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**ACCULTURATIVE STRESS AND ASPECTS OF WELL-BEING AMONG
CHINESE INTERNATIONAL STUDENTS IN U.S. HIGHER EDUCATION**

BY

LIAM G. LANE

HONORS THESIS

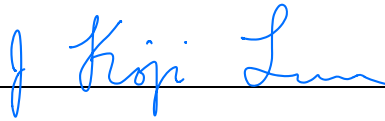
Submitted in partial completion of the requirements for
Honors in Anthropology,
Department of Anthropology,
Binghamton University,
State University of New York
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Accepted in partial fulfillment of the requirements for
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Abstract

Chinese international students have been the largest demographic of international students in the U.S. for the past decade. In our increasingly globalized world, it is inevitable that more international students will immigrate to the U.S. for educational opportunities, among many others, and it is important to consider the challenges that these students may face, to ease their cultural transition. Already we have seen our world changed by the presence of the COVID-19 pandemic and it is inevitable that this will shape the experiences of all students, let alone international students, in the near future, and possibly the foreseeable future. While the effects of this disease are ever evolving, it is certain that they will influence the structure of higher education and contribute to the stressors of being an international student. Studies have shown that the stress from cross-cultural transitions, acculturative stress, is influenced by academic and social stressors that students face when adjusting to life in their host culture. Additionally, higher levels of acculturative stress have been related to adverse effects on students' health, including diet and substance use. This study looks to assess the relationship of acculturative stress among Chinese international students at a public university in New York with aspects of well-being, while also evaluating health-related campus resources and perceptions of University support of student well-being. This study found results consistent with the literature regarding the relationship between acculturative stress and academic ($r^2 = 0.635$, $p < 0.01$) and social well-being ($r^2 = 0.465$, $p < 0.01$), as well as life satisfaction ($r^2 =$

= -0.458, $p < 0.05$) and happiness ($r^2 = -0.639$, $p < 0.01$). Additionally, this research concluded that acculturative stress and length of enrollment have a moderating effect on students' use of drugs/alcohol as a coping mechanism and their self-reported substance use since immigrating to the U.S. ($r^2 = 0.425$, $p = 0.001$; and $r^2 = 0.456$, $p < 0.001$, respectively). No significant relationship was found between acculturative stress and aspects of diet, physical health, and sleep quality, however, analysis of these factors and other survey items revealed non-anticipated correlations. Such findings suggest the interconnectedness of survey items and support the notion that aspects of well-being influence each other, calling for greater importance on promoting well-being among students. Colleges and universities in the U.S. are fortunate to have many resources that look to support student well-being, and all students should have equal opportunity in accessing these resources and benefiting from their services. Cultural differences may hinder individual accessibility to resources or may implicate other adverse health effects that the host culture is unaware of. This study discusses limitations in research and also outlines considerations for future research.

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Preface

I was fortunate enough to spend part of my undergraduate education studying abroad in Thailand with much of my time spent immersing myself in a completely new culture, exploring all that the nation had to offer and traveling to different parts of Southeast Asia, as well. My rationale for studying in such a diverse location was rooted in personal reasoning -removing myself completely from my comfort zone and learning as much about myself as I would in my host country. But as an anthropologist interested in the ways culture influences health ideologies and health practice, my study abroad experience proved to be a perfect opportunity to explore this relationship firsthand.

The concept of “healthy” and how individuals achieve this status is rooted in cultural values. In the United States, there is a large emphasis placed on the notion of “being healthy” and there are ample resources, especially amidst institutions of higher education, to promote healthy lifestyles and support student well-being. Prior to departing for my time abroad, there were mandatory courses that I had to complete that sought to educate students on ways to stay safe and healthy while living outside of the U.S. But this education seemed to be largely concerned with laws and regulations of countries and how students should act to avoid any legal issues. Even the concept of “culture shock” was not addressed as in-depth as I thought it would; yes, most students were subject to experiencing some sort of acculturation, but how could we (or should we) expect this to impact other aspects of our lives and well-being? Fast forward to my host university’s

international student orientation, and there were even more questions relating to resources for foreign students' well-being.

Through conversations with other international students, and even some domestic students, little was mentioned regarding the ways in which perceived culture shock would impact individual well-being. While it should not be a surprise for lay individuals to discuss the greater ramifications of cultural transitions, for me, these conversations alluded to a larger notion: that much of what we talk about and perceive as important is rooted in our own culture. Thinking more about my own experiences studying abroad and how I was impacted by acculturation, allowed me to reflect on the experiences of international students who study abroad for their entire undergraduate education. Moreover, those students who study abroad in the U.S. where the term "healthy" is used extensively and related to many aspects of well-being may have a difficult time adjusting and possibly understanding this meaning. Therefore, there is a great need to evaluate the acculturation of international students to determine if this impacts their well-being, and if there is, encourage U.S. colleges and universities to allocate resources to help with this endeavor. If there is not, resources should still exist to continue to support students in a culturally appropriate manner to ensure the promotion of their well-being while studying abroad.

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Chapter 1: Introduction

This chapter outlines the research basis for this study through background information relating to international students in the U.S., a literature review on the topic to be discussed, and the current study rationale. Additionally, research questions and supporting hypotheses are listed.

I. Background

International education can provide students with enriching opportunities inside and outside of the classroom. In today's world of global interconnectedness, it seems as though education abroad opportunities are a mainstay of institutions of higher education, providing a means for students to connect with other cultures and therefore enhance their education, and a source of revenue for many host universities, be it hosting international students or boasting study abroad programs for domestic students. At the same time, colleges and universities in the U.S. have a unique responsibility to look out for the well-being of international students and need to take steps that look to protect and foster educational opportunities for these students. Considering the anticipated impacts of the current COVID-19 pandemic, international students are currently the most vulnerable population to xenophobic remarks and adversities relating to travel and well-being, among others. Therefore, ensuring international student well-being and supporting students in any way possible, can help mitigate any negative effects from spending a prolonged time abroad.

Anxiety attributable to the loss of familiar customs and environments second to cross-cultural transitions is commonly referred to as "culture shock" (Oberg, 1960).

Berry (1997) employs the term “acculturative stress” in place of “culture shock” for a few reasons; the negative connotation of “shock”, parallel to many psychological models of environment and stress responses, and the transition to a new culture being the root of this stress. This term has been used as an assessment measure in many studies regarding international students of various demographics (e.g., Bai, 2016; Bertram et al., 2014; Crockett et al., 2007; Hansen et al., 2018; Hunt et al., 2017; Kim et al., 2019; Lantrip et al., 2015; Nasirudeen et al., 2014). Acculturative stress has also been viewed as a metric of health, placing emphasis on psychological and social well-being as described by Berry and colleagues (1987):

Acculturative stress is thus a reduction in the health status of individuals, and may include physical, psychological and social aspects; to qualify as acculturative stress, these changes should be related in a systematic way to known features of the acculturation process, as experienced by the individual. (p. 493)

During the 2018-2019 academic year, Chinese international students constituted 33.7% of nearly 1.1 million international U.S. college students (Institute of International Education, 2019). Compared to the 2009-2010 academic year (Institute of International Education, 2010), this demographic has seen a 189.55% increase over the past decade (127,628 students in 2009-2010, compared to 369,548 in 2018-2019) and has remained the top demographic among international students in the U.S. throughout the decade. Many Chinese international students have a high predisposition for elevated levels of acculturative stress compared to other international students due to cultural differences between their host nation and their home culture (Liu, 2009).

Poyrazli and colleagues (2004) studied the impact of basic demographic information in relation to acculturative stress from a sample of 141 international college students in the U.S. The authors found that acculturative stress was generally higher in students who socialized with non-American students than American students and that Asian students generally report higher levels of acculturative stress compared to European students. Support for the latter was rooted in cultural differences between Asian students and European students and looks at fundamental aspects of culture. Generally speaking, Chinese culture is more collective and relies less on self-efficacy compared to Western cultures. This notion has been explored in other research relating to acculturative stress and social support concerning Chinese international students in the U.S. (Bertram et al., 2014; Yeh & Inose, 2003; Yip, 2005; Zhang, 2018). Lower English proficiency among international students has also been linked to greater acculturative stress (Hansen et al., 2018; Poyrazli et al., 2004; Rawlings & Sue, 2013; Zhang, 2018). The inability to effectively communicate may discourage some individuals from seeking resources and obtaining the appropriate help and services that they may need to adjust properly in a new culture and environment.

Considering that higher education in the U.S. places a large emphasis on student self-efficacy, many Chinese international students, in particular, may struggle with adjusting to their new environments. Cultural differences and English proficiency contribute to these barriers and considering many of the resources available to students require students to reach out for help, higher levels of acculturative stress may hinder this ability of students if they cannot communicate effectively (linguistically or culturally). Additionally, studies have shown that Chinese international students may not know what

problems constitute “needing help” and where to go for solutions and resources (Bertram et al., 2014; Carmack et al. 2016; Liu, 2009; Proyrazli et al., 2004; Russell et al., 2008; Wei et al., 2007; Yip, 2005). Therefore, action from colleges and universities to help mitigate adverse effects from acculturation is imperative for student success. Berry (1997) provides more insight into acculturation:

The long-term psychological consequences of this process of acculturation are highly variable, depending on social and personal variables that reside in the society of origin, the society of settlement, and phenomena that both exist prior to, and arise during, the course of acculturation. (p. 5).

This study looks at Chinese international students, in particular, however, these methodologies should also be employed to evaluate the impact acculturative stress has on other international student demographics.

II. Acculturation and Well-being: a literature review

Various studies have assessed acculturative stress in relation to international student well-being. This research project in particular used mental (academic stress, social support, depression) and physical well-being (diet transitions, physical wellness¹, sleep quality, substance use) in addition to campus resource effectiveness and coping mechanisms to evaluate the adverse impacts of acculturative stress of Chinese international students.

¹ While physical health is multidimensional, this study defines physical wellness as physical activity and perceptions of exercise. See Chapter 2 for more detail.

A. Mental health

Han and colleagues (2013) concluded that mental health services on U.S. college campuses should focus on the health of Chinese international students and should improve resources and awareness of these issues involving students. While the reasoning behind these actions was rooted in student-advisor relationships, psychological well-being of international students has also been linked to acculturative stress (Hwang & Ting, 2008; Taliaferro et al., 2019; Wei et al. 2012). Psychological distress has also been associated with higher levels of academic stress (Cemalcilar & Falbo, 2008; Rosenthal et al., 2008). Considering that many international students immigrate to the U.S. for better educational opportunities, the pressure to succeed academically is plausible reasoning to expect increased psychological stress among these students. Differences in classroom environments and course structures may also contribute to students' acculturative and academic stress. O'Reilly (2010) explains that a major challenge for students migrating to the U.S. for education is largely concerned with their academic performance and "often report feeling pressure to do well when studying abroad" (p. 585). Many scholars have also studied the relationship between acculturative stress and academic stress, concluding that the two factors are directly related and that the latter may play a part in determining the former (Bai, 2012; Mallinckrodt & Leong, 1992; Mesidor & Sly, 2016; Zhang, 2018; Zheng, 2016).

Acculturative stress has also been related to social support among international students. Mallinckrodt and Leong (1992) stated that social support "provides a powerful coping resource for a person experiencing stressful life changes, including the stress of adjusting to an unfamiliar culture" (p. 71). Their study concluded that social support for

students had a positive effect on symptoms associated with stress with cross-cultural transitions, and in times of high stress, strong social support networks are paramount for international students (Crockett et al., 2007; Mesidor & Sly, 2016; Ra, 2016; Yeh & Inose, 2003; Zhang, 2018). Early social support has also been shown to help students adjust better to cross-cultural transitions when they arrive in the U.S. (Wang et al., 2012). Social support networks can also be cultivated through culturally-based organizations. As mentioned earlier, many Asian cultures emphasize the importance of family-oriented values and notions of collectivism, and providing a space for students to share these values have been associated with lower levels of acculturative stress (Kim et al., 2012; Lin, 2006); alternatively, the absence of these resources may heighten levels of acculturative stress.

Academic stress and social support have been related to psychological well-being among students, and research also supports the correlation between mental health of students and their risk of developing depression among other mental health illnesses (e.g., Dusselier et al., 2005). Acculturative stress has also been associated with risk of developing adverse mental well-being (Wang et al., 2010) with higher levels of stress manifesting as feelings of sadness and depression (Mallinckrodt & Leong, 1992), and psychological distress (Hwang & Ting, 2008). Moreover, Asian international students on average receive discrimination at higher rates than European international students (Lantrip et al., 2015) and considering cultural differences, the former demographic may not seek out counseling or psychological help (Wei et al., 2012).

B. Physical health

The American diet is characterized by foods high in fats and often lacking in fruits and vegetables, and dramatically increases the susceptibility of consumers developing chronic diseases (Lange-Smith & Van Scyoc, 2017; Satia-Abouta et al., 2002). For many international students, this diet transition may come as a sudden lifestyle change, and is often an aspect of this cultural transition, known as dietary acculturation; Satia-Abouta and colleagues (2002) “states that immigrants either maintain their original eating patterns, develop bicultural eating patterns, or completely adopt the eating patterns of the host country” (as cited in Garnweidner et al., 2012, p. 339). International students may experience difficulty in finding food unique to their home culture too, or “comfort food”. Additionally, much of the ideology behind food is culturally based, whether it be dietary rules regarding religious belief, preparation practices and efforts, even taste (Garnweidner et al., 2012). As a source of energy and sustenance, dietary practices of international students also have physical health concerns, as students can experience negative weight and health statuses (Lange-Smith & Van Scyoc, 2017), concerns relating to cost, food security and quality (Satia et al., 2000) and even perceptions of what it means to “eat healthy” (Pan et al., 1999).

Berry and colleagues (1987) indicate that acculturative stress includes aspects of physical wellness among other psychosocial factors. When concerned with the physical health of students, it is important to consider their diets but also their physical activity levels and perceptions towards physical activity to encourage healthy habits. Research has suggested that physical health, and mental health, are tied to academic performance of students (Rosenthal et al., 2008) and that university health centers have a responsibility

to help students deal with the physical demands of university life (Carmack et al., 2016). Food insecurity has also shown to have implications for physical activity and greater aspects of physical well-being (Bruening et al., 2018). Comparing international students to domestic students, research has shown that university life tends to have new physical health impacts on students and suggests that the health behaviors developed in young adults have life-lasting impacts (e.g. Von Ah et al., 2004). Li and Zizzi (2018) report that physical activity can be a positive outlet for international students too, as this is an outlet that encourages social engagement and may help mitigate the adverse effects of acculturative stress.

Sleep quality has been a research topic of a wide variety of studies concerned with domestic college students, with studies relating sleep quality to academic and mental well-being of students (Buboltz et al., 2001; Dusselier et al., 2005; Lowry et al., 2010). This metric may also apply to international students when discussing acculturative stress, although literature in this field remains limited. From Mallinckrodt and Leong (1992), inability to sleep was a consequence of a difficult time adjusting to a new culture. Additionally, considering that many international students may keep in contact with family in their home country, there is reason to believe that the time zone change may impact students' sleep. Moreover, if international students are not getting adequate sleep, they may also be at risk for the same social and academic deficiencies that have been seen in domestic college students.

Another topic of great importance to college student health is that regarding substance use. Health promotion services among college students are concerned with alcohol and other substance use among this demographic and ways to mitigate usage

(Barnett et al., 2014; Kim & Cronley, 2018; Voh Ah et al., 2004; Windle et al., 2017).

Some research suggests that this increased risky behavior is due to social perceptions of drink and substance use behaviors (Stappenbeck et al., 2010) and provides an alternative way to provide proactive intervention. However, substance use and those most likely to overuse has been explored on the basis of race (Broman, 2005; Lanaway, 2017) and nationality (Sa et al., 2013; Skromanis et al., 2018). International students also show a greater prevalence of substance use and alcohol consumption compared to domestic college students in the U.S. (Holguin, 2011); Skromanis and colleagues (2018) explain this in terms of a coping mechanism:

While engagement in such behaviours likely reflects the tendency of young peoples to experiment with risky activities more generally, these behaviours may be particularly appealing to international students as they may be particularly prone to seeking the temporary escape from educational and acculturational stressors that these behaviours afford. (p. 2)

Other studies have also associated higher levels of acculturative stress with a greater tendency to consume alcohol and participate in substance use (Hunt et al., 2017; Kim & Cronley, 2018). The engagement in alcohol and substance use seems to be a coping mechanism and presents an opportunity for colleges and universities to include international students in prevention and educational campaigns.

C. Coping strategies

Coping mechanisms and acculturative stress have also been studied at length among immigrants. The methods that individuals use to cope with acculturation have the

potential to improve individual quality of life (Belizaire & Fuertes, 2011) lower depression (Crockett et al., 2007) and overall cross-cultural transition (Kuo et al., 2014; Wang et al., 2012). Coping also relies on the environment that an individual is in, with social support being a common term associated with positive coping strategies (Bertram et al., 2014; Crockett et al., 2007; Kim et al., 2012; Mallinckrodt & Leong, 1992; Wang et al., 2012). Coping mechanisms of students may provide insight in how to improve pre-existing resources for acculturation and could highlight areas for program development. Zhang (2018) concludes that reactive and suppressive style coping (from Heppner et al., 1995) are significant in determining levels of acculturative stress and also have implications for other aspects of cross-cultural transition.

III. Study Rationale

This study had three components that were modeled after other studies found in the literature in a larger effort to develop a separate assessment to evaluate aspects that impact international student well-being². The first component was to assess the relationship between Chinese international students' acculturative stress and aspects of well-being using studies available in the literature as a model. Second, this study looked to address campus resource effectiveness from a Chinese international student's perspective to better accommodate students' needs and highlight areas of improvement, if any. Finally, using items from the first part of the study and assessing needs of students, create a survey that would enable colleges and universities to evaluate aspects of well-being that Chinese international students were struggling with, considering that Chinese

² A survey was developed from this study on Chinese international students but may have further implications for international students at large. See Chapters 3 and 4 for more detail.

students are the largest demographic of foreign students coming to the U.S. Additionally, the assessment developed (see appendix J) has practical applications for other international students and can be included in other evaluations relating to acculturation to improve college resources for all international students. This study also outlines directions for future research.

IV. Research Questions and Hypotheses

Many relationships were anticipated during this study based on the literature. Hypotheses and anticipated individual relationships are explained below.

Research question 1- How does acculturative stress levels relate to sample information, and can this information be used to predict acculturative stress in students?

Hypothesis 1.1- Undergraduate students will experience higher acculturative stress levels compared to graduate students.

Hypothesis 1.2- Students who have enrolled at Binghamton for longer will have lower levels of acculturative stress compared to students enrolled for a shorter period of time.

Hypothesis 1.3- Students who did not attend an international school before attending Binghamton University will have higher acculturative stress levels, than students who did.

Hypothesis 1.4- Students who did not attend any other schools in the U.S. before Binghamton University will have higher acculturative stress levels than students who did.

Hypothesis 1.5- Students with greater financial fortune will have higher levels of acculturative stress levels than those not as fortunate (i.e., parents do not pay for education or send students money).

Hypothesis 1.6- Students who do not see themselves as part of the campus or greater Binghamton communities will have higher levels of acculturative stress.

Research question 2- How does acculturative stress related to aspects of well-being?

Hypothesis 2.1- Higher acculturative stress levels will be related to higher academic stress.

Hypothesis 2.2- Higher acculturative stress levels will be related to higher dietary stress.

Hypothesis 2.3- Higher acculturative stress levels will be related to higher levels of social stress.

Hypothesis 2.4- Higher acculturative stress levels will be related to negative aspects of physical health.

Hypothesis 2.5- Higher acculturative stress levels will be related to greater prevalence of substance use.

Hypothesis 2.6- Higher acculturative stress levels will be related to lower health-related quality of life.

Hypothesis 2.7- Higher acculturative stress levels will be related to lower happiness and life satisfaction.

Hypothesis 2.8- Higher acculturative stress levels will be related to lower levels of sleep quality.

Research Question 3- How do negative coping strategies relate to susceptibility for adverse health effects?

Hypothesis 3.1- Reactive and suppressive coping styles will be related to increased likelihood of engaging in substance use (i.e. use drugs/alcohol to cope with living in a new culture).

Hypothesis 3.2- Reactive and suppressive coping styles will be related to increased likelihood of engaging in unhealthy dietary behaviors (i.e. have an unhealthy eating pattern in the U.S.).

Hypothesis 3.3- Reactive and suppressive coping styles will be related to increased likelihood of engaging in unhealthy physical health habits.

Research Question 4- How do international students perceive campus resources and do international students feel supported by University efforts related to well-being?

Hypothesis 4.1- Students who feel more a part of the campus community are more likely to seek out campus resources than students who do not see themselves as a part of the campus community.

Chapter 2: Materials and Methods

This chapter describes the setting in which this study was conducted, how participants were recruited for research and ethical considerations. Additionally, all measures used in this study are outlined and the researcher compares survey items that were used as models for items used for research analysis.

I. Setting

Participants were solicited from Binghamton University, State University of New York, and self-identified as Chinese international students. This medium-sized university enrolls 2251 international students from 100 countries as of the 2019 Fall semester (International Student and Scholar Services (ISSS), 2020) constituting roughly 13% of the student body (Binghamton University Office of Undergraduate Admissions, 2020). As of the 2019 Fall semester, there were 415 undergraduate and 484 graduate Chinese students currently enrolled at the university (ISSS, 2020). All international students must demonstrate a specific level of English proficiency in order to enroll in the University, therefore, the survey was administered in English.

II. Procedure of Recruitment

Prior to the start of the survey, the researcher attempted to contact cultural organizations in an unstructured interview setting to gauge interest and input in the study design and methodology. Few organizations responded to the researcher's emails. Soon after the launch of the survey, these cultural organizations were contacted again to see if the researcher could come and introduce the study to students in the organization to

engage potential participants and allow any students to meet the principal investigator. Again, few organizations were available to meet with the researcher.

The survey was administered through multiple methods of recruitment to reach as many eligible participants as possible. Efforts were made to contact eligible participants through the International Student and Scholar Services Office at Binghamton University; however, the office was unable to send out mass emails and suggested that potential participants be contacted through cultural organizations and clubs on campus. Cultural clubs and organizations that specifically stated that they catered to Chinese international students were contacted and asked to set up initial meetings with the researcher to discuss experiences with acculturation. Aside from cultural organizations, one academic listserv with a high concentration of the target demographic was asked to send out the survey email to all students in the department. Students meeting the demographic of interest from the English Language Institute on campus were also included in emails detailing research study.

Recruitment flyers (see appendix A) were also distributed around campus with QR codes to access the online survey via mobile devices. An announcement (see appendix D) was also submitted to a campus-wide listserv sent to all registered students at Binghamton University every Tuesday and Thursday during the study window. Furthermore, an in-person recruitment session was held towards the end of the survey window to encourage more participants and a flyer (see appendix E) with details was distributed to cultural organizations and distributed around campus.

Once the survey was live, all eligible cultural groups and individuals were sent an initial email and bi-weekly follow up emails with links to the survey. All clubs and

organizations were asked to disseminate the email to all individual members. All emails included one of two messages: the first translated by staff at the English Language Institute (see appendix F), and the second translated by a faculty member of the Translation Research and Instruction Program at the University (see appendix G). This was thought to encourage more students to participate in the survey. The language was changed in the second message to modify the tone and hopefully invite more students to participate in this research project.

In an effort to encourage participation, two \$50 gift cards were raffled off for all students who completed the survey and submitted emails through an external platform independent of the survey software to ensure anonymity.

III. Ethical Considerations

There were four criteria that were fundamental in this research study: 1) informed consent, 2) voluntary participation, 3) anonymity of participants and 4) confidentiality. First, all participants were informed of the nature of the study, what aspects would be evaluated, how data would be shared, and what was expected of them as participants. This was all listed out to participants before consenting to the study (see appendix I). Second, all participation in this study was completely voluntary and participants could leave the study at any time. In the online platform, participants were able to skip any question they did not want to answer. Third, the link that took participants to the online survey was administered in two ways: one through a QR code and the second through a direct link that could be clicked or copied and pasted into an internet browser. No identifying information was collected in the Qualtrics XM portion of the survey. The only

identifying information that was asked from participants was in the form of their University email, after the survey had completed. To collect email addresses, the final question participants were asked was “Would you like the chance to enter to win one of 2 \$50 Visa gift cards?” If participants clicked yes, they were redirected to an online Google form where they recorded their University emails³. Additionally, no individual information was collected that otherwise would be able to distinguish participants from non-participants. Fourth, survey responses were secured with password protection that only the researcher had knowledge of. No responses were shared with individuals outside of this study.

This study was approved by the IRB at Binghamton University (appendix H) and the researcher kept in contact with the IRB committee concerning any modifications of the original study and awaited IRB approval before carrying out any changes. The researcher also completed Collaborative Institutional Training Initiative (CITI Program) Group 2 training and all other required training for Human Subjects research as mandated by the IRB at Binghamton University.

IV. Measures

An online survey was created and published using Qualtrics XM which was suggested by the IRB at Binghamton University. Qualtrics XM allows surveys to be administered with the option to withhold identifying information and allowing participants to skip any questions they did not want to answer. The survey was open for

³ One chance to win per email, one submission per participant.

participants to take from November to March of the 2019-2020 academic year⁴. The administered survey consisted of 182⁵ short questions that incorporated already published surveys and questions adapted from published surveys available in the literature. There were 13 sections to this survey⁶ that are described below. Participants were informed that it would take approximately 20-25 minutes to complete the survey.

A. Individual Characteristics

Nineteen general questions were asked of participants in order to get a basic understanding of participants and potentially identify adverse effects of acculturative stress apart from well-being. Questions like “What is your biological sex”, “Are you an undergraduate or graduate student?”, “What school are you currently enrolled in at Binghamton University?”, and “Cumulative GPA” were among some of the most basic demographic questions.

Other questions tried to gather information that may act as a mediating effect on acculturative stress. Financial fortune (e.g., “My parents pay for my education”) or experience within international education prior to coming to the U.S. (e.g., “Did you attend an international school while in your home country” or “Have you ever attended school in the U.S. besides Binghamton University”) were answered on a yes/no basis.

⁴ The survey was initially scheduled to be active November 2019-January 2020. However, to increase participation response, the survey was extended to February 2020, and again to March 2020, with IRB approval.

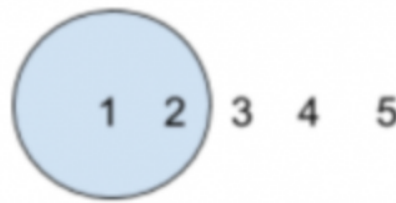
⁵ The initial survey stated that 183 short questions were included, however, one question was mistakenly omitted from the survey publication. One metric of this study was therefore removed.

⁶ midst the spread of COVID-19, an additional section was added inquiring about perceptions surrounding the novel disease in February 2020.

When questions asked participants to quantify an answer, multiple answers were available with the option to write in an answer.

Additionally, students were asked to rank how they perceived themselves in two environments: the Binghamton University community and the Greater Binghamton Community⁷. Answers were provided on a Likert-style scale ranging from 1 (I feel very much a part of the community) to 5 (feeling very much outside of the community) (Figure 1).

Figure 1. *Student Perception in Community*



Note. Circle defines community with 1 and 2 considered “a part” of the community

B. Acculturative Stress

Acculturative stress of students was measured using the Acculturative Stress Scale for Chinese College Students in the U.S. (ASSCS) developed by Bai (2012). This survey (see appendix I) consisted of 32-items answered on a Likert-style scale from 1 (never) to 7 (all the time). The survey was developed from a variety of in-person interviews and adapted from reviews of other literature concerned with acculturation and college students. Items were divided into five subscales: 10 statements relating to

⁷ Former relating to the campus community, the latter relating to the surrounding town/city.

language insufficiency (e.g., “I hesitate to participate in class discussion and seminar”, “I am not used to the English way of thinking”) 8 statements relating to social isolation (e.g., “I do not have many friends in the U.S.”, “I don’t feel a sense of belonging (community) here”), 7 statements relating to perceived discrimination (e.g., “People from some other ethnic groups show hatred toward me”), 4 statements relating to academic pressure (e.g., “The intensive study makes me sick”) and 3 statements relating to guilt towards family (e.g. “I feel guilty that I cannot take care of my parents”). The total score for this metric was calculated by adding up all of the individual item scores; with higher scores indicative of greater levels of acculturative stress. The survey is highly reliable with a Cronbach’s alpha of 0.939.

C. Problem-Focused Style of Coping (PF-SOC)

As mentioned previously, one aspect of this study was to determine the coping styles of students and assess whether or not these behaviors had any influences on predisposition to adverse health effects related to acculturative stress levels. The PF-SOC assessment was developed by Heppner et al. (1995) as a self-report measure to characterize coping strategies in response to problems. Other studies focused on acculturation of international students have also employed this metric (see Akhtar & Kröner-Herwig, 2015; Wei et al., 2008). Participants responded to a list of statements based on how often they engaged in the coping activity on a Likert-scale ranging from 1 (almost never) to 5 (almost all of the time).

The assessment lists three different coping strategies that were derived through factor analysis: reactive, reflective and suppressive. Reactive style of coping was defined as strong responses involving emotion, impulsiveness and lacking cognitive clarity, and

consisted of 5 items (e.g., “I act too quickly, which makes my problems worse”).

Reflective style of coping included 7 items (e.g., “I think about ways that I solved similar problems in the past”) and included other statements that valued consideration of actions, and systematic in coping. Suppressive style of coping was measured using statements that characterized avoidance and denial in the face of problems and was measured using 6 items (e.g., “I feel so frustrated that I just give up doing any work on my problems at all”). Each subset of questions was scored individually, and higher individual scores represented a higher tendency of using reactive style (range: 5-25), reflective style (range: 5-35), or suppressive style (range: 5-30). This survey demonstrated high internal consistency, with coefficient alphas of 0.73, 0.77 and 0.76 for reactive style, reflective style and suppressive style, respectively. See appendix I for the PF-SOC.

D. Academic Stress

Statements related to academic stress were adapted from Bai (2012) item pool used for development of the ASSCS. This 14-item pool was generated from in-person interviews conducted by Bai (2012) as well as items from a previous assessment, the Acculturative Hassles Scale for Chinese Students (AHSCS) developed by Pan and colleagues (2008; 2010)⁸. Items from this 14-item pool were adapted to form a 10-item pool for the present study to develop a variable representing academic stress of students. Items from Bai (2012) were rated on a 7-point Likert-style scale (1 = never, and 7 = all the time), items in the 10-item pool were answered also using a Likert-style scale ranging from 1 (strongly disagree) to 5 (strongly agree). Table 1 displays both the item pool for

⁸ These studies were included in Bai (2012) in developing the ASSCS due to their relevance to the topic of interest and were recently developed surveys at the time that would benefit from further validation.

the ASSCS and the item pool for the present study. No questions used for the final 32-item ASSCS were repeated in the item pool used for this study. At times, items were altered from the ASSCS item pool compared to this study's item pool to provide further validation and/or additional analysis, and to understand additional areas that the study demographic were experiencing.

Table 1. *Item Pools for Academic Stress*

Item Pool For ASSCS: Academic Pressure	Item Pool for Present Study: Academic Stress
15. "It is a big pressure for me to publish academic paper in English."**	
27. "I feel it hard to meet the expectations of my advisor."**	4. "I feel it hard to meet the expectations of my advisor."
42. "I am worried whether I can graduate on time." **	
30. "I hesitate to participate in class discussion and seminar." **	9. "I am eager to participate in class discussions and seminars."
41. "I feel a lot of academic pressure." *	
29. "Academic pressure has lowered the quality of my life." *	8. "I feel pressure to compete academically with my peers."
9. "My advisor gave me a lot of pressure."	7. "I feel like my professors are willing to help."
54. "The intensive study makes me feel sick."*	
36. "I do not know how to balance study and life."	5. "I do not know how to balance my studies and life."
62. "I am not used to the class format here."	6. "I am not used to the class format here."
67. "I have the pressure to succeed."	

68. "I worry about my time management skills."	2. "I worry about my time management skills."
47. "I often have to work overtime in order to catch up." *	1. "I feel like I am constantly behind in my coursework."
23. "Studying occupies most of my time."	3. "Studying occupies most of my time."
	10. "I do not know where to go to get help with course material."

Note. *items included in ASSCS; **items borrowed from AHSCS

E. Dietary Stress

Dietary transitions and stress related to food security items used in this study were adapted and borrowed from a survey administered by Lange-Smith and Van Scyoc (2017). The assessment contained 18 questions relating to intake (e.g., "How often do you dine out in the US?", "How often do you eat vegetables/fruit in the US?") and 7 questions aimed at evaluating students' diet perceptions (e.g., "Do you consider the American diet healthy?", "Do you think you have a healthy eating pattern in your home country?").

The response options for this assessment varied depending on the question asked. Some questions were straightforward and had choices of only "yes/ no" (e.g., "Are you concerned about the effects of your dietary pattern on your health status?"). Other questions asked participants to quantify their intake of certain dietary items (e.g., "How often do you eat meat in the US?) with options of "daily/ several times a week/ once a week/ once a month/ almost never" and other items (e.g., "Do you consume larger portions in America than you do at home?") were more general in response type ("never/

sometimes/ always). This study also inquired about how often students snack during the day, where they purchase snack items, and other dining behaviors.

The questions in the survey administered by Lange-Smith and Van Scyoc (2017) provided a framework for this section of the study. A pool of 10-items asked students about their diet and eating patterns in the U.S. with some inquiring about fundamental practices before immigrating to the U.S. (e.g., “I have a healthy eating pattern back home”). All questions were answered on a Likert-style scale ranging from 1 (strongly disagree) to 5 (strongly agree). This method was utilized to give students more freedom in answering statements compared to simple “yes/ no” responses and also provided the basis for further inquiry given answers (i.e. if students stated that they agreed/strongly agreed with the statement “I have a healthy eating pattern in the U.S.” further research could be conducted to concluded what these eating patterns are). Additionally, two questions relating to weight loss/gain were included to quantify any changes in weight related to acculturative stress and/or diet transitions in participants. All questions used in this section’s item pool can be found in appendix I.

F. Social Stress

Items for the social support section of this study were also adapted from items included in the 72-item pool provided by Bai (2012). The 14-item pool was developed through interviews, the AHSCS, and the Acculturative Stress Scale for International Students (ASSIS; Sandhu & Asrabadi, 1994)⁹. Items in this pool were also answered

⁹ This scale was developed as one of the first assessments of acculturative stress for international students, however, is not well represented in the literature, and other studies have criticized its development (Bai, 2012). Further assessment is needed to determine validity (Bai, 2012).

using a 7-point Likert scale (1= never, and 7 = all the time). From this 14-item pool, 10 items were adapted to use in the current study and were measured using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) to maintain consistency throughout the survey. Items in from Bai (2012) and this study section can be found in table 2. Items 1, 2, and 7 in the present study were repeated from the pool of final items for ASSCS but were not included in factor analysis. At times, items were altered from the ASSCS item pool compared to this study's item pool to provide further validation and/or additional analysis, and to understand additional areas that the study demographic were experiencing.

Table 2. *Item Pools for Social Stress*

Item Pool For ASSCS: Social interaction/participation	Item Pool for Present Study: Social network/ resources
6. "I feel intimidated to participate in social activities." ***	
19. "I don't feel a sense of belonging (community) here." */***	7. "It is hard for me to integrate into the new culture.'
24. "I do not have new social network here." */**	2. "I feel lonely in the U.S."
34. "I do not know how to establish friendships with American people."	8. "I feel like a stranger in the US."
44. "I feel lonely in the US." *	3. "I do not know how to establish friendships with American people."
14. "I have few opportunities to communicate with American people."	
48. "I feel trapped in small groups of Chinese people."	4. "I feel trapped in small groups of Chinese people."

52. "I feel bored here."*	
12. "I do not know how to communicate with people from different cultural backgrounds."	5. "I do not know how to communicate with people from different cultural backgrounds."
55. "I do not have many friends in the US".*	1. "I wish I had more friends in the U.S."
56. "I feel helpless."*	
57. "My social circles shrank after I come to the US."*	
69. "I do not know where to seek help when I have problems."	6. "I do not know where to get help when I have problems."
71. "I have limited social life."*	
	9. "I find it difficult to find time to talk with my family."
	10. "My friends back home don't understand my life in the U.S."

Note. *items included in ASSCS; ** items borrowed from AHSCS; ***items borrowed from ASSIS

G. Physical Health

After reviewing literature regarding fitness and physical health of college students and international students, the researcher found it important to assess the experiences of these factors on international students in a basic form. Fundamental statements were provided to gauge participants' engagement with physical activity and how students perceive habits of domestic students. 10-items were provided to students and had response options based on a 5-point Likert scale with 1 corresponding to "strongly disagree" and 5 corresponding to "strongly agree". Items are listed in appendix I.

H. Substance Use

Items for this section followed a similar methodology for those included in the physical health section. Based on conclusions drawn from the literature, questions regarding perceived pressure to use drugs/alcohol were assessed along with a general idea of substance use after immigrating to the U.S. Perceptions of substance use and their effects on health were also assessed in a separate sub-section. This distinction was made to ensure that students did not feel like they had to use drugs/alcohol and were told to answer questions regardless of how they answered previous questions relating to their potential substance use. All items were measured on a 5-point Likert scale with 1 corresponding to “strongly disagree” and 5 corresponding to “strongly agree”. For the first six items relating to substance use, participants were given the option to respond with a 0, indicating that they did not use drugs/alcohol. The 10-items included in this section are listed in appendix I. Items 1-6 measured substance use, while 7-10 assessed student perceptions.

I. Health-Related Quality of Life

Due to the length of this assessment, the 12-item Short-Form Health Survey was utilized to assess students’ health-related quality of life. The 12-items were selected from a larger study of 36-items and developed by Ware and colleagues (1996) as an alternative to the longer survey. This short-form was shown to be reliable in measuring physical and mental health statuses of individuals to assess an overall health status (Ware et al., 1996). In many questions, the 12-item survey inquiries about health patterns over the past four weeks (e.g., items 4 and 5; see appendix I). Item answers varied between simple “yes/no”

responses and Likert-style scales asking individuals to gauge how often they experienced certain things/felt certain ways.

In creating the 12-item short form (SF-12), Ware and colleagues (1996) constructed two separate 12-item summary scales that looked to reproduce the components of physical and mental health originally assessed in the 36-item survey (Figure 2). Both summary measures were administered to large sample populations in the U.S. (N = 232) and the United Kingdom (N = 187) to test for reliability. The Physical Component Summary-12 (PCS-12) had a reliability coefficient of 0.890 in the U.S. and 0.864 in the U.K.; the Mental Component Summary-12 (MCS-12) had reliability coefficients of 0.760 and 0.744 for the U.S. and U.K. populations, respectively. The SF-12 was determined to be highly reliable and showed little variability when utilized in large sample sizes compared to the 36-item survey (Ware et al., 1996). One concern the researcher had with this survey was that it was validated by populations residing in Western countries; no mention was made of demographic information of sample group or education level in the study conducted by Ware and colleagues (1996). However, the SF-12 has been used in studies with Chinese participants and showed validity and reliability (e.g., Lam et al., 2005). Therefore, this survey was used in this study to assess Chinese international students' health-related quality of life (HRQoL).

Figure 2. Measurement model for development of the 12-item Short-Form Health Survey

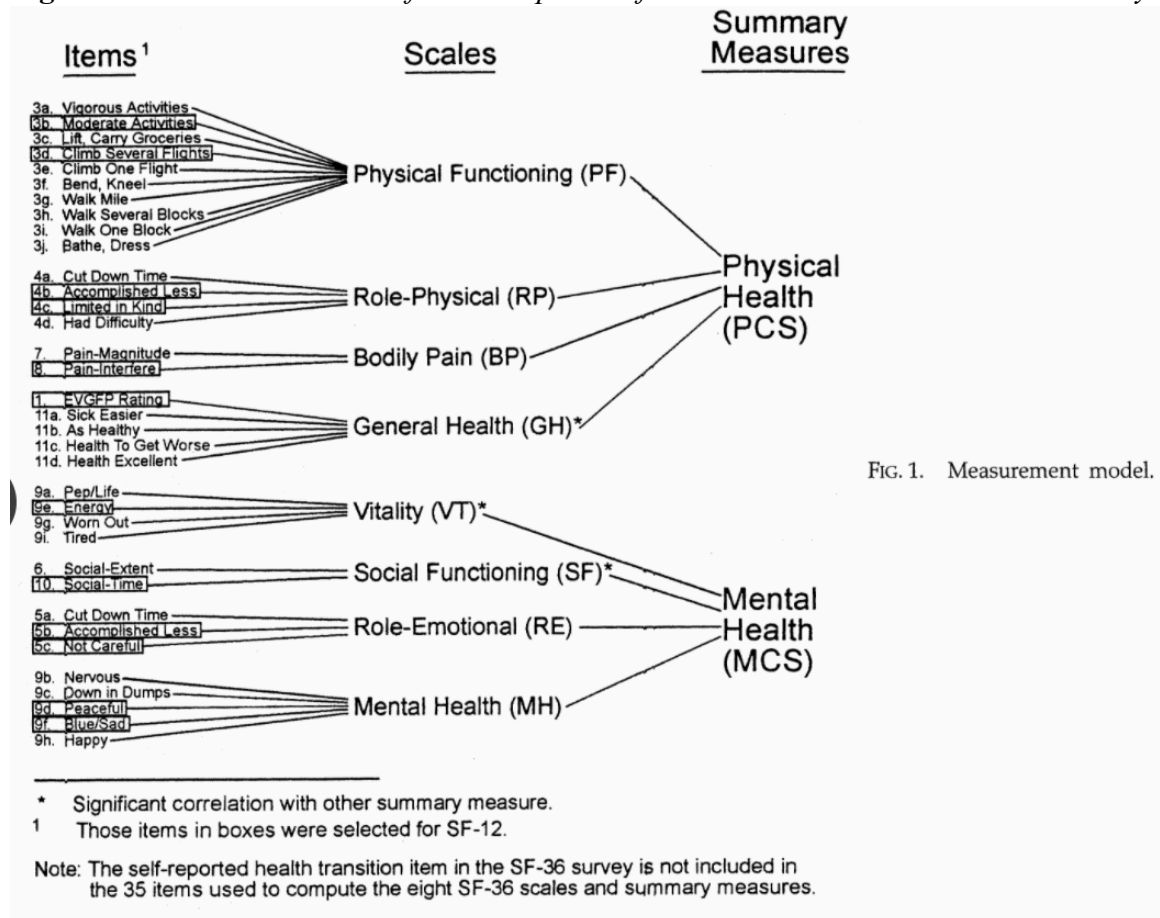


FIG. 1. Measurement model.

Note. Reprinted from Ware et al. (1996); Boxed items were selected for SF-12

Despite efforts made to ensure consistency and continuity with written surveys and the online version of the survey, one question of the SF-12 was mistakenly omitted from the online survey and was not realized until data analysis. Therefore, this measurement was not used to assess well-being of the target demographic. However, this does not mean that this metric should not be used as a tool for measuring HRQoL in future studies.

J. Happiness

Keeping in mind the length of the study, the researcher used another short-form survey to assess students' happiness/depression levels. Joseph and colleagues (2004) developed the Short Depression-Happiness Scale (SDHS) through a principal component analysis of the original 25-item scale and extracted 6 components that were used for further analysis and test-retest reliability. In the second part of the study, researchers conducted an analysis among literature that used the full 25-item Depression Happiness Scale and analyzed coefficient alphas and convergent and discriminant validity of the new 6-item scale (Joseph et al., 2004). Researchers found that the six items demonstrated a high internal consistency ranging from 0.77 to 0.92. Additionally, the data extracted from the sample studies showed high correlation with the full 25-item scale. In the final part of the study, a new sample population ($N = 241$) from the University of Warwick was employed to perform a principal component analysis and correlations between other factors to demonstrate consistencies with other literature. Analysis showed that the six items were significant.

The SDHS includes 3 positive and 3 negative components (see appendix I). Participants answered questions based on how often they experienced the positive feelings (e.g., "I felt pleased with the way I am") and negative feelings (e.g., "I felt dissatisfied with my life") with "Never", "Rarely", "Sometimes," and "Often" over the past seven days. When scoring responses, each word response was associated with a number value (e.g., never = 0 ... often = 3) with items 1, 3, and 6 reversed scored to account for the negative feelings. Preliminary results suggest a cut off of 9 or less may be

indicative of “mild but clinically relevant depression” (Joseph et al., 2004, p. 475) but more research is needed to confirm.

Furthermore, two questions were added to this section that assessed students’ life satisfaction. A Likert-scale ranging from 1 (strongly disagree) to 5 (strongly agree) were used to answer “since I have been in the United States I am generally satisfied with my life” and “Since living in the United States I think that I live a very happy life”.

K. Sleep Quality

Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI) developed by Buysse and colleagues (1989). The purpose of this survey was to develop criteria to distinguish “poor” and “good” sleepers and is suggested to be of use in both clinical settings and research. Items for the PSQI were created through interviews of patients with sleep disorders, literature reviews and a rigorous 18-month field test of components. The 7 component scores used for scoring had a reliability coefficient of 0.83 and was deemed highly consistent. A main difference between the PSQI and other sleep assessment surveys is that the former assesses qualitative (e.g., “During the past month, how would you rate your sleep quality overall?) and quantitative (e.g., “During the past month, how often have you taken medicine (prescribed or “other the counter”) to help you sleep?”). Items were answered on a Likert-scale with responses varying based on the type of question asked (see appendix I). Scores were generated based on Likert-scale values corresponding to responses (Buysse et al., 1989). Concerns regarding the validity of the PSQI on international demographics were alleviated from studies involving the PSQI on non-US students (e.g., Aloba et al., 2007) however in one study validating the

PSQI on Chinese undergraduate students (in China) the PSQI proved to be a multidimensional measure using sleep efficiency and sleep quality (Guo et al., 2016). In spite of this, other studies incorporating a unidimensional model of the PSQI among Chinese students suggest reliability of the instrument's original structure (see Ho & Fong, 2014; Zheng et al., 2016) and was therefore the model used in analysis.

One of the drawbacks to the PSQI is that it asks individuals about their sleep history over the past four weeks. For this study in particular, sleep needed to be assessed as a longitudinal factor to relate more to an individual's acculturative stress scores. Additionally, confounding factors such as stress from midterm/finals week, less schoolwork due to winter break/beginning of the semester, etc. could be mitigated as best they could. Therefore, the researcher added supplemental questions which were assessed on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The first question "My answers above are reflective of my overall sleeping habits while at Binghamton University" was used to control for the confounding factors previously mentioned. Only participants who responded with a 4 or 5 were included in analysis. Additionally, questions were included to evaluate students' perception of sleep quality and importance of sleep ("If I have an exam/assignment coming up, I will compromise my sleep to study/finish the assignment" and "I think my academics are more important than my sleep"). These final two questions could provide intervention strategies to help improve the health of students and educate on the importance of sleep quality and the impact this aspect has on overall health and well-being.

L. Use of Campus Health-Related Resources

A study conducted by Russel and colleagues (2008) looked to assess the use of university health and counseling resources among international students. The study was concerned with factors such as service satisfaction, perceived need for help, reasonings as to why students were not seeking help and the reasons that predicted help seeking by students. Participants were asked to respond to statements related to perceptions of their experiences at the university resources on a 4-point Likert scale. Students who did not visit a health resource on campus were asked to respond to a questionnaire with statements related to reasonings why these resources were not visited or utilized. Statements from the first part of Russel et al. (2008) are listed in table 3 alongside the questions asked in the first part of the current study. For the purposes of the current study, the researcher was more focused on barriers to university health services faced by international students, so an assessment of resources was not adapted from Russell and colleagues (2008). Items in the right side of table 3 were answered using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Question 1 was asked to assess student's knowledge of campus resources available to them. Question 4 was added to assess whether or not students had previously had access to campus resources concerned with student health at previous schools; this may provide reasoning as to why international students may not use campus health resources. Additionally, questions 4 and 5 were added to quantify how much participants are worried about these aspects of health.

Table 3. *Items for Campus Resource Effectiveness*

Items from Russell and colleagues (2004)	Items from Present Study
1. “I was satisfied with the service I received”	1. “I know one or more campus resource I can go to for physical health or mental health concerns”
2. I felt uncomfortable about going to the health/counselling service	2. “I feel comfortable asking about resources on campus”
3. “I was able to get an appointment when I needed to”	3. “I would rather go off-campus for health concerns than go to an on-campus resource”
4. “The health professional was sensitive to my needs”	4. “My home university has resources available that are focused on my health and well-being”
5. “The health professional was professionally competent”	5. “I worry about my mental health”
	6. “I worry about my physical health”
	7. “I feel uncomfortable asking for help”

After these first 6 questions, participants were asked if they “have ever used a campus resource regarding your physical health and or mental health?” providing examples of Binghamton University’s student health center, student-run ambulance service, and university counseling center. Participants who answered “yes” were directed to the next section of the survey (see section M). Participants who responded with “no” were directed to a series of 11-items that focused on barriers to campus health services and mirrored those questions asked in the second part of Russel and colleagues (2008). The items included in the current study in addition to those originally in Russell and colleagues (2008) are displayed in table 4. Questions 9, 10 and 11 in the current study were added to the list to better understand if students were going off campus to seek help

with health-related problems, and the motives behind those decisions (i.e. students telling others to go off-campus, if students did not feel comfortable using on-campus resources). The items in this section were also answered using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Table 4. *Barriers to Campus Health Resources*

Items from Russel and colleagues (2004)	Items included in current study
1. "I did not know how to get an appointment"	1. "I do not know how to get an appointment"
2. "I felt uncomfortable asking for help"	2. "I feel uncomfortable asking for help"
3. "I felt they would not understand me"	"I feel campus healthcare professionals would not understand me"
4. "I thought my problem was not important enough"	"I think my problem is not important"
5. "I didn't know there was such a service"	"I didn't know there was such a service"
6. "I didn't know where to go"	7. "I thought accessing a campus resource might influence my academic results"
7. "I didn't know the service was free"	6. "I didn't know the service was free"
8. "I thought it might influence my academic results"	8. "I thought campus health professionals wouldn't be able to help me"
9. "I thought they wouldn't be able to help me"	10. "Someone told me that the campus resources would not help me"
10. "I went to a service off-campus"	9. "I feel more comfortable going to a location off-campus than an on-campus resource"
11. Other	11. "Someone advised me to go off campus instead of going to an on-campus resource"

M. Perceptions of University Support of Student Well-being

This section aimed to assess students' perceptions of campus support of student well-being. Appendix I displays the 11-items that were developed to evaluate overall effectiveness of University efforts and to recap participant answers in previous sections (e.g., "My sleeping patterns at Binghamton University are similar to my sleeping habits back home" and "I think a strong, reliable social support network is important for my overall well-being"). Answers were measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

N. 2019 Coronavirus

As mentioned previously, in light of the COVID-19 outbreak, the researcher thought that it would be appropriate to include questions regarding international student perceptions of how they are being treated and any concerns that they may have. It was believed that the potential stress of the growing outbreak may influence acculturative stress scores, amid other factors measured in this study. Additionally, considering the timing of this study, some Chinese international students may have traveled back to China for their winter break. Some literature also suggests that individuals belonging to certain ethnic groups may experience perceived or blatant discrimination due to a disease outbreak; the 2003 SARS epidemic caused stigmatization of New York City's Chinatown (Eichelberger, 2007) with other stigmas surrounding this disease targeted Asian populations long after the outbreak was mitigated (Siu, 2008). These psychosocial reactions also give rise to ways public health policies and other medical system reforms

can act to combat these racially charged stigmatizations from resurfacing and targeting innocent individuals (Siu, 2008).

Questions for this section were brief. Participants responded to some questions assessed on a 5-point Likert scale, or chose between a couple statements based on the one they most agreed with. The full section can be found in appendix I.

Chapter 3: Results

This chapter reports the findings of data collected by methods and measurements outlined in Chapter 3. The online survey was accessed by 45 individuals (2 via QR code, 43 via survey URL). Preliminary analysis removed four recorded responses due to participants not completing any survey items aside from consenting to the study. Further analysis removed nine participants who did not continue with the survey after entering individual information. Three participants were removed after not responding to any other items after the acculturative stress section. Five more participants stopped answering questions in the middle of various sections and were removed from the analysis altogether¹⁰. Twenty-four participants were included in the final analysis of acculturative stress and aspects of well-being, campus resource effectiveness, and aspects of well-being assessment development.

Sample information was assessed at the beginning of the survey and basic information of survey participants who completed the full survey (N = 24) was compared to that of all Chinese international students at Binghamton University to assess the generalizability of study results. This information is displayed in table 5.

¹⁰ Of the 17 participants who were not included in the final analysis, 11 identified as female, and 12 were undergraduate students. Other individual information followed similar trends seen in table 5.

Table 5. *Sample Information of Study Participants Compared to University*

Sample Information	Study Sample: number of participants (percentage of sample)	Chinese international students University-wide: number of students (percentages)
Biological Sex (M/F)	10 (41.6) / 14 (58.4)	Information not available
Undergraduate/Graduate	16 (66.7) / 8 (33.3)	484 (53.8) / 415 (46.2)
School enrolled in at Binghamton University- Harpur College of Arts And Sciences	14 (58.3)	518 (57.6)
Watson School of Engineering and Applied Sciences	5 (20.8)	263 (29.2)
College of Community and Public Affairs	1 (4.2)	10 (1.11)
School of Management	4 (16.7)	106 (11.8)
School of Pharmacy and Pharmaceutical Sciences	0	0
Decker College of Nursing and Health Sciences	0	2 (0.2)
Live on-campus/off-campus	6 (25) / 18 (75)	Information not available
Time enrolled at Binghamton University Less than one semester	8 (33.3)	Information not available
One semester	4 (16.7)	
One year	1 (4.2)	
Two years	2 (8.3)	
Three years	6 (25)	

Four years or more	3 (12.5)	
Attend an international school before Binghamton University? (yes/no)	10 (41.7) / 14 (58.3)	Information not available
Attend another school in the U.S before Binghamton University? (yes/no)	6 (25) / 18 (75)	Information not available

Note: University-wide information obtained from ISSS (2020). Some information not available.

I. Acculturative Stress and Sample Information

Acculturative stress scores were evaluated for all 32 participants who completed the portion of the survey and compared to select sample information in the first section of the survey^{11 12}. A bivariate correlation was conducted, and Pearson correlations are listed in table 6. Significant p-values are indicated. For questions 18 and 19, one participant did not respond to either question.

Research question 1 was not generally supported by the data. Individual hypotheses are listed below:

Hypothesis 1.1- data did not support this hypothesis; undergraduate or graduate student status was not significantly correlated with acculturative stress levels.

¹¹ The researcher thought it was important to include an analysis of acculturative stress and individual information with as many participants as possible to further evaluate the relationship between acculturative stress and individual characteristics.

¹² Of the 32 individuals used for this analysis, 19 identified as female, 21 were undergraduates, majority (20) were enrolled in Harpur College of Arts and Sciences, 25 lived off campus, 16 had completed a year or less (one semester, less than one semester) at Binghamton University, 21 did not attend an international school before coming to the U.S., 24 reported that Binghamton University was the first U.S. school they had attended.

Hypothesis 1.2- data did not support this hypothesis; higher acculturative stress levels were associated with more time that students were enrolled at Binghamton University.

Hypothesis 1.3- data did not support this hypothesis; higher acculturative stress levels were not significantly correlated with international school attendance prior to enrollment at Binghamton University.

Hypothesis 1.4- data did not support this hypothesis; higher acculturative stress levels were not significantly correlated with attending an alternative U.S. school prior to enrollment at Binghamton University.

Hypothesis 1.5- data did not support this hypothesis; higher acculturative stress levels were not significantly correlated with financial fortune.

Hypothesis 1.6- data did support this hypothesis; although no significant correlation was found between acculturative stress and perception of inclusion on campus, students who perceived less inclusion among the greater campus community experienced higher acculturative stress levels ($r = 0.432$, $p = 0.015$).

Table 6. *Correlations Between Acculturative Stress Scores and Sample Information*

Sample Information (question number)	Pearson correlation to acculturative stress score
Biological Sex (1)	0.274 (N = 32)
Undergraduate/Graduate (2)	-0.065 (N = 32)
Time enrolled at Binghamton (6)	0.364 * (N = 32)
Attended international school before Binghamton (8)	0.076 (N = 32)
I attended another school in the U.S. (10)	-0.024 (N = 32)

My parents pay for education (12)	0.063 (N = 32)
My parents send me money (13)	0.170 (N = 32)
I pay for my own education (14)	-0.143 (N = 32)
I receive financial aid/scholarships (15)	-0.003 (N = 32)
Birth order in family (17)	-0.154 (N = 28)
Perception of inclusion to the campus community (18)	0.157 (N = 31)
Perception of inclusion in the greater campus community (19)	0.432* (N = 31)

Note: * $p < 0.05$; some participants skipped questions, as is reflected in number of responses

II. Development of Well-being Relationships

To assess the relationship between acculturative stress and aspects of well-being, item pools developed by the researcher for this study underwent Exploratory Factor Analysis (EFA) and a test of internal reliability to develop variables that would be used to assess aspects of well-being. To carry out EFA, Young and Pearce (2013) suggest a cut off of 0.500 for the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and a significant value for Bartlett's test of sphericity. Kaiser (1970) suggests that only components with eigenvalues greater than 1 should be used for analysis. While the factor matrix extracts all components with higher than 1 eigenvalue, factors loading higher than 0.600 should be considered (Enders & Bandalos, 2001) with less than three factors weak and unreliable, and unfit and greater than 5 factors most desired¹³ (Costello & Osborne,

¹³ Only components with eigenvalue greater than 1, with three or more factors loading more than .6 were reported in this section.

2005). In the presence of two or more components with higher than 1 eigenvalue, orthogonal rotation (varimax) was used to more accurately assess factor loading. Shultz and Whitney state that orthogonal rotation is useful when items are not correlated (as cited in Bai, 2012, p. 57). Given that this study was concerned with identifying individual aspects of well-being associated with acculturative stress, orthogonal rotation was the best choice (compared to oblique rotation). After rotation, only factors with three or more components loading higher than 0.600 were retained for further analysis. Furthermore, internal consistency (Cronbach's alpha) of each factor was determined prior to further analysis. Pending EFA and high internal consistency, variables were used in further analysis and survey development.

A. Academic Stress

The 10-item pool was fit for EPA ($KMO = 0.667$, and Bartlett's test of sphericity was significant, $Chi-square = 102.607$, $df = 45$, $p < 0.001$) and a component matrix was derived, with six items loading on one component with an eigenvalue of 4.396. This was the only component that had more than 3 loading factors and accounted for a total of 43.964% of the variance. The research labeled this component "academic stress". Factor loading values, item means, and standard deviations are displayed in table 7. These six items had an internal consistency of 0.858, making them highly reliable. The researcher added these items together to get a total sum for each participant. This sum represented the academic stress score for each participant. Items 7 and 9 were recoded (i.e., 5-point Likert scale values transformed, $1 = 5$, $2 = 4$... etc.) to adjust for their positive phrasing,

EFA included all negative phrased items (i.e., agreeing with negative phrasing would indicate higher stress/ difficulty with academics).

Table 7. *Component Matrix of Academic Stress, One Component with Mean and SD*

Question (from the 10-item pool)	Component Loading	Mean	Standard Deviation (SD)
1. “I feel like I am constantly behind in coursework.”	0.809	2.63	1.50
2. “I worry about my time management skills.”	0.632	3.00	1.67
3. “Studying occupies most of my time.”	0.564	2.88	1.45
4. “I feel it hard to meet the expectations of my advisor.”	0.788	2.92	1.25
5. “I do not know how to balance my studies and life.”	0.874	2.96	1.49
6. “I am not used to the class format here.”	0.577	1.79	1.02
7. “I feel like my professors are willing to help.”*	0.052	1.83**	1.17
8. “I feel pressure to compete academically with my peers.”	0.761	3.13	1.36
9. “I am eager to participate in class discussions and seminars.”*	-0.688	2.75**	1.36
10. “I do not know where to go to get help with course material.”	0.614	1.88	1.91

Note: N = 24; *items are stated with positive phrasing, recoded when included in EFA; **mean values are with items 7 and 9 recoded

B. Dietary Stress

EFA was also a suitable analysis for this section (KMO = 0.542, *Chi-square* = 105.063, *df* = 45, $p < 0.001$) and a component matrix was derived, with two components

having eigenvalue of 3.130 and 2.624 accounting for 31.302% and 26.236% of the variance, respectively (total of 57.538% of the variance for this section). The researcher labeled the two components “healthy eating awareness” (items 2, 5, 7, 8, and 10) and “dietary transitions” (items 3, 4 and 6) as components 1 and 2, respectively. Factor loading values, item means, and standard deviations are listed in table 8. Component 1 had an internal consistency of 0.817 and component 2 a value of 0.828, making both highly reliable. Participant responses from the 5-point Likert scale were added together to get two scores that measured overall dietary stress in two.

Table 8. *Rotated Component Matrix of Dietary Stress, Two Components with Mean and SD*

Question (from the 10-item pool)	Component 1 Loading	Component 2 Loading	Mean	Standard Deviation (SD)
1. “I feel like I have access to food similar to what I would normally eat in my home country.”	0.187	-0.520	2.79	1.35
2. “Most of the time I cook my own meals.”	0.601	-0.254	3.17	1.40
3. “I consume larger portions in America than I do at home.”	0.028	0.802	2.96	1.55
4. “I do not have enough money to buy food that is similar to the food I have in my home country.”	-0.154	0.826	2.50	1.67
5. “I make sure that I have nutritionally balanced meals.”	0.914	-0.063	3.38	1.50

6. "The American diet has significantly influenced my eating patterns."	0.202	0.874	2.67	1.52
7. "I have a healthy eating pattern back home."	0.611	0.471	3.75	1.26
8. "I think my diet is important to my overall well-being."	0.855	0.044	3.92	1.35
9. "Most of the time I eat fast food/dine out or order delivery."	-0.296	0.050	1.75	0.90
10. "I have a healthy eating pattern in the U.S."	0.777	0.074	3.42	1.14

Note: N = 24

Another part of this preliminary analysis was weight change of participants. Table 9 shows the mean before immigrating to the U.S. and current mean weight. Some participants left this item blank. Other participants did not write an appropriate weight (e.g., "145") and therefore the researcher excluded their response. Participants were asked to record weights in kilograms (kg). Those who responded in pounds (lbs) were converted into kilograms by standard unit conversion (2.2lbs = 1 kg).

Table 9. *Mean Weights of Participants and Difference*

Mean weight before immigrating	Current mean weight	Mean difference
67.87 kg	69.30 kg	+1.43

Note: N = 22

C. Social Stress

The social stress variable in this study had a KMO value of 0.803 and a significant Bartlett's Test of Sphericity ($Chi-square = 88.920$, $df = 45$, $p < 0.001$) making EFA an appropriate tool for analysis. The highest eigenvalue was 4.566 and accounted

for 45.657 % of the total variance and was the only component with more than 3 loading factors. Items 2-9 all provided significant loading (see table 10), however, only items 3 through 9 were included in the reliability analysis, as item 2 was included in the ASSCS and would interfere with later analysis. These seven items had an internal consistency of 0.857. Participant responses from the 5-point Likert scale were added together to get a variable that measured overall social support.

Table 10. *Component Matrix of Social Stress, One Component with Mean and SD*

Question (from the 10-item pool)	Component Loading	Mean	Standard Deviation (SD)
1. "I wish I had more friends in the U.S."	0.193	4.13	0.99
2. "I feel lonely in the U.S."	0.775*	2.83	1.24
3. "I do not know how to establish friendships with American people."	0.636	2.92	1.35
4. "I feel trapped in small groups of Chinese people."	0.734	2.88	1.45
5. "I do not know how to communicate with people from different cultural backgrounds."	0.677	2.42	1.28
6. "I do not know where to get help when I have problems."	0.665	2.21	1.25
7. "It is hard for me to integrate into the new culture."	0.762	2.63	1.28
8. "I feel like a stranger in the U.S."	0.774	2.63	1.41
9. "I find it difficult to find time to talk with my family."	0.803	2.08	1.41
10. "My friends back home don't understand my life in the U.S."	0.509	2.29	1.46

Note: N = 24; *item was also included in ASSCS and was removed from social support variable as to not conflict in future analysis

D. Physical Health

Physical health items had a KMO value of 0.566 and a significant Bartlett's Test of Sphericity ($Chi-square = 109.690$, $df = 45$, $p < 0.001$) making EFA an appropriate tool for analysis. Two components had three or more significant loading factors, with eigenvalues of 3.451 and 1.999. The two components accounted for 54.506% of the total variance for this section, with individual variances of 34.512% and 19.994%, respectively. Component one was labeled as "physical health awareness" (items 7-10) and component 2 was labeled "pressure to be active" (items 1, 4, and 6). The items, their factor loadings, means and standard deviations are listed in table 11. Components one and two had internal consistencies of 0.884 and 0.656¹⁴, respectively.

Table 11. *Rotated Component Matrix of Physical Health, Two Components with Mean and SD*

Question (from the 10-item pool)	Component 1 Loading	Component 2 Loading	Mean	Standard Deviation (SD)
1. "I think that American students exercise too much."	0.045	0.612	2.25	1.33
2. "I feel pressured to exercise."	-0.056	0.060	2.17	1.40
3. "I exercise more in the U.S. than I did at home."	0.118	0.067	2.83	1.66
4. "I feel that American students are obsessed with physical health."	-0.259	0.871	2.54	1.25

¹⁴ Although 0.644 is not as high as is generally accepted, George and Mallery state that values between 0.600 and 0.700 are "acceptable" and therefore this sub-scale was used in further analysis (as cited in Gliem & Gliem, 2003, p. 37).

5. "I feel like I have to change my eating habits to have better physical health."	0.126	0.047	3.04	1.46
6. "It is difficult for me to find time to exercise."	-0.090	0.787	2.92	1.44
7. "Exercising allows me to de-stress."	0.851	-0.123	4.0	1.29
8. "I enjoy engaging in some sort of physical activity."	0.861	-0.286	3.88	1.51
9. "I think exercise is important to my overall well-being."	0.882	-0.166	3.79	1.59
10. "I think my diet has an impact on my physical health."	0.803	0.153	4.04	1.08

Note: N = 24

E. Substance Use

The items used for this section did not meet the standards for EFA ($KMO = 0.261$, $Chi-square = 88.486$, $df = 45$, $p < 0.001$). Items would be analyzed individually with acculturative stress. Averages and standard deviations for items are listed in table 12. Items used in the development of the aspects of well-being assessment (2, 3, 5, and 6) had an internal consistency of 0.296 but were included in assessment development due to significance with further analysis and acculturative stress moderation.

Table 12. Means and Standard Deviations for Substance Use Items

Question (from the 10-item pool)	Mean	Standard Deviation (SD)
1. “I feel I have to use drugs/ drink alcohol to fit in with American students.”	1.58	1.18
2. “I feel pressure from American students to drink alcohol (i.e. beer, wine, vodka, etc.).”	1.88	1.26
3. “I feel pressure from American students to use drugs (i.e. marijuana, cigarettes, cocaine, etc.).”	1.96	1.57
4. “I will drink alcohol to feel drunk.”	1.33	0.92
5. “My drug/alcohol use increased when I moved to the U.S.”	1.42	1.02
6. “I use drugs/alcohol as a way to cope with the stress of living in a new culture.”	1.08	0.28
7. “I think excessive use of drugs/alcohol impacts my overall health.”	3.87	1.75
8. “I think using drugs/alcohol is a healthy way to get rid of stress.”	1.25	0.90
9. “I think excessive use of drugs/alcohol impacts my academic performance.”	3.83	1.74
10. “I think using drugs/alcohol impacts how I am perceived by others.”	2.75	1.73

Note: N = 24

F. Health-Related Quality of Life

This metric was not evaluated, due to the omission of one question in the survey.

No parts of this metric were used in data analysis.

G. Happiness

Participants had an average of 16.96 (SD = 4.61, score range 0-18, N = 24) on the SDHS. Supplemental questions, “Since I have been in the United States I am generally

satisfied with my life” and “Since living in the United States I think that I live a very happy life” had a mean score of 3.63 (SD = 1.53) and 3.33 (SD = 1.31), respectively.

These two supplemental questions had an internal consistency of 0.830.

H. Sleep Quality

The Pittsburgh Sleep Quality Index (PSQI) provides instructions on how to score participant responses and are reported as “global sleep scores”. To evaluate participant sleep scores reflective at Binghamton University, only students who answered with a 4 or 5 (i.e., “agree” or “strongly agree”, respectively) to “My answers above are reflective of my overall sleeping habits while at Binghamton University” were included in analysis of sleep quality and other factors. The mean PSQI global score (N = 15) was 7.87 (SD = 5.03, score range 0-21). Supplemental questions of “If I have an exam/assignment coming up, I will compromise my sleep to study/finish the assignment” and “I think my academics are more important than my sleep” were asked. Supplemental questions had an average response of 4.17 (N = 24, SD = 1.49) and 3.63 (N = 24, SD = 1.44), respectively. There was no statistically significant difference among sex or undergraduate/graduate status in supplemental question responses.

III. **Acculturative Stress and Well-being Relationships**

The second research question was concerned with the relationships between acculturative stress levels and aspects of well-being. Pearson correlations are displayed in table 13 and hypotheses are listed:

Hypothesis 2.1- data did support this hypothesis; a *highly significant* relationship was demonstrated between acculturative stress levels and academic stress.

Hypothesis 2.2- data did not support this hypothesis; acculturative stress levels were weakly related to dietary stressors and weight change.

Hypothesis 2.3- data did support this hypothesis; a *highly significant* relationship was seen between acculturative stress levels and social stress.

Hypothesis 2.4- data did not support this hypothesis; levels of acculturative stress were not related to any aspect of physical health.

Hypothesis 2.5- data somewhat supported this hypothesis; a *significant* relationship between students with higher levels of acculturative stress showed a higher feeling of pressure from American students to use drugs and/or alcohol.

Hypothesis 2.6- no data was provided to support or refute this hypothesis.

Hypothesis 2.7- data somewhat supported this hypothesis; although there was no significant relationship between acculturative stress and happiness (as per the SDHS), there were significant correlations between life satisfaction and acculturative stress and life happiness and acculturative stress.

Hypothesis 2.8- data did not support this hypothesis; despite a correlation, acculturative stress was not associated with sleep quality.

Table 13. *Pearson Correlations Among Acculturative Stress and Aspects of Well-being*

Aspect of Well-being	Acculturative stress
Academic stress	0.635**
Healthy eating awareness	0.253
Dietary transitions	0.204
Weight change	0.045
Social stress	0.465**
Physical health awareness	-0.050
Pressure to be active	0.397
“I feel I have to use drugs/ drink alcohol to fit in with American students.”	0.203
“I feel pressure from American students to drink alcohol (i.e. beer, wine, vodka, etc.).”	0.422*
“I feel pressure from American students to use drugs (i.e. marijuana, cigarettes, cocaine, etc.).”	0.499*
“I will drink alcohol to feel drunk.”	0.182
“My drug/alcohol use increased when I moved to the U.S.”	0.303
“I use drugs/alcohol as a way to cope with the stress of living in a new culture.”	0.113
“I think excessive use of drugs/alcohol impacts my overall health.”	-0.366
“I think using drugs/alcohol is a healthy way to get rid of stress.”	0.062
“I think excessive use of drugs/alcohol impacts my academic performance.”	-0.200
“I think using drugs/alcohol impacts how I am perceived by others.”	0.032
SDHS score	-0.319
“Since I have been in the United States I am generally satisfied with my life”	-0.458*
“Since living in the United States I think that I live a very happy life”	-0.639**

PSQI Score ***	0.479
----------------	-------

Note: * $p < 0.05$; ** $p < 0.01$; ***reported sleep quality is reflective of overall sleep quality at Binghamton University

A. Additional Correlations

Other correlations between individual items and acculturative stress, in addition to inter-item correlations were found through bivariate correlation analysis. Statistically significant findings are displayed in table 14.

Table 14. *Additional Correlations*

Relationship Between Extracted Variable and Survey Items	Correlation
Acculturative stress	
“I feel like I have access to food similar to what I would normally eat in my home country”	0.461*
“If I have an exam/assignment coming up, I will compromise my sleep to study/finish the assignment”	-0.434*
Academic stress	
Social stress	0.412*
“I do not know where to get help when I have problems”	0.559**
“I feel like I have access to food similar to what I would normally eat in my home country”	-0.565**
“I feel pressure from American students to drink alcohol (i.e. beer, wine, vodka, etc.)”	0.460*
Happiness†	-0.543**
“Since I have been in the United States I am generally satisfied with my life”	-0.407*
“Since living in the United States I think that I live a very happy life”	-0.591**
Sleep quality ‡	-0.539*

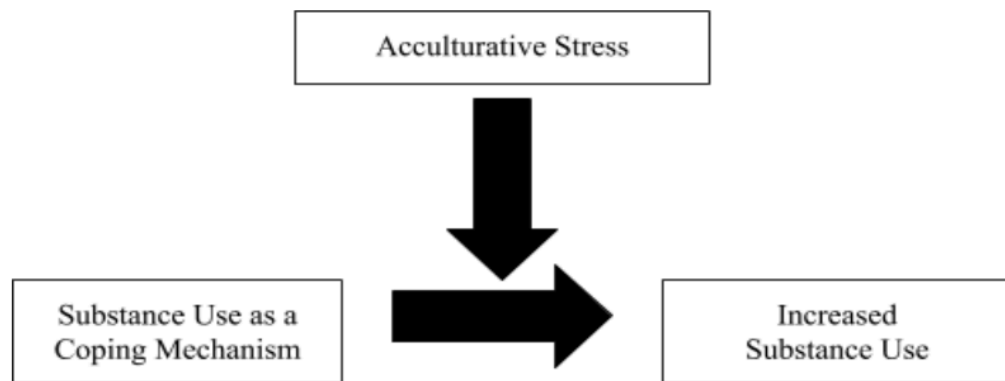
“If I have an exam/assignment coming up, I will compromise my sleep to study/finish the assignment”	0.490*
“Most of the time I cook my own meals”	
“I have a healthy eating pattern in the U.S.”	0.526**
“I feel pressure from American students to drink alcohol (i.e. beer, wine, vodka, etc.)”	0.503*
Social stress	0.577**
Weight change & “I do not know where to get help when I have problems”	0.537**
“I feel like I have access to food similar to what I would normally eat in my home country”	
Happiness †	0.501*
“Since I have been in the United States I am generally satisfied with my life”	0.551***
“Since living in the United States I think that I live a very happy life”	0.775***
Happiness †	
“I do not know where to get help when I have problems”	-0.594**
“Since I have been in the United States I am generally satisfied with my life”	0.621***
“Since living in the United States I think that I live a very happy life”	0.507**
Sleep quality ‡	-0.585*
“I feel pressure from American students to drink alcohol (i.e. beer, wine, vodka, etc.)” & “I feel I have to use drugs/ drink alcohol to fit in with American students”	0.461*

Note: *p < 0.05; **p < 0.01; ***p < 0.001; †happiness as determined by the SDHS; ‡reported sleep quality is reflective of overall sleep quality at Binghamton University; correlations between extracted variables (in bold) and survey items

B. Acculturative Stress as a Moderator for Substance Use

From data analysis, it was found that acculturative stress acted as a moderator for substance use among the study population. Figure 3 displays this moderating relationship. Using linear regression analysis, acculturative stress strengthened the relationship between students' substance use as a coping mechanism and self-reported increase of drugs/alcohol since immigrating to the U.S. (increasing r^2 from 0.229 to 0.425 and p-value from 0.018 to 0.001).

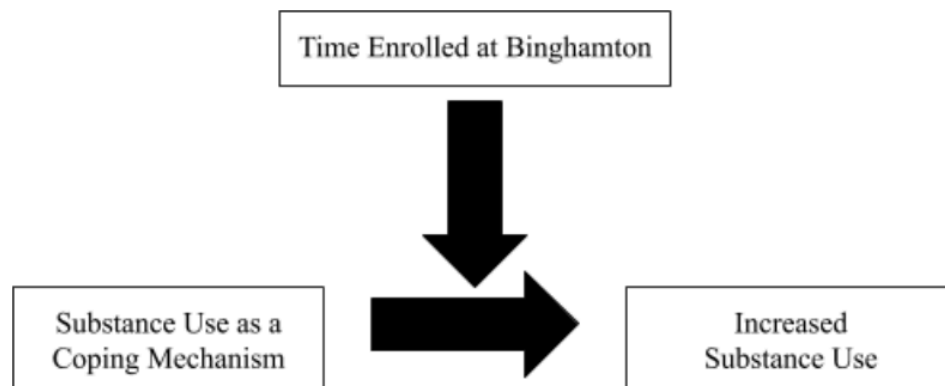
Figure 3. *Moderating Effect of Acculturative Stress on Substance Use*



C. Time at Binghamton as a Moderator for Substance Use

Additional analysis also found that time enrolled at Binghamton University also strengthened the relationship between substance use as a coping mechanism and increased substance use for participants. This relationship is displayed in figure 4. Linear regression analysis, r^2 between substance use as a coping mechanism and increased substance use increased from 0.229 to 0.456 (p-value decreased from 0.018 to < 0.001).

Figure 4. *Moderating Effect of Time Enrolled on Substance Use*



IV. Coping Styles and Well-being

The Problem-Focused Style of Coping (PF-SoC) was scored as directed by Heppner and colleagues (1995). Possible score range was 5-25 for reactive style, 5-35 for reflective style, and 5-30 for suppressive style. The mean scores and standard deviations for reactive, reflective and suppressive styles were 12.87 (SD = 4.80, N = 23¹⁵) 19.88 (SD = 6.82, N = 24), and 14.25 (SD = 5.37, N = 24), respectively. No differences in sex or undergraduate/graduate student status were seen in coping styles. Research question 3 looked to assess the relationship between coping strategies of students and susceptibility for adverse health effects. Specifically, hypothesis 3.1 posited that students engaged in reactive and suppressive coping styles would be related to increased likelihood of engaging in substance use. No significant correlations were found between negative coping style and substance use patterns. Additionally, no significant correlations were found between negative coping style and items related to diet or items related to physical health.

¹⁵ One participant did not answer one item that was required to assess reactive style of coping, and therefore could not be scored.

V. Campus Resource Effectiveness and University Support of Well-being

Campus resource effectiveness was evaluated using questions adapted from Russell and colleagues (2004). Out of the 24 participants, 22 responded “yes” to knowing more than one campus resource they could go to for physical or mental health concerns. All 24 participants answered items 1-6, with means and standard deviations listed in table 15. Females were more likely than males to worry about their mental health ($p = 0.042$); a longer time at Binghamton University was associated with worrying more about physical health ($r^2 = 0.449$, $p = 0.028$)

Table 15. *Student Perceptions of Campus Resources*

Item	Mean	Standard Deviation (SD)
1. “I feel comfortable asking about resources on campus.”	4.17	1.31
2. “I would rather go off-campus for health concerns than go to an on-campus resource.”	2.13	1.48
3. “My home university has resources available that are focused on my health and well-being.”	3.96	1.30
4. “I worry about my mental health.”	2.63	1.50
5. “I worry about my physical health.”	2.79	1.41
6. “I feel uncomfortable asking for help.”	2.04	1.27

Only 9 participants responded “no” to “have [you] ever used a campus resource regarding your physical health and or mental health?” and were directed to answer 11 additional questions. Means and standard deviations for these questions are displayed in

table 16. Cronbach's alpha for barriers to campus resources questions was 0.826 (excluding question 5 due to no variance in participant responses).

Table 16. *Barriers to Campus Resources*

Item	Mean	Standard Deviation (SD)
1. "I do not know how to get an appointment."	1.67	1.41
2. "I feel uncomfortable asking fellow students or university staff for help."	2.00	1.58
3. "I feel campus healthcare professionals would not understand me."	1.56	1.67
4. "I think my problem is not important."	1.67	1.00
5. "I didn't know there was such a service."	1.00	0.00
6. "I didn't know the service was free."	1.44	0.88
7. "I thought accessing a campus resource might influence my academic results."	1.22	0.67
8. "I thought campus health professionals wouldn't be able to help me."	1.56	1.13
9. "I feel more comfortable going to a location off-campus than an on-campus resource."	2.22	1.56
10. "Someone told me that the campus resources would not help me."	1.22	0.67
11. "Someone advised me to go off campus instead of going to an on-campus resource."	1.67	1.41

Additionally, participants were asked to respond to 11 questions evaluating other answers in the survey and overall effectiveness of University efforts to support well-being. Items and their averages and standard deviations are listed in table 17. Questions

specifically pertaining to campus support in well-being (items 5-11) had a high internal consistency of 0.949.

Table 17. *Effectiveness of University Efforts to Support Well-being*

Item	Mean	Standard Deviation (SD)
1. "My sleeping patterns at Binghamton University are similar to my sleeping habits back home."	3.37	1.56
2. "I think academic success is important to my overall well-being."	3.58	1.32
3. "I do not think I have experienced any change in my overall well-being since coming to Binghamton University."	2.71	1.43
4. "I think a strong, reliable social support network is important for my overall well-being."	4.00	1.14
5. "I feel Binghamton University cares about my physical health."	3.65	1.30
6. "I feel Binghamton University wants me to have a healthy diet."	3.46	1.22
7. "I feel Binghamton University makes it easy for me to eat healthily."	3.00	1.35
8. "I feel Binghamton University makes an effort to ensure I succeed academically."	3.67	1.24
9. "I feel Binghamton University makes an effort to ensure I feel welcomed."	3.67	1.27
10. "I feel Binghamton University attempts to make health resources known to me."	4.00	1.10
11. "I feel Binghamton University cares about my overall well-being."	3.75	1.19

To answer the fourth research question, a bivariate correlation analysis was conducted between students' perceptions of inclusion on campus and likelihood to seek out campus resources. These results were generally insignificant and did not support the proposed hypothesis. However, a handful of correlations were relatively strong, and one correlation (Perception of campus inclusion and “I feel uncomfortable asking fellow students or university staff for help”) was highly significant. All correlations are listed in table 18 (1.1-1.6: *Student Perceptions of Campus Resources*; 2.1-2.11: *Barriers to Campus Resources*).

Table 18. *Correlations Between Perception of Campus Inclusion and Use of Campus Resources*

Item	Perception of Campus Inclusion
1.1 “I feel comfortable asking about resources on campus.” ***	-0.389
1.2 “I would rather go off-campus for health concerns than go to an on-campus resource.” ***	0.028
1.3 “My home university has resources available that are focused on my health and well-being.” ***	0.003
1.4 “I worry about my mental health.” ***	0.102
1.5 “I worry about my physical health.” ***	-0.123
1.6 “I feel uncomfortable asking for help.” ***	0.142
2.1 “I do not know how to get an appointment.” †	0.619
2.2 “I feel uncomfortable asking fellow students or university staff for help.” †	0.830**
2.3 “I feel campus healthcare professionals would not understand me.” †	0.645
2.4 “I think my problem is not important.” †	0.500

2.5 “I didn’t know there was such a service.” †	<i>Mean value for item was constant</i>
2.6 “I didn’t know the service was free.” †	0.236
2.7 “I thought accessing a campus resource might influence my academic results.” †	0.437
2.8 “I thought campus health professionals wouldn’t be able to help me.” †	0.645
2.9 “I feel more comfortable going to a location off-campus than an on-campus resource.” †	0.546
2.10 “Someone told me that the campus resources would not help me.” †	0.028
2.11 “Someone advised me to go off campus instead of going to an on-campus resource.” †	0.088

Note: * $p < 0.05$; ** $p < 0.01$; *** $N = 23$; † $N = 9$

VI. 2019 Coronavirus

Questions in this section of the survey were added late in the survey window and therefore, the researcher did not expect to obtain many responses. A total of two participants answered questions in this section, answers are displayed in table 19. No subsequent analysis was conducted with this data due to the low number of responses. Items 1 and 2 were answered based on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Answer choices for items 3 through 5 varied depending on the statement, but generally assessed the impact of COVID-19 on the participant. Specific response choices can be found in appendix I.

Table 19. 2019 Coronavirus Questions with Participant Responses

Item	Participant 1	Participant 2
1. “The Wuhan Coronavirus ¹⁶ outbreak has increased my stress levels since returning to the United States.”	2	3
2. “I feel that Binghamton University is taking adequate measures to support me during this uncertain time.”	5	3
3. “Since being in the United States after the outbreak of the Wuhan Coronavirus, which statement would you most agree with: ...”	I usually or always worry about the health of my friends and/or family back in China.	I usually or always worry about the health of my friends and/or family back in China.
4. “Since being in the United States after the outbreak of the Wuhan Coronavirus, which statement would you most agree with: ...”	I do not notice a difference in other’s perceptions of me	I do not notice a difference in other’s perceptions of me
5. “Since being in the United States after the outbreak of the Wuhan Coronavirus, which statement would you most agree with: ...”	I usually or always talk about the virus with my Chinese international friends.	I rarely or never talk about the virus with my Chinese international friends.
6.” Please use the free response box below as a space to share any concerns or comments that you feel were not reflected in the above questions: ...”	No response	“I am not seen as Chinese”

¹⁶ The researcher would like to note that when this survey section was published, COVID-19 had not been officially named as such by the World Health Organization (2020). The researcher acknowledges the implications and stigmas that come from naming a disease after its origin and did not intend to perpetuate those sentiments.

VII. Aspects of Well-being Assessment

One of the aims of this study was to develop a survey that focused on factors that assess the impact on student well-being to further study Chinese international students (and more broadly, international students) and how their well-being is impacted since immigrating to the U.S. for higher education. When survey sections (academic stress, dietary stress, social stress, physical health, substance use, and happiness supplementary questions) were used for EFA, KMO and Bartlett's Test of Sphericity were not significant, and an analysis was not able to be conducted. Internal consistency for this assessment was unattainable, as well. Instead, the extracted items that made up variables used for analysis were compiled in a list and are displayed in appendix J. More research is needed to validate this survey in its entirety.

Chapter 4: Discussion

This chapter covers discussion of study results as they relate to existing literature, development of the “Aspects of Well-being” assessment, and recommendations for U.S. colleges and universities. This chapter also outlines the limitations of this particular study and the research that should follow.

I. Acculturative Stress, Coping Styles and Relations to Well-being

No sample information was associated with acculturative stress levels in this study. Students who have a greater difference between host and home cultures were thought to have higher acculturative stress than students who had a similar home country to that of their host culture (Hansen et al., 2018). Therefore, it was posited that students who had studied in the U.S. before enrolling at Binghamton University or those who attended an international school (where education is more Western-style) would experience lower levels of acculturative stress; however, data did not support this hypothesis. Additionally, biological sex and age were thought to influence susceptibility to higher acculturative stress (Kim et al., 2019) but this notion was not supported by the current study. The only statistically significant relationship with acculturative stress from block 1 was with students’ perception of off-campus inclusivity. Interestingly, this perception differed from the perception of inclusivity on-campus, where students reported greater perceived inclusion than compared to off-campus. This supports the notion that students feel a greater sense of community on the University’s campus and that the University encourages an inclusive culture among its student body.

This study demonstrated that acculturative stress impacts many aspects of mental and physical well-being among Chinese international students. Academic stress and social stress were significantly correlated with acculturative stress of students and supported other conclusions present in previous studies (Mallinckrodt & Leong, 1992; Mesidor & Sly, 2016; Ra, 2016; Yeh & Inose, 2003; Zhang, 2018; Zheng, 2016). Happiness and life satisfaction were inversely associated with acculturative stress as well, based on responses to the statements, “Since I have been in the United States I am generally satisfied with my life” and “Since living in the United States I think that I live a very happy life”. Although there was no statistically significant correlation between acculturative stress and happiness as determined by the Short Depression Happiness Scale (Heppner et al., 1995), a negative trend was seen and supports the relationship between acculturative stress and “Since living in the United States I think that I live a very happy life”. The results in this study also support findings in research literature relating to acculturative stress to psychological well-being (Cemalcilar & Falbo, 2008; Mallinckrodt & Leong, 1992; Hwang & Ting, 2008). Alternatively, it has been shown that acculturative stress improves the longer foreign individuals are in their new environment, suggesting that this psychological distress and unhappiness are most severe in the first few months of acculturation and then improve (Kim & Kim, 2013); however, this trend was not supported by the current study.

Another trend in this study that supported other findings in the literature was Chinese international student use of drugs and alcohol in relation to acculturation. In the present study, acculturative stress was found to be positively correlated to students reporting the pressure to use drugs and drink alcohol by American students (“I feel

pressure from American students to use drugs (i.e. marijuana, cigarettes, cocaine, etc.” and “I feel pressure from American students to drink alcohol (i.e. beer, wine, vodka, etc.).”). Acculturative stress was also found to act as a moderator between students’ use of drugs/alcohol as a coping mechanism and reported an increase in substance use ($p < 0.001$). This is a significant relationship as acculturative stress strengthened the relationship between the two items when it acted as a moderator. This suggests that students who are experiencing a difficult time adjusting to their host culture may be at a higher risk for increased substance use. The longer students were enrolled in university was also found to act as a moderator in this relationship, possibly suggesting that international students are engaging in substance use to fit in with American students. With increased availability of drugs and alcohol in the U.S. relative to China, Chinese international students may be adjusting to what seems to be a social norm in the U.S.

Even though substance use as a means of coping is already a negative coping strategy, this provides an opportunity for intervention for this demographic. As mentioned previously, substance use among college students has been widely studied and the inclusion of international students is growing ever more important with the development of educational and intervention programs (Kim & Cronley, 2018). Results from the present study also support findings from existing literature (Hunt et al., 2017; Kim & Cronley, 2018; Skromanis et al., 2018). Moreover, although there was no correlation between coping strategies and adverse health effects (i.e., substance use, etc.) this research found statistically significant correlations among students’ problem-focused style of coping and acculturative stress levels. Concluding that acculturative stress is strongly correlated to reactive-style, followed by a weaker, yet still significant correlation

with suppressive and reflective styles. These results are consistent with those discussed in Zhang (2018).

Acculturative stress levels in Chinese international students in this study were not significantly correlated with sleep quality as determined by the Pittsburgh Sleep Quality Index ($p = 0.071$). As mentioned in Mallinckrodt and Leong (1992) acculturative stress has been associated with poor sleep quality in international students and provided a basis for the posited hypothesis. Additionally, considering the effects of the academic and mental well-being of students on sleep quality, it is a surprise that the sleep quality of study participants was not statistically significant with other findings. Participants that responded “agree” or “strongly agree” to “My answers above are reflective of my overall sleeping habits while at Binghamton University” ($N = 15$) were included in the analysis of sleep quality with other aspects of well-being and acculturative stress. This relatively small sample pool may have been reasoning behind this non-significant correlation. Students ($N = 15$) had a mean PSQI score of 7.87 ($SD = 5.03$) which is moderate in the score range (range of 0-21). Sleep quality of the study demographic was statistically correlated with academic stress, which is supported by the literature (Bulbotz et al., 2001; Dusselier et al., 2005; Lowry et al., 2010). Additionally, students reported a high likelihood of compromising their sleep for academics and valuing their academics over their sleep quality. These findings support the notion that sleep quality of students is an aspect of well-being and impacts other dimensions of wellness.

In this study, acculturative stress was not significantly correlated to diet, physical health, or weight change, which does not support the hypotheses posited at the beginning of this study. These results can be interpreted as positive, however, and may indicate that

the Chinese international students in this study are in an environment where their physical health is being supported and of high importance. Students in this study reported healthy eating habits while living in the U.S. (“Most of the time I cook my own meals” & I “have a healthy eating pattern in the U.S.”, $r^2 = 0.526$, $p < 0.01$) and generally did not feel pressure to exercise or be overly physically active (table 14). Additionally, students did not exhibit a significant change in weight in relation to acculturative stress or any other aspect of well-being (although there was a positive correlation between weight change and “I do not know where to get help when I have problems” $r^2 = 0.537$, $p < 0.01$). Students did not seem to be adversely impacted by the dietary transition (table 8) that was expected based on existing literature (Lange-Smith & Van Scyoc, 2017; Satia-Abouta et al., 2002), responding negatively to the statements “I do not have enough money to buy food that is similar to the food I have in my home country”, “The American diet has significantly influenced my eating patterns” and “Most of the time I eat fast food/dine out or order delivery”.

Furthermore, this study analyzed the relationship between acculturative stress and individual aspects of well-being and further analyzed the relationship among different aspects of well-being. Overall, this study highlights the fact that aspects of well-being are interconnected (e.g., Academic stress & happiness; academic stress & “Since I have been in the United States I am generally satisfied with my life”; “I feel pressure from American students to drink alcohol (i.e. beer, wine, vodka, etc.)” & “I feel I have to use drugs/ drink alcohol to fit in with American students”). Moreover, this study alludes to an additional aspect of acculturative stress that was not included in the tool used to assess acculturative stress in this study, in particular, the relationship between acculturative

stress and food security, and general diet. The correlation between “I feel like I have access to food similar to what I would normally eat in my home country” and acculturative stress was statistically significant ($p < 0.05$) and acknowledges another aspect of cross-cultural transitions that contribute to acculturative stress. Correlations between “I feel like I have access to food similar to what I would normally eat in my home country” and “Since living in the United States I think that I live a very happy life” was also statistically significant, with a high correlation ($r^2 = 0.775$, $p < 0.001$) suggests that diet transitions have an impact on student happiness. This notion is also supported by the correlation between the access to food similar to that in student’s home country and life satisfaction ($r^2 = 0.551$, $p < 0.001$), and in overall measure of happiness as determined by the SDHS ($r^2 = 0.501$, $p < 0.05$). This concern with diet is an additional aspect of acculturative stress that Bai (2012) did not include in the development of the ASSCS and acknowledges this.

Correlations between happiness and sleep quality ($r^2 = -0.585$, $p < 0.05$), and happiness and academic stress ($r^2 = -0.543$, $p < 0.01$), suggest the interconnectedness of these factors and calls for research into what may influence these factors and the subsequent effects of higher academic stress levels, poor sleep quality, and unhappiness. Academic stress, for example exhibited more significant negative correlations (e.g., access to familiar food, happiness, life satisfaction, life happiness, and sleep quality) than positive ones (e.g., social stress, not knowing where to get help, pressure to use alcohol, and compromising sleep for academics) which highlights the impact of high academic stress and pressure that students may experience. However, the positive correlations are also interesting, in that students may be more likely to engage in risky behavior, (such as

using alcohol), compromise their sleep quality (which has been shown to have adverse effects on health), and experiencing difficulty in social situations, which is an adversity that many international students face, and contributes to their acculturative stress levels. Other unanticipated correlations are displayed in table 14, and as mentioned previously, highlight the interconnectedness of aspects of well-being and the factors that may influence these aspects. More research should be conducted to evaluate these correlations, particularly among a larger sample size. Additionally, even though this study was concerned with Chinese international students, these correlations may not be unique to this population, and may be present in other international populations. This is something that future research initiatives can explore.

II. Campus Resource Effectiveness

Students in this study did not report any adversities in accessing campus health resources and generally do not report worries about mental or physical health (table 15). When inquiring about barriers to campus resources, students who responded (N =9) generally reported knowledge about campus health resources and knew important information about the services offered to students (i.e., “I didn’t know there was such a service”, “ I didn’t know the service was free”; table 16).

In terms of effectiveness of University efforts to support well-being, students generally agreed that the University was supportive in aspects of student well-being (i.e., “I feel Binghamton University cares about my physical health”, “I feel Binghamton University attempts to make health resources known to me”, “I feel Binghamton University makes an effort to ensure I feel welcomed”; table 17). However, students who

felt greater inclusivity within the campus community were more likely to feel uncomfortable with asking for help related to campus health services. This may be reflective of students' cultural backgrounds, as international students tend to underutilize university services (Russell et al., 2008), especially Asian international students (Wei et al., 2007). Bai (2012) discusses at length the cultural attributes that contribute to these non-help-seeking help behaviors among Chinese international students citing Liu (2009) and Yip (2005) saying "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" (p. 27). This would help explain the seemingly introverted attitudes of Chinese international students towards health services, and namely mental health services (Yip, 2005). However, it should be emphasized that these conclusions are based on 9 responses, and therefore it is difficult to generalize findings to a larger population.

III. Aspects of Well-being Assessment Development

One of the aims of this study was to develop an assessment tool that would help colleges and universities to assess the aspects of well-being among Chinese international students. While preliminary analysis did not support the development of this tool, there may be the potential to use the individual variables that were used in this study to assess the relationship between acculturative stress and aspects of well-being. Academic stress, dietary transitions, healthy eating awareness, social stress, physical health awareness, pressure to be active, select items from substance use, and life satisfaction showed relatively high internal consistencies (0.858, 0.828, 0.817, 0.857, 0.884, 0.644, 0.296, and

0.830, respectively) that suggest reliability. Therefore, combining these subscales together may lead to the development of an assessment tool. Additionally, the sections of this study concerned with campus resource effectiveness and University support of student well-being should be included to gain a larger idea of the factors influencing well-being (i.e., academic stress, availability of campus resources etc.). Items have been put together for ease of replication and should be assessed further to authenticate validation. This preliminary survey is accessible in appendix J.

IV. Study Highlights

Significant findings in this study include positive correlations between acculturative stress and academic stress, social stress, pressure to engage in substance use, and sleep quality and negative correlations with life satisfaction and life happiness. This study also suggests that additional factors, namely dietary transitions and food security, influence international student's acculturative stress levels. Additional findings concerned with campus health resources and university support of student well-being demonstrate that there are cultural factors that play into student decisions in reaching out to resources designed to assist with their needs and that students are aware of these resources; however, cultural attitudes towards help-seeking behaviors may pose the greatest obstacle to students in accessing these resources. Furthermore, colleges and universities play a large role in fostering a campus climate that is accepting of diversity and engages international students and may need to improve resources for international students who have a difficult time adjusting to their host culture, as areas of well-being

are influenced by acculturative stress levels. Overall, aspects of well-being are highly interconnected and have impacts on student's success inside and outside the classroom.

This research builds on the results and work of past studies that were utilized as a foundation for this project. As mentioned previously, Bai's assessment for acculturative stress (2012) did not include any aspects of diet or food security in determining level of acculturative stress. This study not only looked at the relationship between survey items related to diet and food security, but also expanded the range of responses for participants in the dietary stress section. Compared to responses in Lange-Smith and Van Scyoc (2017), which relied on "yes/ no" responses, a Likert-scale provides participants with a wider range of choices, better representing their agreement with statements (and the reason for the vast majority of items having a Likert-scale response). This study also expanded the generalizability of the PSQI (Buysse et al., 1989) by asking students "My answers above are reflective of my overall sleeping habits while at Binghamton University". Given that the PSQI only reflects sleep quality over the past 30-days, inquiring if responses represented participants' overall sleep quality was one way to assess this variable in relation to other aspects of well-being and get a better idea of sleeping habits. Additionally, asking participants if they value other aspects of being a student (namely academics) showed a general agreement among placing academics ahead of sleep quality. In a similar fashion, the SDHS (Joseph et al., 2004) reflected student's relative happiness over the past 7 days, but was generalized by responding to questions such as "Since I have been in the United States I am generally satisfied with my life" and "Since living in the United States I think that I live a very happy life". Responses to these items proved to be highly correlated with other items compared to SDHS scores and

provide insight into the distinction between the notions of “happiness” and “satisfaction” regarding one’s life. Moreover, questions regarding students’ substance use were created from the literature and sought to explore students’ perceptions of drug and/or alcohol use. Results from these questions hint at the coping mechanisms of students second to acculturative stress and the social norms of their host culture in the U.S.

V. Recommendations

It is difficult to make recommendations based on a survey that only had 24 participants, however the rationale behind this study is still important in developing policies and programming that aim to improve the well-being of students. Literature has acknowledged the fact that Chinese international students face cultural challenges when immigrating to the U.S. and calls for specific resources for these students to ease their adjustment (e.g., Han et al., 2012; Kim et al., 2019). Additionally, on college and university campuses, there are many resources that are centered around student health and well-being and these resources should be focused on addressing all students and increasing outreach efforts to accommodate students of all backgrounds. While Zhang-Wu (2018) writes that recommendations should not come out of notions of “colorblindness” and ignore the inherent racism that exists in the world and in the U.S., especially (i.e., xenophobic sentiments surrounding COVID-19, etc.). There should still exist culturally appropriate and sensitive measures for international students as a whole to feel more welcomed and easily adapt to life in a new country, considering the adverse effects of on well-being from acculturative stress.

Yan and Berliner (2011) mention that there needs to be increased socialization among Chinese international students and domestic students, and while this is important to improve competencies that will ease international students' cultural transition. It is also important to encourage international students of similar ethnicity to come together and support each other when needed, such as culturally-oriented organizations or even international student mentoring (Abe et al., 1998; Liu, 2009; Lin 2007; Nasirudeen et al., 2014).

Furthermore, the notions that students must demonstrate character traits of “self-efficacy” (Mesidor & Sly, 2016) and “resiliency” (Kim et al., 2019) when studying in the U.S. are ones that can be detrimental to student success. While college is time for many U.S. students to undergo transformative academic and social maturation, this does not mean that all students will respond to this environment the same. For example, Chinese culture is centered around collectivism and places less emphasis on individual independence (Bertram et al., 2014) and it is understandable that Chinese students may have a difficult time adjusting to these cultural norms. Therefore, cultural organizations and other strong social support networks are imperative in easing this transition.

Colleges and universities in the U.S. are environments with enriching opportunities and are places where students undergo a great deal of personal growth. To support this growth and encourage healthy behaviors that last long after their education, support services should be in place for all students, regardless of identity.

VI. Study Limitations and Future Research

The foremost limitation to this study was the sample size. Participants that participated in this study were not representative of the Chinese international student population at Binghamton University and results of this study cannot be generalized to a larger population due to the number of participants. Although the researcher sought out multiple platforms to recruit eligible participants, more of an effort could have been made on meeting with cultural organizations in person and utilizing participants of the study to encourage their friends to take the survey (i.e., “snowballing”).

Additionally, the survey administered online to students was relatively long (more than 180 items, anticipated 20-25 minutes to complete). Participants were allowed to leave the survey and come back to finish their responses, so no average time of completion was able to be calculated. The survey was also administered completely in English, assuming that students were able to accurately read and comprehend the material presented to them. Allowing students to take a version in their native language may be beneficial to survey response, however language translation may compromise question meaning and should be reviewed prior to publication.

The researcher also had to discard an entire section of this study due to the omission of one element of a survey. Health related quality of life (HRQoL) has been studied among international students and there is reason to believe that HRQoL is directly impacted by acculturative stress, and may connect additional aspects of physical health to acculturative stress (Belizare & Fuertes, 2010; Ogunsanya et al., 2018; Unni et al., 2015; Urzúa et al., 2016). Future research should evaluate this relationship.

This study also broke the concept of “health” and “well-being” into two domains: physical and mental. Certainly, health is not two-dimensional, in some models, there are eight dimensions of wellness: physical, intellectual, emotional, social, spiritual, vocational, financial, and environmental (Stoewen, 2017). These dimensions are important in developing and supporting overall well-being.

Another suggestion for future research aside from a larger sample size, is a greater variety of international student demographics. While it is important to assess the aspects of student well-being there needs to be a reference to these levels to determine what groups are more at risk for adverse health effects or need additional support in attaining and/or maintaining these levels of well-being. Domestic students may also be of use in these studies; unable to take acculturation surveys, domestic students provide insight for cultural effects on health and well-being and may act as a control group for future studies of international students.

Chapter 5: Conclusion

This study reports preliminary information from a relatively small sample size and provides the basis for future research in an effort to accurately identify areas of campus resource improvement to enhance the well-being of Chinese international students. Study results support findings already present in the literature, with acculturative stress being significantly correlated with academic ($r^2 = 0.635$, $p < 0.01$) and social well-being ($r^2 = 0.465$, $p < 0.01$), as well as life satisfaction ($r^2 = -0.458$, $p < 0.05$) and happiness ($r^2 = -0.639$, $p < 0.01$). Additionally, this research concluded that acculturative stress and length of enrollment have a moderating effect on students' use of drugs/alcohol as a coping mechanism and their self-reported substance use since immigrating to the U.S. ($r^2 = 0.425$, $p = 0.001$; and $r^2 = 0.456$, $p < 0.001$, respectively). This study also points to additional areas for future research, namely the relationship between acculturative stress and dietary stress, and acculturative stress and health-related quality of life.

It should be worth mentioning that non-statistically significant results are not necessarily meaningless in this research. If students are not experiencing adverse health effects second to cultural adaptation, then there may already be support systems in place on campus that look to mitigate these effects. Additionally, students may not see the issues that they are experiencing as problems and therefore do not feel the need to report them. The hypotheses posited that were not supported may be statistically significant in a study with a larger population and this may reveal more correlations than what was explored in this research (see table 14). Nevertheless, more research should be conducted to evaluate these levels of acculturative stress and impacts on well-being, not only on

more Chinese international students, but other international students and even domestic students to quantify these relationships.

Student well-being is certainly a concern for many in higher education, as this concept is multidimensional. Supporting healthy habits and providing all students an opportunity to enhance their well-being is a pursuit that has lasting impacts after graduation, and can be seen as a long-term investment, both for students and professionals. This study provided a framework for ways colleges and universities can move forward and assess their current programs among Chinese international students. Being the largest international student demographic in the U.S., this rationale is applicable to many students across the country, however, these efforts to assess and improve well-being and the factors that influence health statuses should not be limited to one demographic. Access to resources that support health and well-being is important for all individuals, regardless of identity. By improving resource quality and accessibility international students can feel more supported, and have a better time adjusting to their host culture.

Appendix A: Recruitment Email Flyer

Research Participation

Assessment of Chinese International Students' Acculturative Stress and the Relation to Well-being

Honors Thesis Research

Contact Principal Investigator:
Liam Lane
llane1@binghamton.edu

This study has been approved by the IRB at Binghamton University

This study looks to address:

- acculturative stress
- coping mechanisms
- health-related quality of life
- happiness
- sleeping habits
- overall well-being
- perceptions of campus resources
- barriers faced by Chinese students

Participants must be 18 years or older and identify as a Chinese international student at Binghamton University

Principal Investigator:

- former international student at Mahidol University International College in Salaya, Thailand
- interests in public health and social determinants of health relating to different cultural groups

20-25 minute survey

Able to win one of two \$50 Visa gift cards for participating!

Access the mobile survey via the QR Code below:



powered by



Appendix B: Initial Recruitment Email

同学们好！请大家填写这份调研。这是一个很好的机会，大家可以反馈各自在美国生活学习时遇到的困难和的方式。这是一份匿名调研，请认真阅读调研者的邮件，然后点击下方链接。然后点击页面底部的“同意”后，你将会进入本次的调研。本次调研可能会占用大家几分钟时间，问题很简单，填写起来也很方便。谢谢！

Hello,

My name is Liam Lane and I am conducting research for my honors thesis. My project looks to assess the acculturative stress of international Chinese students at Binghamton University and how this stress relates to their coping behaviors, health-related quality of life, happiness, and sleeping habits. This study will also inquire about the use of related campus resources and barriers accessing their services.

This research hopes to highlight areas of improvement for international student programs at Binghamton University and looks to apply this study to other international groups.

In order to participate in this survey, you must be over the age of 18 and identify as a Chinese international student at Binghamton University. Additionally, as compensation for your time, upon completion of the study, you will have the chance to be entered in to win one of two \$50 Visa gift cards.

The survey can be accessed via the link below:
http://binghamton.qualtrics.com/jfe/form/SV_aV7LVCCU76qgOwJ

The survey will be active until January 26th, 2020 and you will receive reminder emails during the time this survey is active. This study has been approved by the IRB at Binghamton University.

Please do not hesitate to reach out with any questions and or comments.

Best,
Liam Lane

Appendix C: Follow-up Recruitment Email

诚邀您参加一项BU荣誉本科毕业论文的研究项目。本调查问卷旨在研究在美学习
的中国学生
的生活学习经历和感受。您的参与将为这个研究提供宝贵的信息。本调查问卷采取
完全匿名的方式,
而且只需占用您几分钟的时间。非常感谢您的参与和支持！

Hello,

Recently you received a request to participate in a research study focused on
acculturative stress and the relation to the overall well-being of Chinese international
students. If you have already completed the survey, thank you very much for doing so.
Your time and efforts are greatly appreciated.

If you haven't yet responded to this survey, please consider doing so as your experiences
are very valuable. The survey was sent to your Binghamton University email from Liam
Lane (llane1@binghamton.edu) and will be available until **March 15, 2020**. Please be
advised that the window to take this study has been extended again from the previous end
date (originally February 23, 2020).

The survey can also be accessed via the link below:
http://binghamton.qualtrics.com/jfe/form/SV_aV7LVCCU76qgOwJ

As compensation for your time, upon completion of the study, you will have the chance
to be entered in to win one of two \$50 Visa gift cards.

If you have any questions or concerns regarding this study, please contact Liam Lane at
the email above.

Thank you in advance,

Liam Lane

Appendix D: Campus-wide Email Announcement

Chinese International Students' Acculturative Stress and Well-being

If you are a Chinese international student at Binghamton University and are at least 18 years or older, you are eligible to participate in an anonymous online survey regarding the stress of integrating into a new culture and how this relates to aspects of well-being. The survey should take 20-25 minutes to complete and is being conducted for a student's honors thesis in Anthropology.

Contact: Liam Lane (llane1@binghamton.edu)

Access the survey: http://binghamton.qualtrics.com/jfe/form/SV_aV7LVCCU76qgOwJ

Research Study Information Session:

for Chinese International Students



COME LEARN MORE
ABOUT THE PROJECT

**Tuesday March 3rd and
Wednesday March 4th at
8pm in Science 1, Room 145**

**Any Chinese
international students
18 years or older
are invited to
attend one session**

SNACKS PROVIDED

This study looks
to address:

- acculturative stress
- coping mechanisms
- health-related quality of life
- happiness
- sleeping habits
- overall well-being
- perceptions of campus resources
- barriers faced by Chinese students

This study has been approved by the IRB at Binghamton University

Please contact the principal investigator, Liam Lane, at
llane1@binghamton.edu with any questions

powered by



Appendix F: Message Translated by ELI Staff

同学们好！请大家填写这份调研。这是一个很好的机会，大家可以反馈各自在美国生活学习时遇到的困难和**处理**的方式。这是一份匿名调研，请认真阅读调研者的邮件，然后点击下方**的链接**。然后点击页面底部的“同意”后，你将会进入本次的调研。本次调研可能会占用大家几分钟时间，问题很简单，填写起来也很方便。谢谢！

(Please fill out this survey. It is a good chance to give your opinion about coping with issues while studying in the US. It is anonymous. Please read the surveyor's letter and then click on the link. After you click the consent button at the bottom of the page, it will take you to the survey which is simple and easy to fill out. Thank you!)

Appendix G: Message Translated by TRIP Staff

诚邀您参加一项BU荣誉本科毕业论文的研究项目。本调查问卷旨在研究在美学习
的中国学生

的生活学习经历和感受。您的参与将为这个研究提供宝贵的信息。本调查问卷采取
完全匿名的方式,

而且只需占用您几分钟的时间。非常感谢您的参与和支持！

(Please consider participating in this research study for a student's honors thesis. This
survey is interested in the experience and opinions of international Chinese students
studying in the United States. Your participation is completely anonymous and will take a
few minutes to complete. Thank you in advance!)

Appendix H: IRB Approval Letter



[HUMAN SUBJECTS RESEARCH REVIEW OFFICE](#)
PO BOX 6000
BINGHAMTON, NEW YORK 13902-6000
HSRR@BINGHAMTON.EDU
CALL: (607) 777-3818 OR (607) 777-3918

IRB EXPEDITED APPROVAL

Date: November 13, 2019

Dear [Liam Lane](#):

On 11/13/2019, the IRB reviewed the following submission:

Type of Review:	Expedited
Title of Study:	Assessment of Chinese International Students' Acculturative Stress and the Relation to Well-being
Investigator:	Liam Lane
IRB ID:	STUDY00001952
Funding:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none">• Survey Questionnaire.pdf, Category: Surveys/Questionnaires;• Thesis Protocol Narrative. .pdf, Category: IRB Protocol;• Initial Survey Administration Email.pdf, Category: Recruitment Materials;• B-Line News Submission.pdf, Category: Recruitment Materials;• Follow-Up Survey Administration.pdf, Category: Recruitment Materials;• Faculty Advisor's Statement_jkl (1).pdf, Category: Other;• Informed Consent .pdf, Category: Consent Form;• End of Survey Page_Resources.pdf, Category: Other;• Recruitment Flyer , Category: Recruitment Materials;

The IRB has considered your submission for the project referenced above and has issued an Expedited approval. Expedited studies do not require continuing review. However, the IRB may still require continuing review on a study-specific basis if it is determined that continuing review would enhance the protection of human subjects involved in research. Justifications will be provided to the investigators at the time of approval if the IRB determines that continuing review is required.

Any Modifications to your research must be submitted through PACS for IRB review prior to those changes being executed. Once approval has been granted your study can move forward with those changes. You can submit a Modification by selecting the "Active" tab and under "My Current Actions" select "Create Modification/CR".

When your project has concluded, please complete the Protocol closure process found within the Create Modification/CR selection in PACS.

In conducting this study, you are required to follow the requirements listed in the Investigator's Training and Research Guide, which can be found in the [Division of Research](#) home page under Research Compliance and Human Subjects. If you have any questions, please contact the HSRR office at the phone number or e-mail address above.

Appendix I: Administered Survey

Welcome!

Consent for Research Participation

Title: Assessment of Chinese International Students' Acculturative Stress and the Relation to Well-being

Researcher: Liam Lane, Binghamton University

Researcher Contact Info: llane1@binghamton.edu

You are being asked to participate in a research study. The box below highlights key information about this research for you to consider when making a decision whether or not to participate. Carefully consider this information and the more detailed information provided below the box. Please ask questions about any of the information you do not understand before you decide whether to participate.

Key Information for You to Consider

- **Voluntary Consent.** You are being asked to volunteer for a research study. It is up to you whether you choose to participate or not. There will be no penalty or loss of benefits to which you are otherwise entitled if you choose not to participate or discontinue participation.
- **Purpose.** The purpose of this research is to assess the level of acculturative stress of international Chinese students at Binghamton University and how this stress relates to their coping strategies, health-related quality of life, happiness, sleeping habits, and overall well-being. This study will also inquire about the use of related campus resources and barriers accessing their services. This research hopes to highlight areas of improvement for international student programs at Binghamton University and looks to apply this study to other international groups. You are being contacted to participate because you are a Chinese international student at Binghamton University 18 years or older. It is expected that most Chinese international students will participate.
- **Duration.** It is expected that the survey will take approximately 20-25 minutes.
- **Procedures and Activities.** You will be asked to complete an anonymous, 183 short question online survey.
- **Risks.** There is a very minor risk of breach of confidentiality, however, it is minimal as this study does not collect any identifying information or IP addresses. Additionally, participants may be uncomfortable answering some questions pertaining to mental health, drug, and alcohol use, or life in the U.S. You may skip any question you do not wish to answer and or stop participation at any time.
- **Benefits.** There are no direct benefits for participation, however, those who complete the survey may choose to enter into a drawing to win one of two \$50 Visa gift cards.
- **Alternatives.** Participation is voluntary and the only alternative is to not participate.

Who is conducting this research?

The researcher, Liam Lane, from Binghamton University is asking for your consent to this research.

What happens to the information collected for this research?

Information collected for this research will be used to document the trends associated with acculturative stress and analyze how this stress relates to other aspects of an individual's overall well-being. Additionally, this study is part of an honors thesis project and data gathered may be shared at professional conferences.

How will my privacy and data confidentiality be protected?

This is an anonymous survey, no personal information will be recorded. All responses will be stored in a password secure database that only the researcher has access to. You will be asked to record your email address in a separate platform at the completion of the survey in order to be entered to win one of two \$50 Visa gift cards.

What if I want to stop participating in this research?

Taking part in this research study is your decision. Your participation in this study is voluntary. You do not have to take part in this study, but if you do, you can stop at any time. You have the right to choose not to participate in any study activity or completely withdraw from continued participation at any point in this study without penalty or loss of benefits to which you are otherwise entitled. Your decision whether or not to participate will not affect your relationship with the researchers or the Binghamton University.

Will I be paid for participating in this research?

You will not receive payment for participating in this study. Instead, individuals who have completed the online survey will be eligible to enter into a drawing (via email address) for one of two \$50 Visa gift cards.

Who can answer my questions about this research?

If you have questions, concerns, or have experienced a research-related injury, contact the research team at:

Liam Lane

llanel@binghamton.edu

Binghamton University's Human Subjects Research Review Office (a.k.a. Institutional Review Board) is overseeing this research. An IRB is a group of people who perform independent review of research studies to ensure the rights and welfare of participants are protected. If you have questions about your rights or wish to speak with someone other than the research team, you may contact:

Human Subject Research Review

hsrrc@binghamton.edu

607-777-3818

Additionally, if any part of this survey made you feel uncomfortable or would like to speak with someone regarding your experience(s) as an international student, please feel free to reach out to the resources listed below:

Binghamton University Counseling Center:
<https://www.binghamton.edu/counseling/index.html>

International Student and Scholar Services:
<https://www.binghamton.edu/international/student-scholar-services/>

Binghamton University Health Services:
<https://www.binghamton.edu/health/>

American Civic Association (Binghamton, NY):
<https://www.americancivic.com/>

STATEMENT OF CONSENT

I have had the opportunity to read and consider the information in this form. I have asked any questions necessary to make a decision about my participation. I understand that I can ask additional questions throughout my participation.

I understand that by selecting “I consent, begin the study” I volunteer to participate in this research. By selecting this statement, I am also confirming that I am: at least 18 years old, and identify as a Chinese international student at Binghamton University. I also understand that I am not waiving any legal rights.

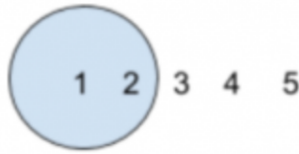
I consent, begin the study

I do not consent, I do not want to participate in the study

Block 1- Demographic Information

1. **What is your biological sex?** Male; Female; Prefer not to say
2. **Are you an undergraduate or graduate student?** Undergraduate; Graduate
3. **What school are you currently enrolled in at Binghamton University?** Harpur College of Arts and Sciences; Watson School of Engineering and Applied Sciences; College of Community and Public Affairs; School of Management; School of Pharmacy and Pharmaceutical Sciences; Decker College of Nursing and Health Sciences
4. **What is your cumulative GPA?** 3.5-4.0; 3.0-3.49; 2.5-2.9; 2.0-2.49; below 2.0
5. **Do you live...** on-campus; off-campus
6. **How long have you been enrolled at Binghamton University?** Less than one semester; One semester; One year; Two years; Three years; Four years or more
7. **What is your expected graduation date (semester/year, e.g. Spring 2021)**
8. **Did you attend an international school while in your home country?** Y/N
9. **If you answered yes to the previous question, for how many years were you enrolled in an international school?**
10. **Have you ever attended school in the U.S. besides Binghamton University?**
Y/N

11. If you answered yes to the previous question, please check all that you have attended: Primary school (elementary school); Secondary school (middle/high school); Another college or university; other
12. My parents pay for my education (tuition, housing, food, etc.) Y/N
13. My parents send me money while I am at school. Y/N
14. I pay for my own education (I have a job to pay for school expenses/rent, I have taken out loans to finance my education, etc.). Y/N
15. I receive financial aid/scholarships to attend Binghamton University. Y/N
16. How many children are in your immediate family (including yourself)?
17. What number child are you? (i.e. if you are the second born, please respond with 2)
18. The image below is referenced in the following two questions:



Based on the above image, with the blue circle representing the Binghamton University community and again as the Greater Binghamton Community, where do you see yourself (with 1 feeling very much a part of the community, 5 feeling very much outside of the community and 3 feeling neutral)

Binghamton University Campus Community
Greater Binghamton Community

Block 2- ASSCS -Bai, J. (2012)

Please complete the following information honestly.

1=never-----2-----3=sometimes-----4-----5=often-----6-----7=all the time

1. I hesitate to participate in class discussions and seminars.
2. My social circles shrank after I came 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 a 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 an academic paper in English.
30. I shy away from social situations due to my limited English.
31. I do not have a new social network here.
32. Academic pressure has lowered the quality of my life.

Block 3- PF-SOC (Heppner et al., 1995)

The following statements relate to how you cope with problems that you may experience being an international student. Please complete the following information honestly.

1= almost never-----2=occasionally-----3= about half of the time-----4=often-----5=almost all of the time

1. I am not really sure what I think or believe about my problems.
2. I don't sustain my actions long enough to really solve my problems.
3. I think about ways that I solved similar problems in the past.
4. I identify the causes of my emotions, which help me identify and solve my problems.
5. I feel so frustrated that I just give up doing any work on my problems at all.
6. I consider the short-term and long-term consequences of each possible solution to my problems.
7. I get preoccupied thinking about my problems and overemphasize some parts of them.
8. I continue to feel uneasy about my problems, which tells me I need to do some more work.
9. My old feelings get in the way of solving current problems.
10. I spend my time doing unrelated chores and activities instead of acting on my problems.
11. I think ahead, which enables me to anticipate and prepare for problems before they rise.
12. I think my problems through in a systematic way.

13. I misread another person's motives and feelings without checking with the person to see if my conclusions are correct.
14. I get in touch with my feelings to identify and work on problems.
15. I act too quickly, which makes my problems worse.
16. I have a difficult time concentrating on my problems (i.e. my mind wanders).
17. I have alternate plans for solving my problems in case my first attempt does not work.
18. I avoid even thinking about my problems.

Block 4- Academic Stress

The following statements are about your academic experience at Binghamton University. Please answer honestly.

1=strongly disagree-----2=somewhat disagree-----3=neither agree nor disagree-----
4=somewhat agree-----5=strongly agree

1. I feel like I am constantly behind in my coursework
2. I worry about my time management skills.
3. Studying occupies most of my time.
4. I feel it hard to meet the expectations of my advisor.
5. I do not know how to balance my studies and life.
6. I am not used to the class format here.
7. I feel like my professors are willing to help.
8. I feel pressure to compete academically with my peers.
9. I am eager to participate in class discussions and seminars.
10. I do not know where to go to get help with course material.

Block 5- Dietary Stress

The following statements are about your diet and eating patterns. Please complete the following information honestly.

1=strongly disagree-----2=somewhat disagree-----3=neither agree nor disagree-----
4=somewhat agree-----5=strongly agree

1. I feel like I have access to food similar to what I would normally eat in my home country.
2. Most of the time I cook my own meals.
3. I consume larger portions in America than I do at home.
4. I do not have enough money to buy food that is similar to the food I have in my home country.
5. I make sure that I have nutritionally balanced meals.
6. The American diet has significantly influenced my eating patterns.
7. I have a healthy eating pattern back home.
8. I think my diet is important to my overall well-being.

9. Most of the time I eat fast food/dine out or order delivery.
10. I have a healthy eating pattern in the U.S.

Added questions- answer with free response

1. What was your weight before moving to the U.S. (in kg, please provide an estimate if you do not know the exact value)?
2. What is your current weight (in kg)?

Block 6- Social Stress

The following statements are about your social network and social resources. Please complete the following information honestly.

1=strongly disagree-----2=somewhat disagree-----3=neither agree nor disagree-----
4=somewhat agree-----5=strongly agree

1. I wish I had more friends in the U.S.
2. I feel lonely in the U.S.
3. I do not know how to establish friendships with American people.
4. I feel trapped in small groups of Chinese people.
5. I do not know how to communicate with people from different cultural backgrounds.
6. I do not know where to get help when I have problems.
7. It is hard for me to integrate into the new culture.
8. I feel like a stranger in the US
9. I find it difficult to find time to talk with my family.
10. My friends back home don't understand my life in the U.S.

Block 7- Physical Health

The following statements are about your perceptions of fitness and physical health. Please answer honestly.

1=strongly disagree-----2=somewhat disagree-----3=neither agree nor disagree-----
4=somewhat agree-----5=strongly agree

1. I think that American students exercise too much.
2. I feel pressured to exercise.
3. I exercise more in the U.S. than I did at home.
4. I feel that American students are obsessed with physical health.
5. I feel like I have to change my eating habits to have better physical health.
6. It is difficult for me to find time to exercise.
7. Exercising allows me to de-stress.
8. I enjoy engaging in some sort of physical activity.
9. I think exercise is important to my overall well-being.

10. I think my diet has an impact on my physical health.

Block 8- Substance Use

The following statements are about your drug/alcohol consumption and exposure. Please answer honestly. If you do not use drugs/drink alcohol, please respond appropriately with 0.

1=strongly disagree-----2=somewhat disagree-----3=neither agree nor disagree-----
4=somewhat agree-----5=strongly agree

1. I feel I have to use drugs/ drink alcohol to fit in with American students.
2. I feel pressure from American students to drink alcohol (i.e. beer, wine, vodka, etc.).
3. I feel pressure from American students to use drugs (i.e. marijuana, cigarettes, cocaine, etc.).
4. I will drink alcohol to feel drunk
5. My drug/alcohol use increased when I moved to the U.S.
6. I use drugs/alcohol as a way to cope with the stress of living in a new culture.

Please answer the following question regardless of how you answered in the previous questions.

1=strongly disagree-----2=somewhat disagree-----3=neither agree nor disagree-----
4=somewhat agree-----5=strongly agree

1. I think excessive use of drugs/alcohol impacts my overall health.
2. I think using drugs/alcohol is a healthy way to get rid of stress.
3. I think excessive use of drugs/alcohol impacts my academic performance.
4. I think using drugs/alcohol impacts how I am perceived by others.

Block 9- 12-SF, HRQoL- (Ware et al., 1996)

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. Please answer every question by marking one box. If you are unsure about how to answer, please give the best answer you can.

1. In general, would you say that your health is:
Excellent, very good, good, fair, poor

The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

2. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, playing golf
Yes, limited a lot; yes, limited a little; no, not limited at all
3. Climbing several flights of stairs
Yes, limited a lot; yes, limited a little; no, not limited at all

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

4. Accomplish less than you would like
Yes, no
5. Were limited in the kind of work or other activities
Yes, no

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

6. Accomplished less than you would like
Yes, no
7. Didn't do work or other activities as carefully as usual
Yes, no
8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?
Not at all, a little bit, moderately, quite a bit, extremely

These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks:

9. Have you felt calm and peaceful?
All of the time, most of the time, a good bit of time, some of the time, a little of the time, none of the time
10. Did you have a lot of energy?
All of the time, most of the time, a good bit of time, some of the time, a little of the time, none of the time
11. Have you felt downhearted and blue?
All of the time, most of the time, a good bit of time, some of the time, a little of the time, none of the time
12. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?
All of the time, most of the time, some of the time, a little of the time, none of the time

Block 10- SDHS- (Joseph et al., 2004)

A number of statements that people have made to describe how they feel are given below. Please read each one and tick the box which best describes how frequently you felt that way in the past seven days, including today. Some statements describe positive feelings and some describe negative feelings. You may have experienced both positive and negative feelings at different times during the past seven days.

1=never——2=rarely——3=sometimes——4=often

1. I felt dissatisfied with my life
2. I felt happy
3. I felt cheerless
4. I felt pleased with the way I am
5. I felt that life was enjoyable
6. I felt that life was meaningless

Added questions- answer with 1-5 strongly disagree → strongly agree

1. Since I have been in the United States I am generally satisfied with my life.
2. Since living in the United States I think that I live a very happy life.

Block 11- PSQI -(Buysse et al., 1989)

Instructions: The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month. Please answer all questions. During the past month,

1. When have you usually gone to bed?
2. How long (in minutes) has it taken you to fall asleep each night?
3. When have you usually gotten up in the morning?
4. How many hours of actual sleep do you get at night? (This may be different than the number of hours you spend in bed)
Not during the past month (0), Less than once a week (1), Once or Twice a week (2), Three or more times a week (3)
5. During the past month, how often have you had trouble sleeping because you...
 - a. Cannot get to sleep within 30 minutes
 - b. Wake up in the middle of the night or early morning
 - c. Have to get up to use the bathroom
 - d. Cannot breathe comfortably
 - e. Cough or snore loudly
 - f. Feel too cold
 - g. Feel too hot
 - h. Have bad dreams
 - i. Have pain
 - j. other reason(s), please describe, including how often you have had trouble sleeping because of this reason(s)
6. During the past month, how often have you taken medicine (prescribed or “over the counter”) to help you sleep?
7. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?
8. During the past month, how much of a problem has it been for you to keep up enthusiasm to get things done?

Very good (0), fairly good (1), fairly bad (2), very bad (3)

9. During the past month, how would you rate your sleep quality overall?

Added questions- answer with 1-5 strongly disagree → strongly agree

1. My answers above are reflective of my overall sleeping habits while at Binghamton University
2. If I have an exam/assignment coming up, I will compromise my sleep to study/finish the assignment.
3. I think my academics are more important than my sleep.

Block 12- Campus Resource Effectiveness

This section will ask you about campus resources and if you have ever utilized one. Please answer honestly.

1. I know one or more campus resource I can go to for physical health or mental health concerns. Y/N

1=strongly disagree-----2=somewhat disagree-----3=neither agree nor disagree-----
4=somewhat agree-----5=strongly agree

1. I feel comfortable asking about resources on campus.
2. I would rather go off-campus for health concerns than go to an on-campus resource.
3. My home university has resources available that are focused on my health and well-being.
4. I worry about my mental health.
5. I worry about my physical health.
6. I feel uncomfortable asking for help.

1. Have you ever used a campus resource regarding your physical and/or mental health (i.e. Decker Student Health Services, Harpur's Ferry, University Counseling Center, etc.)? Y/N

If the answer to the above question is NO, redirected to following questions; if yes participant skips following section and moves to the next block:

You answered "no" to "have you ever used a campus resource regarding your physical/mental health?" Please elaborate a little on why you answered this way. Your responses are of great value to this study.

Please complete the following information honestly.

1=strongly disagree-----2=somewhat disagree-----3=neither agree nor disagree-----
4=somewhat agree-----5=strongly agree

1. I do not know how to get an appointment.

2. I feel uncomfortable asking fellow students or university staff for help.
3. I feel campus healthcare professionals would not understand me.
4. I think my problem is not important.
5. I didn't know there was such a service.
6. I didn't know the service was free.
7. I thought accessing a campus resource might influence my academic results.
8. I thought campus health professionals wouldn't be able to help me
9. I feel more comfortable going to a location off-campus than an on-campus resource
10. Someone told me that the campus resources would not help me.
11. Someone advised me to go off campus instead of going to an on-campus resource.

Block 13- COVID-19 Questions

The following statements are in light of the recent developments of the Wuhan Coronavirus and if this disease has any influence on your experience at Binghamton University. Please answer honestly.

1. The Wuhan Coronavirus outbreak has increased my stress levels since returning to the United States.
1=strongly disagree-----2=somewhat disagree-----3=neither agree nor disagree---
--4=somewhat agree-----5=strongly agree
2. I feel that Binghamton University is taking adequate measures to support me during this uncertain time.
1=strongly disagree-----2=somewhat disagree-----3=neither agree nor disagree---
--4=somewhat agree-----5=strongly agree
3. Since being in the United States after the outbreak of the Wuhan Coronavirus, which statement would you most agree with:
 - a. I usually or always worry about the health of my friends and/or family back in China.
 - b. I rarely or never worry about the health of my friends and/or family back in China
4. Since being in the United States after the outbreak of the Wuhan Coronavirus, which statement would you most agree with:
 - a. I think others believe I have the virus because I am Chinese.
 - b. I notice more sympathy from other students because I am Chinese.
 - c. I do not notice a difference in other's perceptions of me.
5. Since being in the United States after the outbreak of the Wuhan Coronavirus, which statement would you most agree with:
 - a. I usually or always talk about the virus with my Chinese international friends.

b. I rarely or never talk about the virus with my Chinese international friends.

6. Please use the free response box below as a space to share any concerns or comments that you feel were not reflected in the above questions:

Block 14- Campus Effectiveness in Supporting Well-being

The following statements are about your experience at Binghamton University. Please complete the following information honestly.

1=strongly disagree-----2=somewhat disagree-----3=neither agree nor disagree-----
4=somewhat agree-----5=strongly agree

1. My sleeping patterns at Binghamton University are similar to my sleeping habits back home.
2. I think academic success is important to my overall well-being.
3. I do not think I have experienced any change in my overall well-being since coming to Binghamton University.
4. I think a strong, reliable social support network is important for my overall well-being.
5. I feel Binghamton University cares about my physical health.
6. I feel Binghamton University wants me to have a healthy diet.
7. I feel Binghamton University makes it easy for me to eat healthily.
8. I feel Binghamton University makes an effort to ensure I succeed academically.
9. I feel Binghamton University makes an effort to ensure I feel welcomed.
10. I feel Binghamton University attempts to make health resources known to me.
11. I feel Binghamton University cares about my overall well-being.

Block 15- End of Survey

Would you like to enter into the chance to win one of two \$50 Visa gift cards as compensation for participating in this survey?

Yes

No

(If yes- redirected to separate survey)

(If no- end survey)

Separate survey

Thank you for participating in the study. As mentioned earlier, please enter your Binghamton University email in the line below to be entered to win one of two \$50 gift cards (one chance per email, one submission per participant). You will be contacted via

email if you have won. Your email cannot be associated with your responses to the previous survey.

Please contact Liam Lane (llane1@binghamton.edu) with any questions, comments or concerns regarding this study.

Your Binghamton University email:

Appendix J: “Aspects of Well-being” Assessment

Influences of Well-being for Chinese International Students	
These statements may describe some of the problems that you have experienced since coming to the U.S. or other experiences relating to your health. Please circle the number that best represents your experiences using the scale: 1-strongly disagree, 2-disagree, 3-neither agree nor disagree, 4-agree, 5-strongly agree	
1.	I feel like I am constantly behind in my coursework.
2.	I consume larger portions in America than I do at home.
3.	I feel it hard to meet the expectations of my advisor.
4.	I do not have enough money to buy food that is similar to the food I have in my home country.
5.	I make sure that I have nutritionally balanced meals.
6.	I do not know how to establish friendships with American people.
7.	Exercising allows me to de-stress.
8.	I enjoy engaging in some sort of physical activity.
9.	Since I have been in the United States I am generally satisfied with my life.
10.	I think exercise is important to my overall well-being.
11.	I do not know how to balance my studies and life.
12.	My drug/alcohol use increased when I moved to the U.S.
13.	I feel pressure to compete academically with my peers.
14.	I do not know where to go to get help with course material.
15.	I feel like a stranger in the US.
16.	I have a healthy eating pattern back home.
17.	I feel pressure from American students to drink alcohol (i.e. beer, wine, vodka, etc.).
18.	I feel pressure from American students to use drugs (i.e. marijuana, cigarettes, cocaine, etc.).

19. I find it difficult to find time to talk with my family.
20. I think my diet is important to my overall well-being.
21. I exercise more in the U.S. than I did at home.
22. I think that American students exercise too much.
23. I do not know how to communicate with people from different cultural backgrounds.
24. It is hard for me to integrate into the new culture.
25. I think my diet has an impact on my physical health.
26. I use drugs/alcohol as a way to cope with the stress of living in a new culture.
27. The American diet has significantly influenced my eating patterns.
28. I have a healthy eating pattern in the U.S.
29. Since living in the United States I think that I live a very happy life.
30. I worry about my time management skills.
31. I do not know where to get help when I have problems.
32. I feel trapped in small groups of Chinese people.
33. I feel that American students are obsessed with physical health.
34. Most of the time I cook my own meals.
<p>A. Add subscale items together to get a component score</p> <p>B. Subscales-</p> <ul style="list-style-type: none"> a. Academic pressure- 1, 3, 11, 13, 14, 30 b. Diet transitions- 2, 4, 27 c. Healthy eating awareness- 5, 16, 20, 28, 34 d. Social support- 6, 15, 19, 23, 24, 31, 32 e. Physical health awareness- 7, 8, 10, 25 f. Pressure to be active- 21, 22, 33 g. Substance use- 12, 17, 18, 26 h. Life satisfaction- 9, 29

Perceptions of Campus Resources

These statements look to address your perception of health-related resources on your college campus. Only if you respond “no” to question 1 should you continue onto the rest of the survey. Please circle the number that best represents your experiences using the scale:

1-strongly disagree, 2-disagree, 3-neither agree nor disagree, 4-agree, 5-strongly agree

1. Have you ever accessed a campus resource concerning or relating to your overall well-being? (yes or no)

2. I do not know how to get an appointment.

3. I feel uncomfortable asking fellow students or university staff for help.

4. I feel campus healthcare professionals would not understand me.

5. I think my problem is not important.

6. I didn't know there was such a service.

7. I didn't know the service was free.

8. I thought accessing a campus resource might influence my academic results.

9. I thought campus health professionals wouldn't be able to help me

10. I feel more comfortable going to a location off-campus than an on-campus resource

11. Someone told me that the campus resources would not help me.

12. Someone advised me to go off campus instead of going to an on-campus resource.

13. Free response:

Effectiveness of University Efforts to Support Well-being

These questions look to address the effectiveness of university efforts to support well-being among students. Please circle the number that best represents your experiences using the scale:

1-strongly disagree, 2-disagree, 3-neither agree nor disagree, 4-agree, 5-strongly agree

1. I feel [insert college/ university name] cares about my physical health.

2. I feel [insert college/ university name] wants me to have a healthy diet.

3. I feel [insert college/ university name] makes it easy for me to eat healthily.

4. I feel [insert college/ university name] makes an effort to ensure I succeed academically.
5. I feel [insert college/ university name] makes an effort to ensure I feel welcomed.
6. I feel [insert college/ university name] attempts to make health resources known to me.
7. I feel [insert college/ university name] cares about my overall well-being.

References

- Abe, J., Talbot, D. M., & Gellhoed, R. (1998). Effects of a peer program on international student adjustment. *Journal of College Student Development*, 39, 539-547.
- Akhtar, M., & Kröner-Herwig, B. (2015). Acculturative stress among international students in context of socio-demographic variables and coping styles. *Current psychology*, 34(4), 803-815.
- Aloba, O. O., Adewuya, A. O., Ola, B. A., & Mapayi, B. M. (2007). Validity of the Pittsburgh Sleep Quality Index (PSQI) among Nigerian university students. *Sleep Medicine*, 8(3), 266-270.
- Bai, J. (2012). *Development and validation of the acculturative stress scale for chinese college students in the united states (ASSCS)* (Order No. 3610096). Available from ProQuest Dissertations & Theses Global. (1497967233). Retrieved from <http://proxy.binghamton.edu/login?url=https://search.proquest.com/docview/1497967233?accountid=14168>
- Bai, J. (2016). Development and validation of the Acculturative Stress Scale for Chinese College Students in the United States (ASSCS). *Psychological Assessment*, 28(4), 443.
- Barnett, N. P., Ott, M. Q., Rogers, M. L., Loxley, M., Linkletter, C., & Clark, M. A. (2014). Peer associations for substance use and exercise in a college student social network. *Health Psychology*, 33(10), 1134-1142.
- Belizaire, L. S., & Fuertes, J. N. (2011). Attachment, coping, acculturative stress, and quality of life among Haitian immigrants. *Journal of Counseling & Development*, 89(1), 89-97.
- Berry, J. W. (1997). Immigration, acculturation, and adaptation. *Applied psychology*, 46(1), 5-34.
- Berry, J. W., Kim, U., Minde, T., & Mok, D. (1987). Comparative studies of acculturative stress. *International migration review*, 21(3), 491-511.
- Bertram, D. M., Poulakis, M., Elsasser, B. S., & Kumar, E. (2014). Social support and acculturation in Chinese international students. *Journal of Multicultural counseling and development*, 42(2), 107-124.
- Binghamton University Office of Undergraduate Admissions. (2020). Class Profile. Retrieved March 26, 2020, from <https://www.binghamton.edu/admissions/academics/profile.html>
- Broman, C. L. (2005). Stress, race and substance use in college. *College Student Journal*, 39(2), 340-353.
- Bruening, M., Woerden, I. V., Todd, M., & Laska, M. N. (2018). Hungry to learn: the prevalence and effects of food insecurity on health behaviors and outcomes over time among a diverse sample of university freshmen. *International Journal of Behavioral Nutrition and Physical Activity*, 15(1).

- Buboltz Jr, W. C., Brown, F., & Soper, B. (2001). Sleep habits and patterns of college students: a preliminary study. *Journal of American college health*, 50(3), 131-135.
- Buysse, D. J., Reynolds, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry res*, 28(2), 193-213.
- Carmack, H. J., Bedi, S., & Heiss, S. N. (2016). International students, university health centers, and memorable messages about health. *Journal of International Students*, 6(1), 52-72.
- Cemalcilar, Z., & Falbo, T. (2008). A longitudinal study of the adaptation of international students in the United States. *Journal of Cross-Cultural Psychology*, 39(6), 799-804.
- Costello, A. B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical assessment, research, and evaluation*, 10(1), 7.
- Crockett, L. J., Iturbide, M. I., Torres Stone, R. A., McGinley, M., Raffaelli, M., & Carlo, G. (2007). Acculturative stress, social support, and coping: Relations to psychological adjustment among Mexican American college students. *Cultural Diversity and Ethnic Minority Psychology*, 13(4), 347.
- Dusselier, L., Dunn, B., Wang, Y., Shelley il, M. C., & Whalen, D. F. (2005). Personal, health, academic, and environmental predictors of stress for residence hall students. *Journal of American college health*, 54(1), 15-24.
- Eichelberger, L. (2007). SARS and New York's Chinatown: the politics of risk and blame during an epidemic of fear. *Social Science & Medicine*, 65(6), 1284-1295.
- Enders, C. K., & Bandalos, D. L. (2001). The relative performance of full information maximum likelihood estimation for missing data in structural equation models. *Structural equation modeling*, 8(3), 430-457.
- Garnweidner, L. M., Terragni, L., Pettersen, K. S., & Mosdøl, A. (2012). Perceptions of the host country's food culture among female immigrants from Africa and Asia: Aspects relevant for cultural sensitivity in nutrition communication. *Journal of nutrition education and behavior*, 44(4), 335-342.
- Gliem, J. A., & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education.
- Guo, S., Sun, W., Liu, C., & Wu, S. (2016). Structural validity of the Pittsburgh sleep quality index in Chinese undergraduate students. *Frontiers in psychology*, 7, 1126.
- Han, X., Han, X., Luo, Q., Jacobs, S., & Jean-Baptiste, M. (2013). Report of a mental health survey among Chinese international students at Yale University. *Journal of American College Health*, 61(1), 1-8.

- Hansen, H. R., Shneyderman, Y., McNamara, G. S., & Grace, L. (2018). Acculturative stress and native and US culture immersion of international students at a community college. *Journal of International Students*, 8(1), 215-232.
- Heppner, P. P., Cook, S. W., Wright, D. M., & Johnson, W. C. (1995). Progress in resolving problems: A problem-focused style of coping. *Journal of Counseling Psychology*, 42(3), 279.
- Ho, R. T., & Fong, T. C. (2014). Factor structure of the Chinese version of the Pittsburgh Sleep Quality Index in breast cancer patients. *Sleep medicine*, 15(5), 565-569.
- Holguin, L. E. (2011). *Substance use and social networks of international students* (Order No. 1495485). Available from ProQuest Dissertations & Theses Global. (877593974). Retrieved from <http://proxy.binghamton.edu/login?url=https://search.proquest.com/docview/877593974?accountid=14168>
- Hunt, E. N., Martens, M. P., Wang, K. T., & Yan, G. C. (2017). Acculturative stress as a moderator for international student drinking behaviors and alcohol use consequences. *Journal of ethnicity in substance abuse*, 16(3), 263-275.
- Hwang, W. C., & Ting, J. Y. (2008). Disaggregating the effects of acculturation and acculturative stress on the mental health of Asian Americans. *Cultural Diversity and Ethnic Minority Psychology*, 14(2), 147.
- International Student and Scholar Services (ISSS). (2020). International student enrollment at Binghamton University - International Student and Scholar Services: Binghamton University. Retrieved March 29, 2020, from <https://www.binghamton.edu/international/student-scholar-services/resources-1/demographics/index.html>
- Institute of International Education. (2019). *Open Doors: 2019 Fast Facts* . Retrieved from <https://www.iie.org/Research-and-Insights/Open-Doors/Fact-Sheets-and-Infographics/Fast-Facts>
- Institute of International Education. (2010). *Open Doors: 2010 Fast Facts* . Retrieved from <https://www.iie.org/Research-and-Insights/Open-Doors/Fact-Sheets-and-Infographics/Fast-Facts>
- Joseph, S., Linley, P. A., Harwood, J., Lewis, C. A., & McCollam, P. (2004). Rapid assessment of well-being: The short depression-happiness scale (SDHS). *Psychology and psychotherapy: Theory, research and practice*, 77(4), 463-478.
- Kaiser, H. F. (1970). A second generation little jiffy. *Psychometrika*, 35(4), 401-415.
- Kim, Y. K., & Cronley, C. (2018). Acculturative stress and binge drinking among international students in the United States: Resilience and vulnerability approaches. *Journal of American college health*, 1-12.

- Kim, J., & Kim, H. (2013). The experience of acculturative stress-related growth from immigrants' perspectives. *International Journal of Qualitative studies on Health and Well-being*, 8(1), 21355.
- Kim, Y. K., Maleku, A., Lemieux, C. M., Du, X., & Chen, Z. (2019). Behavioral Health Risk and Resilience among International Students in the United States: A Study of Socio-demographic Differences. *Journal of International Students*, 9(1), 282-305.
- Kim, J., Suh, W., Kim, S., & Gopalan, H. (2012). Coping strategies to manage acculturative stress: Meaningful activity participation, social support, and positive emotion among Korean immigrant adolescents in the USA. *International journal of qualitative studies on health and well-being*, 7(1), 18870.
- Kuo, B. C. (2014). Coping, acculturation, and psychological adaptation among migrants: a theoretical and empirical review and synthesis of the literature. *Health Psychology and Behavioral Medicine: An Open Access Journal*, 2(1), 16-33.
- Lam, C. L., Tse, E. Y., & Gandek, B. (2005). Is the standard SF-12 Health Survey valid and equivalent for a Chinese population? *Quality of Life Research*, 14(2), 539-547.
- Lanaway, D. (2017). Perceived racial discrimination and motivations for illicit substance use among black college student drug users. *Drug and Alcohol Dependence*, 171.
- Lange-Smith, G., & Van Scyoc, S. (2017). Comparison of International Student's Dietary Intake in the United States versus in the Student's Home Country.
- Lantrip, C., Mazzetti, F., Grasso, J., Gill, S., Miller, J., Haner, M., ... & Awad, G. (2015). Ethnic identity and acculturative stress as mediators of depression in students of Asian descent. *Journal of College Counseling*, 18(2), 144-159.
- Li, S., & Zizzi, S. (2018). A Case Study of International Students' Social Adjustment, Friendship Development, and Physical Activity. *Journal of International Students*, 8(1).
- Lin, C. (2006). Culture shock and social support: An investigation of a Chinese student organization on a US campus. *Journal of Intercultural Communication Research*, 35(2), 117-137.
- Liu, M. (2009). Addressing the mental health problems of Chinese international college students in the United States. *Advances in Social Work*, 10(1), 69-86.
- Lowry, M., Dean, K., & Manders, K. (2010). The link between sleep quantity and academic performance for the college student. *Sentience*, 3(2), 16-9.
- Mallinckrodt, B., & Leong, F. T. (1992). International graduate students, stress, and social support. *Journal of College Student Development*, 33(1), 71-78.
- Mesidor, J. K., & Sly, K. F. (2016). Factors That Contribute to the Adjustment of International Students. *Journal of International Students*, 6(1), 262-282.

- Nasirudeen, A. M. A., & Josephine, K. W. N. (2019). Acculturative stress among Asian international students in Singapore. *Journal of International Students*, 2014 Vol. 4 (1), 4(4), 363-373.
- Oberg, K. (1960). Cultural shock: Adjustment to new cultural environments. *Practical anthropology*, (4), 177-182.
- O'Reilly, A., Ryan, D., & Hickey, T. (2010). The psychological well-being and sociocultural adaptation of short-term international students in Ireland. *Journal of college student development*, 51(5), 584-598.
- Ogunsanya, M. E., Bamgbade, B. A., Thach, A. V., Sudhapalli, P., & Rascati, K. L. (2018). Determinants of health-related quality of life in international graduate students. *Currents in Pharmacy Teaching and Learning*, 10(4), 413-422.
- Pan, J. Y., Wong, D. F. K., Joubert, L., & Chan, C. L. W. (2008). The protective function of meaning of life on life satisfaction among Chinese students in Australia and Hong Kong: A cross-cultural comparative study. *Journal of American College Health*, 57(2), 221-232.
- Pan, J. Y., Yue, X., & Chan, C. L. (2010). Development and validation of the Acculturative Hassles Scale for Chinese Students (AHSCS): An example of mainland Chinese university students in Hong Kong. *Psychologia*, 53(3), 163-178.
- Pan, Y. L., Dixon, Z., Himburg, S., & Huffman, F. (1999). Asian students change their eating patterns after living in the United States. *Journal of the American Dietetic Association*, 99(1), 54-57.
- Poyrazli, S., Kavanaugh, P. R., Baker, A., & Al-Timimi, N. (2004). Social support and demographic correlates of acculturative stress in international students. *Journal of College Counseling*, 7(1), 73-82.
- Rawlings, M., & Sue, E. (2013). Preparedness of Chinese students for American culture and communicating in English. *Journal of International Students*, 3(1), 29-40.
- Ra, Y.-A. (2016). Social Support and Acculturative Stress Among Korean International Students. *Journal of College Student Development*, 57(7), 885-891.
- Rosenthal, D. A., Russell, J., & Thomson, G. (2008). The health and wellbeing of international students at an Australian university. *Higher Education*, 55(1), 51.
- Russell, J., Thomson, G., & Rosenthal, D. (2008). International student use of university health and counselling services. *Higher Education*, 56(1), 59-75.
- Sa, J., Seo, D. C., Nelson, T. F., & Lohrmann, D. K. (2013). Cigarette smoking among Korean international college students in the United States. *Journal of American College Health*, 61(8), 454-467.
- Sandhu, D. S., & Asrabadi, B. R. (1994). Development of an acculturative stress scale for international students: Preliminary findings. *Psychological reports*, 75(1), 435-448.

- Satia-Abouta, J., Patterson, R. E., Neuhouser, M. L., & Elder, J. (2002). Dietary acculturation: applications to nutrition research and dietetics. *Journal of the American Dietetic Association*, 102(8), 1105-1118.
- Satia, J. A., Patterson, R. E., Taylor, V. M., Cheney, C. L., Shiu-Thornton, S., Chitnarong, K., & Kristal, A. R. (2000). Use of qualitative methods to study diet, acculturation, and health in Chinese-American women. *Journal of the American Dietetic Association*, 100(8), 934-940.
- Siu, J. Y. M. (2008). The SARS-associated stigma of SARS victims in the post-SARS era of Hong Kong. *Qualitative health research*, 18(6), 729-738.
- Skromanis, S., Cooling, N., Rodgers, B., Purton, T., Fan, F., Bridgman, H., ... Mond, J. (2018). Health and Well-Being of International University Students, and Comparison with Domestic Students, in Tasmania, Australia. *International Journal of Environmental Research and Public Health*, 15(6), 1147.
- Stappenbeck, C. A., Quinn, P. D., Wetherill, R. R., & Fromme, K. (2010). Perceived Norms for Drinking in the Transition From High School to College and Beyond. *Journal of Studies on Alcohol and Drugs*, 71(6), 895-903.
- Stoewen, D. L. (2017). Dimensions of wellness: Change your habits, change your life. *The Canadian Veterinary Journal*, 58(8), 861.
- Taliaferro, L. A., Muehlenkamp, J. J., & Jeevanba, S. B. (2019). Factors associated with emotional distress and suicide ideation among international college students. *Journal of American college health*, 1-5.
- Unni, E. J., Madrid, L., Oderda, G., & Saokaew, S. (2015). Quality of life of pharmacy students in the United States. *Currents in Pharmacy Teaching and Learning*, 7(6), 753-763.
- Urzúa, A., Ferrer, R., Gaete, V. C., Aragón, D. N., Labraña, I. R., & Poblete, B. T. (2017). The influence of acculturation strategies in quality of life by immigrants in Northern Chile. *Quality of Life Research*, 26(3), 717-726.
- Von Ah, D., Ebert, S., Ngamvitroj, A., Park, N., & Kang, D. H. (2004). Predictors of health behaviours in college students. *Journal of advanced nursing*, 48(5), 463-474.
- Wang, S. C., Schwartz, S. J., & Zamboanga, B. L. (2010). Acculturative stress among Cuban American college students: Exploring the mediating pathways between acculturation and psychosocial functioning. *Journal of Applied Social Psychology*, 40(11), 2862-2887.
- Wang, K. T., Heppner, P. P., Fu, C. C., Zhao, R., Li, F., & Chuang, C. C. (2012). Profiles of acculturative adjustment patterns among Chinese international students. *Journal of counseling psychology*, 59(3), 424.
- Ware Jr, J. E., Kosinski, M., & Keller, S. D. (1996). A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Medical care*, 220-233.

- Wei, M., Heppner, P. P., Mallen, M. J., Ku, T. Y., Liao, K. Y. H., & Wu, T. F. (2007). Acculturative stress, perfectionism, years in the United States, and depression among Chinese international students. *Journal of Counseling Psychology*, 54(4), 385.
- Wei, M., Ku, T. Y., Russell, D. W., Mallinckrodt, B., & Liao, K. Y. H. (2008). Moderating effects of three coping strategies and self-esteem on perceived discrimination and depressive symptoms: A minority stress model for Asian international students. *Journal of Counseling Psychology*, 55(4), 451.
- Wei, M., Liao, K. Y. H., Heppner, P. P., Chao, R. C. L., & Ku, T. Y. (2012). Forbearance coping, identification with heritage culture, acculturative stress, and psychological distress among Chinese international students. *Journal of counseling psychology*, 59(1), 97.
- Windle, M., Haardörfer, R., Lloyd, S. A., Foster, B., & Berg, C. J. (2017). Social Influences on College Student Use of Tobacco Products, Alcohol, and Marijuana. *Substance Use & Misuse*, 52(9), 1111–1119.
- World Health Organization (WHO). (2020). Coronavirus Disease (COVID-19) - events as they happen. Retrieved April 2, 2020, from <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen>
- Yan, K., & Berliner, D. C. (2011). Chinese international students in the United States: Demographic trends, motivations, acculturation features and adjustment challenges. *Asia Pacific Education Review*, 12(2), 173-184.
- Yeh, C. J., & Inose, M. (2003). International students' reported English fluency, social support satisfaction, and social connectedness as predictors of acculturative stress. *Counselling Psychology Quarterly*, 16(1), 15-28.
- Yip, K. S. (2005). Chinese concepts of mental health: Cultural implications for social work practice. *International Social Work*, 48(4), 391-407.
- Yong, A. G., & Pearce, S. (2013). A Beginner's Guide to Factor Analysis: Focusing on Exploratory Factor Analysis. *Tutorials in Quantitative Methods for Psychology*, 9(2), 79–94.
- Zhang, J. (2018). *Acculturative stress, english proficiency, social support, and coping strategies among chinese international students* (Order No. 10816812). Available from ProQuest Dissertations & Theses Global. (2124053575). Retrieved from <http://proxy.binghamton.edu/login?url=https://search.proquest.com/docview/2124053575?accountid=14168>
- Zhang-Wu, Q. (2018). Chinese International students' experiences in American higher education institutes: A critical review of the literature. *Journal of International Students*, 8(2), 1173-1197.

- Zheng, B., Li, M., Wang, K. L., & Lv, J. (2016). Analysis of the reliability and validity of the Chinese version of Pittsburgh sleep quality index among medical college students. *Beijing da xue xue bao. Yi xue ban= Journal of Peking University. Health sciences*, 48(3), 424-428.
- Zheng, K. (2016). *Acculturative stress, attachment style and coping style of mainland chinese international students in the united states* (Order No. 10473972). Available from ProQuest Dissertations & Theses Global. (1877987000). Retrieved from <http://proxy.binghamton.edu/login?url=https://search.proquest.com/docview/1877987000?accountid=14168>

