
- Conducted program evaluation by analyzing quantitative data.

06/2009-05/2010 **Coordinator,** School of Social Work, Indiana University
- Project: *Collaboration in Medical Humanities and Social Work between Peking University Health Science Center and IUPUI*, funded by IUPUI Office of the Vice Chancellor for Research.
- Planned a cross-university and cross-cultural course, recruited both American and Chinese students, negotiated all the administrative and logistic issues with Peking University.

09/2007-05/2009 **Research Assistant,** School of Social Work, Indiana University
- Contributed to literature review on international military social work, networked with Chinese military psychologists for possible collaborations.

TEACHING EXPERIENCES

Summer 2012, 2011 & 2010	Instructor S300/S600 China & U.S. Health Care Issues: A Cross-Cultural Comparison (A study abroad course offered at the BSW and MSW levels for students to understand differences in U.S. and Chinese health care systems.)
Spring 2012 & 2011	Instructor S300 Statistical Reasoning in Social Work
Spring 2011	Guest speaker S517 Assessments in Mental Health and Addictions
Fall 2011	Guest speaker S231 Generalist Social Work Practice I: Theory and Skills

PROFESSIONAL PRACTICE EXPERIENCES

09/2006-03/2007 **International Social Service Hong Kong Branch, Hong Kong**

School social worker

- Provided counseling services for local middle school students
- Conducted developmental groups for adolescents with behavioral problems

07/2006-08/2006 **Integrated Service Center for Ethnic Minorities, Christian Action, Hong Kong**

Community social worker (practicum)

- Offered welfare consultation and career counseling for unemployed ethnic minorities
- Organized public education programs to facilitate multi-ethnic integration
- Implemented need assessment, program evaluation, and outreach programs

04/2005-06/2005 **Care For Children, Beijing Chapter**

Translator, conference interpreter, coordinator

- Networked with Chinese mass media
- Assisted in building Chinese website

06/2004-11/2004 **Oriental Horizon, China Central Television, Beijing**

Journalist & editor

- Researched topics and interviewed subjects for daily social news
- Wrote scripts for anchors and edited video materials
- Managed the content and layout of the internet edition of the program

09/2002-12/2002 **Center for the Study of Contemporary China, Tsinghua University, Beijing**

Journalist & editor

- Worked in the newspaper for the project of Mock Legislation Hearing for AIDS Patients
- Interviewed AIDS patients, specialist doctors and related stakeholders
- Advocated for AIDS patients' rights

09/2001-07/2005 **The Aixin Student Volunteer Society, Peking University, Beijing**

Volunteer

- Taught in impoverished provinces in China and surveyed residents on local education
- Learned sign language and conducted sign language classes in many universities in Beijing
- Organized regular recreation activities for Special School for Visually Impaired Children