Evaluation of a Universal Internet-based Mental Health Prevention Class to Enhance Protective Factors and Decrease Symptomatology of College Students: A Closer Look at Asian International Students

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Abstract

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Entering college is an important life stage and often stressful transition for young adults. This stress is compounded for international students, who are typically studying in an unfamiliar country and burdened with the additional stressors of adjusting to cultural differences and navigating higher education in the United States. More recently, the COVID-19 pandemic has exacerbated these existing stressors, placing international students who study in the United States at an even greater disadvantage. A review of literature indicates an increased risk of mental health issues among college students and highlights these unique stressors as a critical determinant of Asian international college students' well-being.

With the pressing need to ensure a sustainable impact on the greatest number of Asian international college students in the United States, there is a need for universities to provide universal preventive intervention in addressing key psychological factors associated with these unique stressors to promote positive transitions and adjustment of Asian international college students to university life. The aim of this study is to evaluate the effectiveness of a 10-week internet-based mental health prevention class (titled "*Resilience and Wellness for College and Beyond" - RWCB*) with supervised skill practice that focuses on reducing psychological distress, improving resilience, increasing a sense of belonging, and promoting overall well-being. The sample consists of 153 U.S. and 46 Asian international college students from a public research university in the Pacific Northwest.

The study results of RWCB class are associated with higher post-class sense of belonging and subjective well-being for overall sample immediately following the class but demonstrated mixed results for Asian American and Asian international students. Interestingly, the results of hierarchal linear regression suggested that supervised skill coaching was found to contribute to the success of predicting subjective well-being for the Asian international students. In addition, post-class sense of belonging was found to have a unique effect on acculturative stress. Despite this study's limitations, the current findings illustrate the importance of further investigation into the integration of mental health prevention programming into their coursework. The purpose of this study is to provide a comprehensive lens for institutions to better understand the challenges impacting college students' mental health and discuss the importance of collaboration across university systems to establishing meaningful and sustainable programming to students in coping with their adjustment to college. Future research is also needed for the university to adequately

develop culturally appropriate practices for supporting the mental health and wellbeing of Asian international students on university campuses.

Keywords: Asian international students, school belonging, resilience, subjective well-being

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Chapter 1: Introduction

Background of the Study

Entering college is an important and often stressful transition for young adults (Huang et al., 2018; Pedrelli et al., 2015). There is increasing attention being given to this developmentally crucial period, recognizing that students face multiple transitions, including leaving their home state, making their own life decisions, interacting with individuals from diverse backgrounds, and navigating less-structured learning environments (Conley et al., 2013). This is even more relevant for traditional college students, those who enter college at age 17 or 18 than nontraditional college students. For traditional age college students (age 18-24), entering college is a critical developmental stage at a time when they struggle with *Identity* versus *Role Confusion* evolving into a stage of *Intimacy* versus *Isolation* (Erikson, 1993). While adapting to greater independence and responsibility, the transitions from late adolescence to emerging young adulthood can be challenging psychosocially, academically, and financially (Arnett, 2000). With many stressors and transitional events, college students fall within the age range when the onset of common mental health problems occurs (Liu et al., 2019). This crucial period deserves attention for providing better care for college students with increased vulnerability for developing a wide range of mental health challenges (Liu et al., 2019).

Given that the initial experience of college life is demanding and requires a lot of adjustment to new environments, many students are at increased risk of mental and emotional issues such as anxiety, mood, and suicidality. According to the 2019 annual report from the Association for University and College Counseling Center Directors (AUCCCD), findings indicate that college counseling centers are serving increasing numbers of students with variety of mental health problems, on average, 12.3% more appointments in 2019 as compared to the

previous year (LeViness et al., 2019). Among 562 counseling centers across the U.S., 87.3% of counseling center directors reported an increase in demands for counseling services in the past year and the most frequent concern for counseling center clients was anxiety (60.7%), followed by depression (48.6%), stress (47%), family concerns (29%), relationship problems (27%), academic difficulties (26.2%), sleep disturbance (17.7%), social isolation/loneliness (17.5%), trauma (17.2%), adjusting to a new environment (17.0%), and suicidal thoughts (14.4%).

Consistent with findings from the AUCCCD 2019 annual report, Benton and his colleagues (2003) reported that the number of students presenting concerns related to depression who sought college counseling services doubled over a 13-year period, and the number of students reporting suicidal ideation tripled during the same time period. Several other studies also investigating anxiety (Pedrelli et al., 2015), depression (Ibrahim et al., 2013), and suicidality (Pedrelli et al., 2015; Wolitzky-Taylor et al., 2020) among U.S college students have been conducted, and trend analyses indicate that mental health problems are on the rise for this population.

Over the last two decades, the surging cultural diversity in the composition of the U.S. population has heightened the importance of the higher education system in accommodating the educational and psychological needs among diverse populations, including international students (Cho & Yu, 2015). The phenomenon is further highlighted by the fact that international students' enrollments have ballooned nearly 45% from 1998 to 2019 in U.S. higher education settings (Institute of International Education, IIE, 2019), including students as undergraduate, graduate, non-degree, and optional practical training. Specifically, international undergraduate students total 431,930 in the 2018-2019 academic year in the United States. This rise of international students in the United States is expected to continue and has prompted universities to facilitate

more positive adjustment and educational experiences for international students (Martirosyan et al., 2019).

International college students constitute an increasingly relevant and vital source of diversity on college campuses, with over a million international college students in the United States, according to the IIE (2019). International students, in particular, deal with a uniquely challenging transition to college because of difficulty with homesickness, cultural differences, role conflicts, social integration, English proficiency, and problems in daily life tasks (Hendrickson et al., 2011; Smith & Khawaja, 2011) on top of the usual academic, social, emotional, functional, and interpersonal transitions that are common for college students (Gerdes & Mallinckrodt, 1994). In recent years, research has reported heightened levels of psychological distress within the international student population (Bayram & Bilgel, 2008; Bruffaert et al., 2018). Poyrazli (2015) reported that the top three concerns of 198 international students at the Pennsylvania State University were academic (71%), career (60%), and stress (43%). In this study, it is important to highlight the experiences of depression, where approximately one out of every five international students indicated experiencing concerns related to depression, not including students who had sought services at the counseling center.

Among the international students who enrolled in universities in the United States, Asian students constitute one of the largest groups (Baer & Martel, 2020). As the number of Asian international students (AISs) grows, the need for more ethnically sensitive study of this population becomes critical. Wang et al. (2012) pointed out that a significant methodological concern in studying international students is the heterogeneity among this diverse group from more than 200 countries with different languages, cultures, and worldviews. According to the Open Doors Report (IIE, 2019), more than half of all international undergraduate students come

from Asia, with the largest representation from China and South Korea. Studies have shown several areas in which AISs are likely to experience adjustment issues: language barriers, financial problems, different educational systems, acculturation, and discrimination (Yi et al., 2003). Overall, Yeh and Inose (2003) reported that AISs experience more acculturative stress than their counterparts from Europe. This finding is not surprising given that AISs experience larger cultural differences, which may require more adjustment efforts leading to higher levels of acculturative stress (Ye, 2006). AISs who attend predominately white institutes (PWI) in the United States also need to cope with cultural differences and experience more psychological symptoms associated with experiences of racially or linguistically related discrimination (Wei et al., 2008). East Asian international students who experience discrimination report higher levels of depression, anxiety, post-traumatic stress symptoms, suicidal ideation, and psychological distress (Wei et al., 2015; Wei et al., 2012).

Problem Statement

Researchers have found that AISs often experience mental health concerns (Wei et al., 2015; Wei et al., 2012) which is compounded by the fact that they often underutilize counseling services. Moreover, despite the large representation of AISs in the U.S., they have received limited attention from college researchers regarding mental health services (Zhang & Goodson, 2011). Many studies of international students contain samples of both undergraduate and graduate students enrolled in U.S. universities. However, undergraduate and graduate students likely contend with very different psychological concerns. For instance, in one study by Yi and her colleagues (2013), undergraduate students reported that academic, anxiety, and depression were their three major concerns. In contrast, graduate students identified that they suffered more from depression, time management, and relationship problems with romantic partners (Yi et al.,

2003). Zhang and Goodson (2011) found that only three out of sixty-four studies from 1990 to 2009 had solely undergraduate international student samples. While studying in the United States, international undergraduate students in particular, deal with a uniquely challenging transition to college because of difficulty with language proficiency (Yeh & Inose, 2003), acculturative stress (Li & Lin, 2014), homesickness, financial hardships, and problems in daily life tasks (Hendrickson et al., 2011; Smith & Khawaja, 2011). At the same time, domestic students may only have to tackle the traditional challenges of transitioning into college. These additional cultural barriers and challenges often take a heavy toll on international students' mental health (Chen et al., 2020).

Among limited research on Asian international students' mental health, very few researchers developed evidence-based strategies within a multi-tiered system of support (i.e., universal prevention, targeted group intervention, intensive individualized intervention) to reduce emotional and psychological distress and aid the adjustment of AISs to American higher education systems and help them succeed in college (Brunsting et al., 2018; Smith & Khawaja, 2011). Moreover, most of the previous researchers on AISs' mental health focused on depression and anxiety as the sole indicators of AISs' mental health. Although depression and anxiety are becoming increasingly prevalent among the college student population, it would be insufficient to provide a holistic view of mental health by only examining these levels of psychological distress. In other words, it is critical to acknowledge the importance of multidimensions in mental health and move beyond a singular focus on problems. A key aspect of student mental health promotion is addressing the strengths and skills that help students flourish in college and beyond (Antaramian, 2015; Seligman & Csikszentmihalyi, 2000).

Finally, there is a pressing need to ensure a lasting impact on the greatest number of Asian international college students in the U.S. There is a growing body of literature discussing the relationship between acculturative stress and psychological distress of Asian international college students (Han et al., 2017; Tian et al., 2019; Xiong, 2018); however, there has been limited studies addressing the utility of protective factors in college settings to improve psychoeducational services for Asian international college students (Xiong, 2018). For example, resilience has been associated with adapting to the university environment and recovering from adversity to maintain a relatively stable, healthy level of psychological functioning (Du & Wei, 2015). Among university students, resilience has been shown to be a significant predictor of successful coping. That is, higher levels of resilience have been associated with lower levels of psychological distress (Pidgeon et al., 2014). Next, a sense of belonging has been defined as a sense of being recognized for one's abilities within the institution, a sense of commitment to one's educational institution, and the perception of fitting in with peers (Goodenow, 1993). In addition, a sense of belonging is significantly associated with positive academic, social, and psychological outcomes (Anderman, 2003; Goodenow & Grady, 1993). While it is well established that student's sense of belonging is vital for their academic, social, and psychological well-being, there is little research examining how AISs' sense of belonging on PWI campuses affects their mental health. Importantly, evidence also shows that a positive perception of belonging on campus is positively associated with students' decisions to seek help and disclose their mental health concerns (Pott, 2017). Due to an increasingly diverse student body, adapting higher education services to the needs of students from various backgrounds and cultures effectively and responsively is a central focus for educators (Sulkowsk & Joyce, 2012).

Significance of the Study

College student mental health and how campuses respond are increasingly pressing issues on many university campuses across the United States (Beiter et al., 2015; Lipson et al., 2019). According to the 2019 annual report from the Association for University and College Counseling Center Directors (AUCCCD), the top five most frequent concerns for counseling center clients were anxiety, depression, stress, family concerns, and relationship problems. Yakushko et al. (2008) found that the most common presenting concerns among international students who sought help at the counseling center were relationship issues (22%), followed by depression (15%), isolation and loneliness (7%), and anxiety (7%).

While international students struggle with similar mental health issues as their domestic counterparts (Poyrazli, 2015), research findings showed that international students are less likely to seek help from counseling services than their domestic peers (Han et al., 2013; Williams et al., 2018). Nilsson et al. (2004) mentioned that only 2.6% of university counseling center clients were international students. In their study, 38% of the international students did not attend follow-up counseling sessions after the initial intake session. Similarly, another study found only 1.8% of the total international students sought help at the counseling center at a particular college campus during a 5-year period (Yakushoko et al., 2008). In particular, AISs sought out fewer mental health services and were less willing to seek help than their domestic counterparts and other international students (Eisenberg et al., 2007). Despite the continuously increasing number of Asian international undergraduate students in the United States, only a limited number of empirical studies have focused on this population in the utilization of mental health services, highlighting the necessity for further research to understand the critical factors influencing the

help-seeking behaviors of this unique population and cultural considerations for effective intervention (Liu, 2009)

Studying in an unfamiliar country can be a difficult transition for Asian international students, characterized by challenges in adjusting to higher education in the United States. A review of the literature indicates that academic, socio-cultural, psychological, and personal concerns are critical aspects of Chinese international college students' lived experiences (Wei et al., 2012; Yan & Berliner, 2011). International students are trying to learn and achieve in the host culture while managing stress-related psychological difficulties, such as relating to peers and adapting to new role adaptations. If Asian international college students cannot adapt to their new roles, psychological concerns such as alienation, anxiety, depression, academic problems, inability to sleep well, low self-esteem, and suicidal intentions often arise (Wei et al., 2012; Yan & Berliner, 2011). Therefore, helping Asian international undergraduate students successfully adjust to U.S. culture and higher education should not be ignored. Given the importance of meeting the needs of the greatest number of Asian international undergraduate students, the university is uniquely positioned to play a vital role in identifying and addressing the key modifiable psychosocial factors impacting Asian international students' mental health. This study proposes that implementation of university-based preventive interventions targeting acculturative stress is an effective method of proactively promoting positive transition and adjustment of *all* Asian international undergraduate students to university life.

Chapter 2: Literature Review

This chapter aims to provide an overview for understanding the demands of college life and how they contribute to common mental health problems in college students. This section begins with mental health concerns among college students in the U.S. Further, mental health challenges and barriers among college students will be presented, emphasizing AISs. Next, there will be a focus on defining mental health based on a dual-factor model (DFM) of mental health, which incorporates both psychopathology and subjective well-being (SWB) as indicators of mental health. In addition, the hedonic theory of SWB and the overall conceptual framework of this study will be introduced. Importantly, resilience, sense of belonging, and acculturation research will provide the roadmap guiding the development of the proposed universal internet-based resilience preventive intervention. Finally, perspectives and core elements of school-based universal prevention implementation will be discussed.

Mental Health among College Students in the U.S.

Obtaining a college degree is considered an important step in life and lighting the path to success. According to the National Center for Education Statistics (NCES, 2020), the overall college enrollment rate has increased since 2000. Undergraduate enrollment in degree-granting 4-year postsecondary institutions rose from a total of 10.4 million to 10.9 million students between 2000 and 2018. The NCES also tracked a 2012 student cohort sample of U.S. students, finding that only 62 percent of those who began seeking a bachelor's degree at a 4-year institution earned their degrees at the same institution within 6 years. In other words, nearly one-third of the students who enrolled in college still had not earned a bachelor's degree at the six-year mark, and many of them dropped out during their 1st year (Bradburn & Carroll, 2002; Pittman & Richmond, 2008). Therefore, gaining a better understanding of what risk factors

contribute to adjustment concerns and identifying what factors may promote positive adjustment in college is imperative.

Several researchers pointed out transitional, academic, and social challenges can affect the mental health and well-being of college students (Cleary et al., 2011; Perry, 2016; Pittman & Richmond, 2008). The mental health of undergraduate students can influence their academic and professional success and the development of their psychological well-being in the long run (Liu et al., 2019). Indeed, there is evidence that the impact of college-related stressors on mental health presents as early as the first semester of college. Some researchers even found that students' level of depression, anxiety, and stress may be persistent throughout the years in college (Beiter et al., 2015). Although some researchers found that levels of depression decreased over time (Mey & Yin, 2015), they did not return to pre-university levels (Bewick et al., 2010). Findings from epidemiological research suggested that 12-50% of college students meet the criteria for at least one or more common mental disorders (Blanco et al., 2008; Bruffaerts et al., 2018; Hunt & Eisenberg, 2010; Verger et al., 2010). Seventy-five percent of those who have been diagnosed with a mental health disorder experienced their first onset before the age of 25 (Kessler et al., 2007). Even more noteworthy is that the probabilities of experiencing common mood disorders (i.e., depression and anxiety) increase throughout adolescence and reach a peak in early adulthood (Fusar-Poli, 2019; Kessler et al., 2007), making university students a distinctly vulnerable population.

The Prevalence and Severity of Mental Health Issues in College Students in the U.S.

There has been a sharp increase in the number of college students who experience serious mental health problems since 1990s (Kirsch et al., 2015). Although many students successfully navigate this transition to college, others experience long-term mental and emotional issues

(Pittman & Richmond, 2008). Research has documented that an estimated one in three students on college campuses meets the criteria for clinically significant mental health problems (Auerbach et al., 2018; Eisenberg et al., 2013). Notably, Lipson and his colleagues found that most of the data highlighting this trend of escalating psychopathology among college students has been drawn mainly from clinical samples (Lipson et al., 2019).

To capture a more complete picture, researchers analyzed national survey data from the Healthy Minds Study (HMS), the largest and most comprehensive study of mental health in the college population (Lipson et al., 2019). From 2007 to 2017, the web-based survey data documented mental health and service utilization from 196 U.S. campuses with 155,026 students. The authors found that mental health service utilization increased substantially over the course of a decade, from 19% to 34%. In a similar fashion, rates of diagnosed mental health conditions showed upward trends, with over one-third of students reporting a diagnosed condition during the 2016-2017 academic year. Significantly, they also found that rates of depression (from 24.8% to 29.9%) and suicidal ideation (from 5.8% to 10.8%) increased during this time. Similarly, Keyes et al. (2012) further examined the 2007 HMS and found that the prevalence of any mental disorder was 12.7% with the mental disorder most frequently reported being major depression (7.9%), followed by generalized anxiety (5.9%), and panic disorders (3.8%).

Anxiety and College Students. The Center for Collegiate Mental Health (CCMH) found the increasing prevalence of mental health problems, which reported year-over-year increases in the frequency of anxiety and depression in college students in the past eight years (CCMH, 2020). In addition, the category of anxiety in this study was expanded to 6 specific types, including generalized, social, test anxiety, panic attack, specific phobias, and unspecified/other.

Among the anxiety disorders, social phobia has an early age of onset (median age of onset between 7–14 years), while panic disorder, generalized anxiety disorders (GAD), and post-traumatic stress disorder (PTSD) have later onsets; GAD has often been associated with a later onset, usually young adulthood (Lijster et al., 2017). Pedrelli and colleagues (2015) also reported that anxiety disorders are the most prevalent psychiatric problem among college students, with approximately 11.9 % of college students suffering from an anxiety disorder. As has been previously discussed, anxiety can be caused by many changes occurring during emerging adulthood as well as the factors unique to the college campus. Anxiety has been shown to influence college students' academic performance and impact whether or not they will obtain their college degree (Pedrelli et al., 2015). In another study, college students expressed anxiety associated with changes in education mode during the pandemics (Browning et al., 2021). Overall, these findings highlight the need to provide college students with sufficient skills for managing their anxiety difficulties on campus and in their personal lives.

Depression and College Students. Depression is also one of the most common health problems for university students (Beiter et al., 2015; Ibrahim et al., 2013). Research conducted by Ibrahim et al. (2013) found accumulating evidence to suggest that depression represents a significant health concern in university populations; on average, nearly a third of students are affected. The authors' systematic review of studies among college students worldwide found that reported depression prevalence rates ranged from 10% to 85%, with a weighted mean prevalence of 30.6%, which is considerably higher than rates reported in general populations (Ibrahim et al., 2013). The transition to "emerging adulthood" represents a period of increased risk for the onset of depression due to a shift from the dependency of childhood and adolescence to independence in developing their individual identity in love, work, and world views (Arnett, 2000). During this

period, newly faced social and intellectual challenges may bring emotional pressures in life, leading to an increased risk for depression, anxiety, and stress (Arnett, 2000; Bayram & Bilgel, 2008). Survey data from the American College Health Association (ACHA) conducted in Spring 2019 suggested that the prevalence of clinically significant depression among university and college students is rising over time (ACHA, 2019), with 46.2% of college students reporting they felt so depressed that it was difficult to function any time within the last 12 months. Depression can lead to an accumulation of negative consequences throughout adult life and has been linked to unstable relationships, poor academic achievements, suicidal thoughts and attempts, detrimental behaviors (e.g., smoking, poor diet, lack of exercise, or poor sleep habits), and poorer work performance (Bruffaerts et al., 2018; Doom & Haeffel, 2013). Evidence indicates that a significant number of college students carry psychological and emotional issues with them to campus, and that these are exacerbated by the additional strains of college life. With multiple sources of stress in college life, these findings suggest that more attention should be given to identifying and preventing depression in university settings.

Suicidality and College Students. According to the National Center of Health Statistic Data, the suicide rate in general increased 35% from 1999 through 2018 (Hedegaard et al., 2021). Suicide is the 10th leading cause of death across the U.S population and is a major contributor to premature mortality as it ranks as the second leading cause of death for ages 10–34 (CDC, 2018). In addition, the three most common causes of death among college-aged students, ages 18 -24, are unintentional injury, suicide, and homicide (CDC, 2018). According to the most recent survey report from the CCMH, the self-reported lifetime prevalence rates of “threat to-self” characteristics (non-suicidal self-injury, 28.7%; serious suicidal ideation, 36.7%; and suicide attempts, 10.6%) increased for the ninth year in a row among college students receiving

counseling services. Significantly, 39.6% of undergraduates seeking treatment report some suicidal ideation within the last two weeks, yet notably, clinicians report suicidality as a presenting concern for just over 10% of students (CCMH, 2019). Given that many college students with suicidal ideation do not seek treatment, it is critical to employ gatekeeper prevention strategies (Pedrelli et al., 2015; Wolitzky-Taylor et al., 2020).

Research has reported heightened levels of psychological distress within the university student population (Bayram & Bilgel, 2008; Bruffaert et al., 2018; Misra, 2004). Previous research investigating common mental health problems among college students indicate that mental health concerns that are left untreated could result in adverse outcomes, including lower self-esteem, social withdrawal, poor academic performance, and, in some severe cases, suicide. Bruffaerts and colleagues (2018) found that around one-third of first-year college students reported problems with mental health in the previous 12 months, and their data also suggested that mental health problems are directly associated with lower academic performance. Previous studies report that depression and suicidal thoughts are related to a lower grade point average (De Luca et al., 2016; Mortier et al., 2015). In addition, low academic performance, in turn, is associated with dropout in the short-term and loss of human capital for societies in the long run (Freudenberg & Ruglis, 2007). Consistent with the finding, college students with mental disorders are twice as likely to drop out without receiving a degree (Hartley, 2010). Taken together, mental health problems among college students are not just a theoretical, clinical, or educational problem, but also a societal problem. Significantly, advocating for existing college infrastructure to play an active role in designing and implementing preventive interventions that target improvement of the campus environment is highly recommended (Bruffaert et al., 2018).

Furthermore, mental health problems also have a negative impact on later career trajectories and as well as a dramatic negative economic impact over the life span (Blanco et al., 2014; Huang et al., 2018). As a result, the need to understand the sources of stress among college students is important. Identifying and understanding sources of everyday stressors across college students can help increase the understanding of what intervention elements should be targeted to support their mental health.

Common Struggles and Stressors for this Transition

Many students, including domestic and international students, may encounter a variety of difficulties when they begin their post-secondary education (Cleary et al., 2011; Perry, 2016; Pittman & Richmond, 2008). While stress is inevitable in life, it is becoming more prevalent among undergraduate students (Lester, 2014; Liu et al., 2019). An extensive array of new life circumstances is involved in the shift to college life for many students, including several "firsts" such as managing finances, living independently, carrying responsibilities, and pursuing majors (Darling et al., 2007). In descriptions of the intricate relationship between individual students and their educational context, several pieces should be further explored to identify psychosocial supports, academic and life goals, sources of stress, and finances that may impact college students' psychological well-being over time.

First, many students leave their homes and distance themselves from their support networks, often for the very first time, (Cleary et al., 2011). In particular, incoming students such as freshmen, international students, and first-generation undergraduate students often experience homesickness and struggle with the transition to academic and personal life as it differs from their past experiences (de Araujo, 2011; Gardner, 2013; Perry, 2016; Pittman & Richmond, 2008). Homesickness has been reported significantly higher during the first year of higher

education and often leads to student attrition and failure to complete one's education (Thurber & Walton, 2012. College students' struggle with homesickness is therefore an important focus for universities to provide better care to promote the positive adjustment of newcomers (Thurber & Walton, 2012). The demands of adjusting to new surroundings lead many students to deal with new and unexpected circumstances that may engender a range of mental and emotional problems. Several studies pointed out that first-year American students, international students, and first-generation doctoral students all reported feelings of alienation or separation as a result of adapting to new environments (Burdett & Crossman, 2012; Gardner, 2013; Perry, 2016).

In addition to emotional and psychosocial issues, both international and American students often encounter challenges with their academic pursuits (Perry, 2016). Academics are an integral part of the life of all college students, and it can be filled with accumulated stressors. Grayson (2008) identified that 65% of domestic students report struggling with studying, while 74% of international students express similar difficulties with the same issue. Academic pressures of test taking, rigorous course workload, and meeting grade requirements have been shown to be significant sources of stress for students (Kumaraswamy, 2013). There are important outcomes riding on their successful performance in school. For example, their academic performances play a huge role in retaining financial aid, staying in school, achieving graduation, and even landing their first job (Vye et al., 2007). While academic rigor can be perceived as a positive challenge, potentially increasing learning capacity and competency, this stress can be detrimental to the student's mental health if coped with insufficiently (Beiter et al., 2015).

Regarding finances, money is also reported as one of the major stressors among college students (Britt et al., 2017; Heckman et al., 2014). Survey responses from the 2010 Ohio Student Financial Wellness Survey revealed that financial stress is widespread among college students,

with 71% of the sample reporting feeling stressed about personal finances (Heckman et al., 2014). The high level of stress is most likely a result of more than simply paying college tuition. For many students, college is the first time they live away from home and they are responsible for budgeting the cost of daily living expenses, such as food, clothing, rent, and bills (Lim et al., 2014).

Financial stress can also lead to psychological or emotional effects (Northern et al., 2010). Nearly one-third of college students reported on a national college health survey that finance issues cause high distress and 24% of students indicated this finance-related distress negatively affects their academic performance (ACHA, 2020). Further, research has documented the following adverse outcomes associated with financial stress: (1) anxiety (Andrews & Wilding, 2004; Heckman et al., 2014), (2) depression (Andrews & Wilding, 2004), (3) poor academic performance (Joo et al., 2008), (4) poor physical health (Northern et al., 2010), and (5) difficulty persisting towards degree completion (Joo et al., 2008; Robb et al., 2011).

Mental Health among Asian International Students in the U.S.

The review in the previous section serves as an overview for understanding the demands of college life and how it contributes to common mental health problems in college students. Domestic and international students encounter many similar challenges discussed previously when they begin their college journey, such as responsibilities and course work, changes in living, financial burdens, as well as in family and interpersonal relationships (Darling et al., 2007; Misra, 2004). Some of these difficulties are shared by a variety of groups, including first-year students, first-generation college students, and international students (Bruffaerts et al., 2018; Burdett & Crossman, 2012; Gardner, 2013; Perry, 2016). Although domestic and international students encounter common stressors in college, international students also face many unique

obstacles and are not able to easily access the same protective social support systems as their domestic student peers (Perry, 2016). The majority of international students are deprived of their resources of social support and familiar means of communication (Misra, 2004). In addition, college may be even more stressful for international students who have the added stress of using nonnative language in academic and social settings, learning different cultural norms, and navigating a new educational system in addition to academic preparation (Misra, 2004; Mori, 2000). Not surprisingly, international students who attend universities in the U.S. also need to cope with culturally specific concerns and tend to experience more psychological problems than their American peers (Mori, 2000; Spencer-Oatey & Xiong, 2006). The study conducted by Mitchell et al. (2007) found that all students had similar challenges, yet international students were more likely to be hospitalized for their mental health issues. These findings suggest that life in a foreign country is even more difficult, especially when the needs of international students are not necessarily being met.

Internationalization of American Colleges and Universities

According to the Institute of International Education (IIE), international college students constitute an increasingly relevant and important source of diversity on college campuses, with over a million international college students in the U.S. (2019). International students in the U.S. are defined as those who apply for student visas to enter the country and their immigration documents should be approved by the U.S. government (Wolf & Phung, 2019). From 1948 to 1949, only 25,464 international students were enrolled in US colleges and universities. Today, the number of international students has multiplied 43 times in comparison to 71 years ago, with representation of over 220 nationalities (IIE, 2019). Over the last two decades, the number of international students has ballooned from 490,933 in 1998-1999 to 1,095,299 in 2018-2019,

including students enrolled in universities as undergraduate (39%), graduate (35%), non-degree (6%), and optional practical training (after getting their degree, 20%). In the 2018-2019 school year, international students made up 5.5 percent of the total U.S. higher education population, making it the fourth consecutive year the U.S. has hosted more than one million international students (IIE, 2019).

Asian International Students' Enrollment in Higher Education in the United States

During the 2018-2019 academic year, the top 10 countries of origin of international students are China, India, South Korea, Saudi Arabia, Canada, Vietnam, Taiwan, Japan, Brazil, and Mexico (IIE, 2019). Among international students who enrolled in universities in the U.S., AISs constitute one of the largest groups (Baer, 2017). In 2018-2019, 758,076 Asian international students were enrolled in academic programs and optional practical training (OPT). Among all AISs, the top five countries of origin are China, India, South Korea, Vietnam, and Taiwan, representing approximately 60 percent of the total enrollment of international students in the U.S. (IIE, 2019). For the tenth consecutive year, China remained the largest source of international students in the U.S. in 2018-2019 with 369,548 students, making it 34% of the total international student body. All in all, the largest segment of international students was from South and East Asia (63%) (IIE, 2019). The report continued to highlight the competitiveness of higher education in the U.S. as a destination of choice for Asian international students.

International students make colleges and universities in the U.S. more diverse and they enrich the experience of other students while receiving an education at a U.S. institution (Lee, 2015). As such, the reciprocal experience of hosting international students on American college campuses can have a transformative effect on all students (Lee, 2015). However, studying in an unfamiliar country can be a taxing transition for international students, characterized by

challenges in their adjustment to higher education in the U.S. Inevitably, all undergraduate students learn to adapt to their new educational and social surroundings (Darling et al., 2007). Although there are many barriers and obstacles that international students share with their American peers, there are also numerous challenges that are unique to them.

Mental Health Issues in Asian International Undergraduate Students

On top of the usual academic, social, linguistic, emotional, functional, and interpersonal transitions common for college students, AISs often undergo a series of culturally and linguistically specific challenges (Gerdes & Mallinckrodt, 1994). Asian international students, in particular, deal with a uniquely challenging transition to college because of difficulties with homesickness, cultural differences, role conflicts, social integration, language barriers, financial difficulties, unfamiliarity with U.S. educational system, racial/ethnic prejudice and discrimination, and problems in daily life tasks (Hendrickson et al., 2011; Mori, 2000; Smith & Khawaja, 2011).

Even though the category of "international students" implies a homogeneous group that combines all non-U.S. students, students from different areas likely have more differences between them than commonalities in their cultural backgrounds and past experiences (Lee, 2015). Due to profound cross-cultural differences than U.S. cultures, AISs might have more challenging acculturation experiences than other international students (Berry et al., 2011).

Anxiety and Depression in Asian International Students. Asian international students, in particular, are reported to have severe mental health issues and lower intention to seek professional help from counseling and psychological services (Han et al., 2013). For example, Chinese international students had a higher rate of depression and anxiety than the average rate in American college settings (Xiong, 2018). Another study of 203 Chinese international students

(144 from mainland China) found prevalence rates of 47.5% for depression and 48% for anxiety symptoms (Cheung, 2010). In addition, Yeh and Inose (2003) indicated that AISs experience more acculturative stress than other international students from Europe. Hamamura and Laird's study (2014) suggested that acculturative stress is highly linked with depressive symptoms among East Asian international students in the United States.

Given the current trend, Chinese international students are becoming the most frequently researched representative of East Asian and AISs due to the increasing numbers of students studying in the United States (Li et al., 2014). Chataway and Berry (1989) reported that Chinese international students have experienced more challenges in their cross-cultural adjustment process, such as higher anxiety, more prejudice, more communication problems, and lower perceived social support. Furthermore, Han and colleagues (2013) found that among 130 Chinese international students who participated in a cross-sectional survey at Yale University, 45% of Chinese international students exhibited symptoms of depression and 29% exhibited symptoms of anxiety.

To address the need for further research, the following paragraphs aim to explore the experiences of AISs studying in the United Sates and identify strategies used to overcome the unique struggles shared.

Unique challenges for Asian International Students

Studying in an unfamiliar country can be a critical transition for AISs, characterized by challenges in their adjustment to higher education in the U.S. A review of the literature indicates that academic, socio-cultural, psychological, and personal concerns are critical phenomena in international Asian international college students' lives (Wei et al., 2012; Yan & Berliner, 2011). International students try to learn and achieve in the host culture while managing stress-related

psychological difficulties, such as adapting to new role transitions. According to researchers (Wei et al., 2012; Yan & Berliner, 2011), Asian international college students experience psychological distress, academic problems, sleep problems, low self-esteem, and suicidal intentions often arise when they are struggled to adapt to their new roles. Researchers have well documented the various types of challenges of AIS adjustment: language differences, educational challenges, practical needs, sociocultural struggles, and discrimination.

Language Differences. The most significant and prevalent stressor international students encounter is the language barrier (Mori, 2000). The majority of international students study in a second language (i.e., English) and a lack of linguistic skills in English can impact AISs in many ways (Mori, 2000). In the academic domain, the language barrier has direct negative implications for academic performance, such as their ability to understand lectures, complete reading and do their writing assignments, ask clarifying questions, and orally express their perspectives and opinions in classes. Some studies suggest that limited English language proficiency levels have an accumulative effect on international students' adjustment (Gebhard, 2012; Zhang & Goodson, 2011). Lee (2015) also described how some students who speak English as a non-native language often have difficulty meeting the expectations of U.S. classrooms, where class participation is required and often graded. Without the ability to confidently participate in class discussion, language challenges make it particularly challenging to communicate effectively in the classroom. According to Poyrazli and Kavanaugh (2006), language proficiency was found to be a significant predictor of academic difficulties and academic stress, which then incites acculturative stress in the form of depression or anxiety (Dao et al., 2007). In social domains, language barriers play a role in contributing to heightened social anxiety and friendship issues (Hendrickson et al., 2011; Smith & Khawaja, 2011). For example, students who reported lower

levels of English skills reported higher levels of discrimination and homesickness, which led to more physical complaints, anxiety, forgetfulness, and social isolation (Lee, 2015; Poyrazli & Lopez, 2007).

Educational Differences. Academic and language proficiency are also closely connected (Burdett & Crossman, 2012). Several researchers have examined the relationships between English language proficiency and academic difficulties (Martirosyan et al., 2015; Poyrazli & Grahame, 2007). Language differences can cause deep anxiety for international students, which may hinder them from sharing their thoughts and perspective in the classroom, even when they were able to perform at the high academic levels that they previously achieved in their native language (Lin & Scherz, 2014; Williams et al., 2018; Yeh & Inose, 2003). Another cause of students' adjustment problems is their unfamiliarity with the U.S educational system (Mori, 2000). Researchers pointed out that English language proficiency was a primary challenge; however, it was followed by cultural differences, unfamiliarity with host country educational systems, and modes of instruction (Robertson et al., 2000). Overall, AISs are likely to encounter fundamental cultural differences among education systems, including classroom norms, teaching and learning styles, procedures, communication styles, and professor–student and student–student interactions among education systems, which may lead to higher acculturative stress (Hung & Hyun, 2010; Martirosyan et al., 2019).

Practical Challenges. In addition to language and academic challenges, international students also shared their feelings of powerlessness and some of their practical stressors in a higher education system, such as work restrictions and limited financial support (Lee, 2007). Concerns about tuition and living expenses are shared by most international students (Lee, 2007). According to Martirosyan and his colleagues (2019), none of the top 20 universities with

the greatest enrollment of international students in 2016 identified college financing and funding availability specifically targeted to international students. Not to mention international students also encounter work restrictions in the host country and substantially greater tuition fees (Lee, 2007).

Sociocultural Challenges. Researchers have identified unique challenges that international students experience related to their social adjustment and academics that often require specialized attention and support services (Martirosyan et al., 2019). According to Andrade (2006), the evaluation of adjustment in academic settings was to check the "fit" between students and the academic environment. In general, international students are more likely to experience anxiety and stress when adjusting to a new educational system. In particular, the separation from close family and friends, lack of familiarity with different cultural practices, and lack of confidence in the host country's language proficiency led to barriers to social adjustments (Zhang, 2010). When international students leave their home country, they are often away from their previous social support system. Compared to domestic students, it is also more difficult for international students to build a new social network (Longerbeam et al., 2013; Luo et al., 2019) and many of them report feeling a sense of isolation (MacLachlan & Justice, 2009).

Cultural differences might strain AISs' social relationships with local peers (Smith & Khawaja, 2011). Not surprisingly, AISs may encounter barriers in making local friends compared to their European counterparts (Smith & Khawaja, 2011). Western cultures emphasize individualism, assertiveness, and self-sufficiency; while Asian cultures often embrace collectivism (although there is a large variation in the degree and type among countries) which emphasizes interdependence and relatedness (Smith & Khawaja, 2011; Mori, 2000; Yeh & Inose, 2003). Over time, international students' frustration, combined with their experience of

racial/ethnic prejudice and discrimination, may stop them from building significant relationships with local students (Mori, 2000).

Discrimination. According to Mori (2000), everyday realities of racial and ethnic barriers are not uncommon in higher education in the U.S. Although discrimination is still happening on many college campuses in the U.S., it continues to be a particularly salient problem for many international students. While studying in the U.S., 50% of international students have dealt with discrimination in some form or another (Eustace, 2007). In another study, discrimination was similarly reported as one of the significant factors that influencing AISs' mental health (Park et al., 2017). Maffini (2018) also reported that AISs and Asian American students were more likely to report being verbally threatened than other college students, which contributed to their anxiety, depression, and suicidality.

Acculturation. Finally, acculturation is well established as one of the most prominent factors shaping AISs' mental health (Smith & Khawaja, 2011). As AISs enter U.S. collegiate life, they are trying to adapt to a new social, cultural, educational environment and this process is called acculturation (Li & Lin, 2014). International students might encounter several acculturation stressors: language anxiety, educational system changes, and cultural differences. Smith and Khawaja (2011) argue that language barriers not only impede international students' ability to write their assignments, understand the lecture content, and ask questions in class, but also hinder them from interacting with local students. The researchers conducted 682 qualitative interviews with AISs and found that AISs reported difficulty adjusting to the interactive teaching style and critical thinking approach of American professors despite reporting that these pedagogical practices were ultimately beneficial to their learning (Liberman, 1994). In addition, Liao and Wei (2014) identified that AISs report more acculturative stress than European

international students. The unique challenge related to acculturation for AISs may stem from their cultural values: family recognition, perfectionism, and social stigma to get mental health support (Li & Lin, 2014).

Challenges to Supporting Asian International Students

Underutilization of Mental Health Services

Utilization is defined as "a help-seeking behavior in which the services of the mental health systems are used" (Sue et al., 1994). Given the mental health issues that arise in college university students in the United States, the underutilization of mental health services has been documented (Mori, 2000). Herman et al. (2011) found that 40% of the students were at significant risk for depression and about 10% had high levels of depression symptoms among 589 college students. However, they reported that only 29% of the students in need of help had ever consulted any mental health services over the past year. Similarly, Rosenthal and Wilson (2008) found that the utilization rate of counseling services was only 10% among a sample of 1,773 college students who faced a range of psychological disorders and were at a high level of psychological distress.

Despite the fact that international students may be more vulnerable to mental health challenges than students in general, mental health services have been significantly underutilized by this population in the United States (Hwang et al., 2014; Mori, 2000). Chen and Mak (2008) compared four groups of college students and their attitudes and behaviors toward mental health services, including European Americans, Chinese Americans, Hong Kong Americans, and Mainland Chinese. Overall, there seems to be evidence to indicate that European Americans were more willing to seek help and had the highest level of utilizing mental health services. Hong Kong Chinese and Mainland Chinese students who were generally less exposed to western

cultures and practices were less likely to seek or had ever sought mental health support (Chen & Mak, 2008). Consistently, Herman et al. (2011) found that the utilization rate of mental health services was 3.7 times higher among European American students compared to a combined group of Asian students, including Japanese, Filipino, Native Hawaiian/Other Pacific Islander, and others. Han et al. (2013) highlighted Chinese international students at Yale University were significantly underutilizing mental health services. Over a quarter, 27% of the sample recruited, had never heard of the mental health services on campus and only 4% had ever used them (Han et al., 2013).

Evidence in the literature shows that international students prefer to go to friends initially and then seek advice from their professors or adviser rather than going to a counseling center (Bradley et al., 1995). Lin and Cheung (1999) highlighted that Asian Americans largely rely on family members when encountering psychological problems; not until the conditions become extremely severe or all other resources have been exhausted will they seek professional help. Another study found that when Asian international students encountered personal problems, their primary sources of support were friends and families, while counseling services were usually considered the least desirable choice (Constantine et al., 2005). Remarkably, the researchers found that international students were more likely than their domestic counterparts to seek help from the school faculty (Poyrazli, 2015). This finding suggests that international students may be particularly receptive to targeted university-based intervention attuned to their particular stressors and mental health needs.

Research addressing access to and use of mental health services of minority or international students is limited (Eisenberg et al., 2007; Mori, 2000). Eisenberg and colleagues (2007) provide several explanations for the underutilization of mental health services on campus

among college students, including low socioeconomic status, lack of awareness of perceived need, a lack of information on the available services or insurance coverage, and uncertainty about the effectiveness of the services. Beyond the common factors that hinder help-seeking in general college populations, Hwang et al. (2014) proposed three reasons for this underutilization by international students: (a) the stigma connected to mental health services; (b) the lack of information and availability on services; and (c) the lack of culturally sensitive services. Likewise, Alavi and colleagues (2014) also found four significant factors that hinder international students from visiting counseling centers: (a) not having faith or positive attitude in the process of counseling services, (b) a lack of information about the counseling services, (c) lack of necessity to seek professional help, and (d) lack of trust and confidential concern. More recently, Williams and colleagues (2018) further identified five obstacles that would prevent international students from receiving mental health services: stigma, unawareness, language concern, issues of referrals, and counseling training.

In this regard, Eshun and Gurung (2009) propose that "culture influences how individuals manifest symptoms, communicate their symptoms, cope with psychological challenges, and their willingness to seek treatment" (Eshun & Gurung, 2009, p. 4). Cultural diversity among international students has a significant impact on the many aspects of mental health, ranging from the ways in which health and illness are perceived, attitudes toward mental health, and health-seeking behaviors (Gopalkrishnan, 2018). To better understand patterns of international students' mental health services utilization, this section will discuss each barrier in greater detail.

Stigma. Stigma profoundly impacts help-seeking behavior (Chen et al., 2020). Stigma is defined as a "mark of shame, disgrace or disapproval which results in an individual being rejected, discriminated against, and excluded from participating in a number of different areas of

society" (WHO, 2001, p. 16). Stigma around mental illness can be a great concern in some cultural groups and is often a major barrier to stop people from seeking mental health services (Gopalkrishnan, 2018). Therefore, insight into cultural values is critical to understanding how people frame mental health issues and how they translate their perspective of these issues into actions with regard to seeking help (Chen et al., 2020).

Hyun et al. (2007) indicated that cultural stigma associated with mental health needs hinders international students from utilizing counseling services. Instead, they may somaticize their feelings of stress and seek help for physical illness rather than for psychological assistance (Misra, 2004). For example, Tung (2011) reported that AISs were more likely to seek help from physicians because their internalized emotional problems manifested with physical symptoms.

Asian international students also reported less self-perceived needs for counseling and greater discomfort or shame with counseling than domestic students (Yoon & Jepsen, 2008). Hechanova and Waelde (2017) argued that shame associated with stigma is one of the reasons why Asians are less likely to seek professional support. In addition, shame plays a key role in some cultural contexts because it is viewed as a sign of embarrassment or weakness (Hyun et al., 2007; Chen & Mak, 2008). For example, Chinese-speaking international students reported perceiving a loss of respect from others and feeling ashamed if others found out they received mental health services. This feeling of shame is often referred to as "losing face" in Chinese culture (Liu, 2009). Due to concerns about their public reputation and being conscious of how others view them, Chinese international students may inhibit feelings of distress to avoid losing face (Chen & Mak, 2008). Among those individuals who strongly identify with traditional Chinese culture, the fear of embarrassment decreases their likelihood of having positive attitudes and intentions toward seeking help, using mental health services, or expressing personal

emotions to mental health professionals (Chen & Mak, 2008; Saint Arnault, 2009).

Lack of Awareness of Needs and Available Services. There are also barriers to accessing services because international students often do not know where to seek services or whether available resources would apply to their specific situations (Alavi et al., 2014; Hyun et al., 2007). Mori (2000) pointed out that many international students, particularly those who just arrived the United States, are not informed of how to access available campus resources. Surprisingly, many international students do not know most counseling services on campus are free of charge (or entail a small fee) even when they are aware of the existence of a counseling center.

In a recent study involving a sample of 113 Chinese international students enrolled at two universities in the southeastern United States, nearly half of the participating Chinese students were unaware of the availability of on-campus counseling services (Chen et al., 2020). Chen and colleagues (2020) reported that one of the key differences between international students and their U.S. counterparts was their knowledge of using mental health services. International students enrolled in U.S. universities tend to have significantly lower awareness and knowledge of the counseling services available on campus than domestic students (Hyun et al., 2007). Furthermore, Hyun et al. (2007) found that international students are less likely to use counseling services than domestic students due to a lack of awareness of their need for mental health services. Alternatively, Asian international students seek help for the physical manifestations of emotional problems, such as fatigue or sleep difficulties, and present to their primary care provider for mental health issues (Lee et al., 2004). Chen et al. (2015) also noted that low mental health literacy of mental illness and treatment led to unawareness of available services and/or are reluctant to seek help among Chinese international students.

Language. Low language proficiency is considered a significant barrier to seeking professional mental health support (Li et al., 2014; Williams et al., 2018). Paone and Malott (2008) found that the language differences between international students and their counselors have an adverse effect on the client. In addition, Prieto-Welch (2016) indicated that international students might have difficulties expressing themselves in English, which may impede the counseling process. Willis-O'Connor et al. (2016) reported that international students felt that the mental health providers were judging their language proficiency, leading to nervousness and uneasiness throughout the therapeutic sessions. Yoon and Jepsen (2008) also found that poor English proficiency hindered AISs from utilizing counseling services on campus. Due to the awareness of language barriers, international students often feel uncomfortable seeking out services in the first place and may avoid seeking help until their symptoms tend to be severe and they are in crisis mode (Hwang et al., 2014).

Issues of Referrals. Williams and colleagues (2018) proposed that one limitation of the current referral process is that there is no mandatory requirement for faculty to refer students for mental health services. Additionally, some faculty members may be unaware of the appropriate way to respond to mental health issues of their students because they don't have sufficient training, or they don't perceive mental health supports as their assigned duties or responsibilities (Ethan & Seidel, 2013). Interestingly, international students were more likely to seek help from the school faculty than their domestic counterparts (Hayes & Lin, 1994); however, many international students may not be referred to the counseling center despite many universities have providing formal or informal training for faculty members to respond to mental health needs of their students (Poyrazli, 2015).

Counseling Training. Another issue illuminated by studies of international students was

the necessity for cultural sensitivity and the unique need for counseling services for international students (Giamos, 2017). Gopalkrishnan (2018) pointed out that much of the theory and practice of mental health, including psychiatry and mainstream psychology, have been developed from Western cultural values and the dominant culture's understanding of the human conditions. Even though these theories and practices provided powerful conceptual frameworks and strategies to reduce psychological distress in many settings, they have also been very problematic when applied to individuals from non-Western cultures without considering the complexity across cultures.

Yoon and Jepsen (2008) found that AISs worried that Western counselors might not understand them due to cultural differences, which hinder their utilization of counseling services. In addition, Yakunina and Weigold (2011) investigated AISs' intentions to seek counseling by examining the relationship between cognitive variables (i.e., counseling attitudes and stigma) and cultural factors (Asian values, acculturation, and loss-of-face concerns). They found that students who embraced more traditional Asian values reported lower help-seeking intentions due to less positive attitudes toward counseling. Not surprisingly, AISs' values of collectivism, conformity, humility, and emotional self-control may be inconsistent with Western models of psychotherapy, which typically emphasize the importance of individualism, assertiveness, and open expression of emotions. Thus, AISs may view Western models of counseling as culturally insensitive, which results in negative counseling attitudes and low help-seeking intentions (Yakunina & Weigold, 2011). For example, Zhang and Dixon (2001) discovered that AISs found counselors using general counseling techniques to be less expert and trustworthy than those who were culturally responsive. Overall, Asian international students are reported to underutilize professional mental health services and have a higher dropout rate in counseling (Mitchell et al., 2007). Moreover,

the percentage of AISs who take advantage of counseling services is much lower than domestic students (Hwang et al., 2014).

Acculturation and Acculturative Stress among Asian International Students

Acculturation and Adaptation

In the field of acculturation psychology, researchers focus on both the process as well as the outcomes of cultural contact. That is to say, it is critical to understand not only how change occurs in individuals adjusting to new cultural environments but what has changed in individuals as a product of acculturation (Kim & Abreu, 2001; Sam, 2006; Wang & Mallinckrodt, 2006; Ward et al., 2010). During the cross-cultural transition, the changes in individuals can take various forms, including (1) physical change (i.e., adjustments to population density, weather), (2) biological change (i.e., new nutritional status), (3) cultural change (i.e., linguistic, social, educational systems), (4) social change (i.e., ingroup-outgroup relations), and (5) psychological change (i.e., behavioral, and psychological processes) (Berry et al., 1987). Ward et al. (2010) pointed out that the result of these changes, referred to as adaptive outcomes, can have both positive and negative consequences for an individual's intrapersonal and interpersonal milieu, directly or indirectly over longer periods of time.

Long-term acculturative change due to cross-cultural adaptation can be further categorized into two areas: psychological and sociocultural adaptation (Ng et al., 2017; Ward, et al., 2010). *Psychological adaption* refers to "feelings of well-being or satisfaction during cross-cultural transitions" (Ward et al., 2001, p. 42). In other words, psychological adaptation involves perceiving life as satisfactory, having a sense of purpose in life, or exhibiting a high level of well-being and self-esteem (Ward et al., 2001). In comparison with psychological adaption, *sociocultural adaptation* outcomes are situated within a social or cultural learning framework

and involve the individual's ability to successfully navigate and engage in novel cross-cultural encounters (Ward & Kennedy, 1993; Ward et al., 2001). Moghaddam et al. (1993) pointed out that to reach the desired level of socio-cultural adaptation, daily cultural learning in social skills and behaviors is required to navigate and includes two elements: the development of "positive interpersonal relations with members of the host culture" and "some level of effectiveness in carrying out the necessary tasks at hand" (Moghaddam et al., 1993, p. 138).

Both dimensions of adaptation have been studied in relation to a range of antecedent factors (Ladum, 2019). Burkholder and colleagues assert that the literature on international student adaptation is difficult to organize due to the wide range of variables and definitions (Bierwiaczonek & Waldzus, 2016); however, there are some variables previously established as playing important roles in the adaptation process including social support (Lee et al., 2004); values, beliefs, coping strategies (Li & Lin, 2014); friendship networks and social connectedness (Hendrickson et al., 2011); university support (Cho & Yu, 2015); social contact, gender, and stress (Zhang & Goodson, 2011); acculturation orientation (Suanet & van de Vijver, 2009); cultural distance (Ladum, 2019); financial satisfaction (Khawaja & Dempsey, 2008); amount of time spent in the host country (Park et al., 2014); language proficiency (Duru & Poyrazli, 2011); and perceived discrimination (Poyrazli et al., 2010). Of the predictors examined in the literature, social support, length of stay, country of origin, English proficiency, and gender were reported most frequently for psychological adaptation outcomes, including acculturative stress (Ladum, 2019; Zhang & Goodson, 2011). Searle & Ward (1990) indicated that psychological adjustment is strongly influenced by personality, coping strategies, and available social support; sociocultural adaptation is more dependent on factors such as length of stay in the new culture, cultural knowledge, language proficiency, and acculturation strategy.

While successful adaptation may be relatively easier for some international students, those who struggle to find an adjustment in the novel cultural context may deem their process of acculturation more complicated and experience acculturative stress resulting in adverse health consequences (Berry et al., 1987). Hence, the need for exploring acculturation issues can have important implications that lead to a better theoretical understanding of the adaptation pathways and outcomes of AISs, improving mental health practices and school policy implementation in support of the learning experiences of AISs, and making recommendations for host institutions on how to cultivate an accommodating climate for the emergence of cultural diversity. In the following reviews, the aim is to introduce the overall construct of acculturation by comparing and contrasting three frequently cited models of acculturation and to extend the application of these theories to better explain variations in adaptation outcomes for AISs in the United States.

Models of Acculturation

This literature review will introduce three theoretical models: unidimensional, bi-dimensional, and resilience. Acculturation can take many different forms. Initially, scholars mainly focused on the migrants' and immigrants' acculturation processes (Berry et al., 1987; Schwartz et al., 2010). However, due to the interactive nature of acculturation and cross-culture connections, the majority's perspective began to take an interest in other populations, such as sojourners and international students (López-Rodríguez et al., 2014).

A Unidimensional Model. Initially, acculturation was conceptualized by the scholars as a unidimensional model focusing on migrants only (Berry, 1980; Schwartz et al., 2010). It was theorized that the migrant underwent a process of a uniform and linear path of assimilation, discarded their cultural heritage, and adopted the host country's culture (Schwartz et al., 2010; Smith & Khawaja, 2011). The unidimensional conceptualization of acculturation implied

assimilation – individuals gradually give up their identification with the culture of origin and move towards identification with the dominant culture in the host society (Olmeda, 1979). In other words, as adherence to the new culture increases, adherence to one's culture of origin inevitably decreases (Miller et al., 2011).

Since the early 1980s, the critiques of the unidimensional model of acculturation have stemmed from the field of cross-cultural psychology (Doucerain, 2019; Lee et al., 2003). The scholars argued that the unidimensional model viewed original and host cultures as opposing rather than counterbalancing; however, the acquisition of the values and behaviors of the host society does not necessarily deny the maintenance of individuals' values and behaviors of their country of origin (Berry, 1980).

In addition, the challenge to unidimensional acculturation suggested not only that there is more than one possible avenue in how individuals adjust to their environments, but the types of adaptation outcomes achieved by first-generation immigrants and their children may also vary due to the changes in the social and economic structure of the host society (Portes & Zhou, 1993). For example, a weakness of the unidimensional model pointed out by Cuellar and colleagues (1995) was the challenge to separate bicultural individuals with high familiarity with both societies from those with low understanding of both cultures. In contrast, the bi-dimensional approach provides another perspective embracing the concept of pluralism, and it is a balanced model of acculturation and identity – immigrants, sojourners, and refugee groups develop bicultural identities (Berry, 1970, 1980, 1997).

Bidimensional Model. Berry (1970, 1974, 1980) developed a framework to study individuals' preferences and different ways to acculturate. Berry proposed a bidimensional structure of acculturation strategies based on two fundamental dimensions of acculturation: (a)

the extent to which individuals wish to maintain (or change) their original culture and heritage, and (b) the extent to which individuals wish to participate with others and to achieve in the wider mainstream society.

Berry's theory (1997) emphasized the importance of examining acculturative stress as a manifestation of acculturation when an individual or a group of people comes into contact with another cultural group. According to Berry and colleagues (1987), the acculturation experiences may sometimes put a heavy demand on the individual, leading to the experience of *acculturative stress* (Berry, 1997, 2003; Berry & Annis, 1974). The definition of acculturative stress is described as an outcome of collective stressors that occur during the process of acculturation which can lead to the poor mental health status of the acculturating individual (Berry et al., 1987). Furthermore, Berry et al. (1987) indicated that the relationship between acculturation and stress is inevitable, and it depends on the group of individuals and their characteristics as they set their foot in the acculturation process. The outcome of this process can be a strengthening of mental health or its demolition (Eustace, 2007).

Berry et al. (1987) pointed out that the relationships among acculturation, stressors, and acculturative stress are "probabilistic" instead of "deterministic," meaning they are impacted by a number of moderating factors. First of all, one of the moderating factors is the essence of the host or mainstream society as to whether it has a pluralistic or multicultural ideology or whether it is a society that pushes its people to comply with a single cultural standard. The next moderating factor is the nature of the acculturating group. For instance, sojourners or international students are more likely to experience more mental health problems than those permanently settled and established, such as immigrants and refugees, because they are temporarily in contact with the host society (Berry et al., 1987).

The authors described a third moderating factor as the mode of acculturation used by individuals as they adjust to the new environment (Berry et al., 1987). How individuals acculturate is most often described in Berry's conceptual analysis of acculturation attitudes (Berry et al., 1989), also referred to as acculturation strategies (Berry, 1997), which includes: assimilation, separation, integration, and marginalization. When individuals express a preference for not maintaining their heritage culture and with a strong orientation to participate in the mainstream society, the *assimilation* orientation to acculturation is defined. On the contrary, when an individual yearns to maintain heritage culture and rejects participating in mainstream society, the *separation* orientation is defined. *Integration* involves culture maintenance and participation or fluency in both original and mainstream cultures. Finally, marginalization is characterized by an absence to maintain one's heritage culture or connect with mainstream society (Berry, 1995, 1997).

Finally, other factors that can modify the relationship between acculturation and stress include the individual's demographic and socio-psychological characteristics. These include personal and societal levels including age, gender, marital status, length of stay in the host culture, socio-economic status, cognitive style, prior intercultural experience, and even macro social and political factors such as the degree of cultural pluralism extant in the wider society (Lee et al., 2003; Ward & Rana-Deuba, 1999). Both the process and product of acculturation have been examined with particular attention to predicting acculturative stress (Ward & Rana-Deuba, 1999). Empirically, studies have validated the unique association between acculturative stress and several predictive factors (Berry, 1997; Ward & Rana-Deuba, 1999). In this regard, Ward & Rana-Deuba (1999) pointed out that comparative research has shown that marginalization and separation are associated with high levels of acculturative stress, integration

is associated with a low level of stress, and assimilation is associated with an intermediate stress level (Berry et al., 1987). Moreover, preliminary findings suggested that individuals who report weak relations with their original culture experience more challenges in psychological adjustment, whereas individuals who identify weakly with the host cultures experience more difficulties in sociocultural adaptation (Ward & Rana-Deuba, 1999).

Ward & Rana-Deuba (1999) assert that Berry's contribution to the development of acculturation theory and research had been supported by a solid conceptual base and a systematic and comparative analysis of empirical data. Berry's bidimensional model has been influenced by earlier research by Graves (1967), whose work introduced the concept of psychological acculturation—psychological and behavioral changes that an individual experiences due to sustained contact with members of other cultural groups. This concept becomes a core construct in Berry's model.

Furthermore, cross-cultural comparisons across diverse groups such as immigrants, sojourners, refugees, and native peoples have been systematically undertaken. Together, Berry's model of acculturation and adaptation is highly influential and he is widely recognized as a prominent pioneer in the field of acculturation. However, Wang et al. (2018) raised concerns about Berry's (1995) model, arguing that it may not be sufficient to comprehensively understand acculturation without taking certain personal and situational factors into account.

A Resilience-Based and Meaning-Oriented Model of Acculturation. Pan (2011) questioned that traditional acculturation research had focused mainly on acculturative stress and its adverse impacts on mental health. Therefore, he proposed to shift acculturation research from adjustment problems and psychopathological perspectives into a resilience framework, which focuses on positive adaptation outcomes and their contributing protective factors, such as

strengths, resources, and competencies of individuals.

The resilience framework proposed by Pan (2011) demonstrated the interactive relationship between risk and protective factors on positive adaption outcomes. In Pan's research (2011), he identified risk factors as "acculturative hassles" experienced by migrants in the mainstream society and their threat appraisal of these struggles. In addition, the positive outcome is conceptualized as a person' emotional well-being regarding positive and negative affect in his study. Pan (2011) also demonstrated that cognitive appraisal and coping are two significant mediators in the stress-outcome relations by applying Lazarus and Folkman's (1984) transactional model of stress and coping to Berry's (2006) model of acculturative stress.

According to Pan (2011), the resilience framework for acculturation was developed by connecting the concepts of acculturative hassles, personal relevance, and significance of the encounter to individuals and determining its stressfulness using thereat and challenges appraisal. In this model, when the acculturative struggles are perceived to be stressful, the coping process of sense-making will be initiated. It is critical to recognize that being able to make sense of the hassles is related to positive affect, whereas failure to make sense is linked with negative affect. The attainment of meaning-in-life is also related to positive affect and vice versa. Most importantly, the relationship between sense-making coping and meaning-in-life is reciprocal. Overall, adopting a resilience framework contributes to our understanding of how migrants develop the strength to become psychologically healthy and thrive in a new environment.

Conceptual Frameworks

Mental Health Defined

Traditional Mental Health Model: Psychopathology. The mental health field has a long history of focusing on psychopathology (PTH) or psychological problems (Eklund et al.,

2011). Psychopathology symptoms are often described as either internalizing problems (e.g., depression, anxiety) or externalizing problems (e.g., aggression, conduct problems) (Antaramian, 2010; Suldo et al., 2016). Based on the traditional medical model, this pathogenic approach identifies symptoms and treats illnesses and mental health is defined as the absence of illness or disability (Keyes, 2007). Moreover, back in the 1980s, Wilhelm Griesinger was the first to allege that "mental illness is a brain illness," which led to a strong focus on the medical conception of mental illness (Fitzgerald, 2015).

Throughout history, this pathogenic approach has been the dominant approach in the mental health field. It includes the development of designing relevant classification systems (e.g., the Diagnostic and Statistical Manual of Mental Disorders, 5th ed., American Psychiatric Association, 2013). Accordingly, the primary focus of mental health efforts historically has involved identifying symptoms and problems, investigating the reasons and rationale of how problems occur, and attempting to find ways to "fix" problems (Antaramian, 2010; Cowen, 1994). Followed by the pathogenic approach, mental health is defined by the presence of symptoms of disorders and related negative outcomes. If an individuals' symptoms do not meet the criteria for a disorder, their mental health status is viewed as subclinical and will not be targeted for interventions (Suldo et al., 2016). Overall, there are risks for those subclinical individuals who may not receive intervention or obtain mental health treatment based on such traditional, one-dimensional, and negative indicators of diagnosis (Dunn & Dougherty, 2005; Wang et al., 2011)

The continued dominance of the pathogenic-based focus on mental health is facilitated by three major elements (Keyes, 2005). Firstly, the field of PTH has been more historically researched and evolved than the theoretical foundations of positive mental health indicators.

Secondly, evidence steadily shows that individuals without PTH (e.g., anxiety or depression) function better than individuals with PTH. Lastly, mental illness has become a prominent public health issue due to its high prevalence and treatment at a great expense within the human population. For example, the field of psychology directed attention primarily toward healing processes and repairing damage, maintaining the preoccupation with pathology and treating illnesses after World War II (Antaramian, 2010; Seligman, 2002). As a result of this prolonged history of the medical model of mental health, the primary focus of mental health efforts has been the identification and intervention of individuals' maladaptive functioning rather than facilitating their well-being (Antaramian, 2010; Graiver, 2021).

In recent decades, different perspectives on this traditional medical model have increasingly recognized that the absence of PTH does not equate complete mental health (Keyes, 2009). In 1948, the World Health Organization (WHO) defined *health* as "a state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity." This revised definition of health moved a step forward and identified health as a complete state, including the presence of positive physical and mental well-being beyond just the absence of illness (Sartorius, 2006). The concept of positive functioning is also translated into research about mental health. Jahoda (1958) published an influential and important work on positive mental health. Notably, Jahoda argued that it is "unlikely that the concept of mental health can be usefully defined by identifying it with the absence of disease" (p. 15), indicating that the absence of mental illness may be necessary but not sufficient for ensuring optimal mental health. In addition, she further discussed positive indicators of mental health and subdivided it into three domains: self-realization, sense of mastery over the environment, and sense of autonomy (Jahoda, 1958).

Historically, positive indicators of mental health have been ignored and efforts to understand how these positive indicators, such as resilience, happiness, and hope may relate to a person's mental health as well as their role in the development or prevention of PTH have been limited (Lyons et al., 2012; Seligman & Csikszentmihalyi, 2000). In the late 1990s, the advocates of positive psychology advocated for the concept of mental health to move beyond a singular focus on problems and address the strengths and positive human functioning that help individuals to flourish to ensure optimal mental health (Seligman & Csikszentmihalyi, 2000). Furthermore, Keyes (2006) found that the outcomes of youth without PTH reported diminished emotional well-being (i.e., languishing in life). Importantly, not all youth with clinical levels of PTH experienced poor quality of life (Bastiaansen et al., 2005). All in all, studies in the field of positive psychology examining those positive indicators provide important information beyond traditional psychological practices narrowly focused on the presence or absence of PTH and diagnoses linked to behavioral symptoms and associated levels of maladaptive functioning (Eklund et al., 2011). The integration of positive and negative indicators of well-being into mental health fields is critical to yield a more comprehensive picture of functioning (Suldo & Shaffer, 2008).

Mental health issues are becoming increasingly prevalent within the college student population and college counseling centers often focus on addressing these psychological symptoms using the DSM-5 and other measures of PTH (Eisenberg et al., 2011; Kirsch et al., 2015; Vespia, 2007). Eklund et al. (2011) highlighted that there are risks of focusing mainly on pathology in college mental health services and argued that it is important to address the needs of students with heightened levels of psychological distress as well as those experiencing life struggles and transition challenges. Acknowledging the importance of positive indicators of

mental health compels researchers and clinicians to move beyond a singular focus on problems and also address the strengths and skills that help students to flourish in college and beyond (Antaramian, 2015; Seligman & Csikszentmihalyi, 2000).

Positive Indicator of Mental Health: Subjective Well-Being. Subjective well-being (SWB) was introduced with the emergence of positive psychology; the construct of SWB has been well-researched over the years (Lyons et al., 2012). SWB is one widely studied construct that incorporates positive indicators of mental health beyond the absence of negative factors in positive psychology (Antaramian, 2015; Lyons et al., 2012). SWB is defined as "an umbrella term used to describe the level of well-being people experience according to their subjective evaluations of their lives" (Diener & Ryan, 2009, p. 391). Positive psychology includes the study of optimal functioning, including the personal pursuit of happiness and feeling good about life (the hedonic aspect of well-being) and/or striving for excellence and fulfillment of human potential in life (the eudaimonic aspect of well-being). (Chen et al., 2012; Keyes, 2009; Suldo et al., 2016).

Hedonic theories of well-being have received the most extensive research attention in models of well-being (Keyes, 2006). In the hedonic tradition, Diener's (1984) review of research on SWB culminated in a model composed of a person's cognitive and affective evaluations of life as a whole. In addition, various studies on SWB have come to the consensus that SWB consists of cognitive and affective components: the individuals' subjective and cognitive assessment of their life satisfaction, the presence of positive affect, and the absence of negative affect (Andrews & Withey, 2012; Diener, 1984; Diener & Seligman, 2002; Shoshani & Steinmetz, 2014). Positive and negative affect are considered emotional experiences of subjective well-being and encompass a high frequency of positive emotions and a low frequency

of negative emotions. The latter component, life satisfaction, in contrast, involves an individuals' overall cognitive appraisal of their life quality (Diener, 1984). Overall, an individual's SWB reflects the frequency of positive and negative emotions and the individual's assessment of overall happiness (Diener et al., 2002).

Despite the numerous aspects of well-being in the literature, the current study focuses on intervention to improve individuals' overall life satisfaction of well-being given that this dimension of well-being has received widespread attention in positive-psychology research. Diener et al. (1999) indicated that life satisfaction echoes the impact of life events and mood states and extends beyond the transitory nature of such influences. Therefore, the life satisfaction component is considered the most stable component of subjective well-being and has received the most research attention as the best indicator of a person's perceptions about their life (Antaramian, 2010; Lyons et al., 2012).

A growing body of evidence indicates that SWB facilitates several positive outcomes (Antaramian, 2010; Budianto, 2005). For instance, high levels of SWB have been shown to improve physical health and longevity (Graham et al., 2004; Xu & Roberts, 2010), higher quality social relationships and increased relationship satisfaction (Lyubomirsky et al., 2005), and work performance (Russell, 2008; Wright & Cropanzano, 2000). Thus, SWB is not just a desirable outcome itself but also a catalyst for reaching optimal functioning (Antaramian, 2015; Diener, 2012).

In the research on children and adolescents, high SWB is linked with several positive attributes and behaviors, including fewer symptoms of anxiety and depression, less delinquency and aggression, and increased self-efficacy and self-esteem (Gilman et al., 2000; Lyons et al., 2012; MacDonald et al., 2005; Suldo & Huebner, 2004; Suldo & Huebner, 2006). Noteworthy,

SWB contributes to desirable outcomes of positive experiences, as well as contributing to adaptive outcomes. For example, SWB is an essential determinant of resilience while facing stressful life experiences among adolescents. Individuals with low life satisfaction often demonstrate increased externalizing behavior after experiencing severe life stress, while individuals with high life satisfaction are less likely to develop behavior problems after facing stressful life circumstances (Suldo & Huebner, 2004). Furthermore, higher life satisfaction reported by adolescents also predicts reduced peer victimization and lower levels of internalizing behavior (Haranin et al., 2007; Martin & Huebner, 2007). An additional study suggested that higher levels of SWB among students are associated with better relationships with parents, teachers, and peers (Gilman & Huebner, 2006). These findings further indicate that SWB "serves not only as a key indicator of positive development but also as a broad enabling factor that promotes and maintains optimal health" (Park, 2004, p. 27). As such, these outcomes highlight the potential benefits of incorporating education for well-being in school curriculum (Shoshani & Steinmetz, 2014).

Although research on the relationship between PTH and decreased school performance is well-established, much less attention has been devoted to understanding the role of SWB and students' mental health outcomes (Antaramian, 2010). In addition, few studies have investigated all three components of SWB simultaneously as they relate to international undergraduate students' adjustment to higher education. While research on international students' well-being is still limited, it is evident that this population faces a greater risk than U.S. students for compromised well-being due to acculturative stressors and distance from their familiar support network during their relocation to the United States (Budianto, 2012; Hyun et al., 2007).

Du & Wei (2015) examined the connections between international students' acculturation experience, coping strategies (i.e., social connectedness), and the desired outcome (SWB). Using a longitudinal design, 213 Chinese international students completed surveys and reported their perception of well-being during their learning journey in the United States. The study results found that individuals who identify highly with the host culture can achieve more life satisfaction and positive affect if they feel close to individuals in U.S. mainstream society. Similarly, Tseng and Newton (2002) interviewed two international students about their well-being during their study in the United States. These students reported several strategies that were helpful for them to achieve well-being. The identified strategies primarily involved relationships, including developing meaningful friendships, establishing cultural and social contacts, building relationships with advisors and instructors, and being able to ask for help.

Despite the limited studies and small sample sizes of the interviews in this area, these findings shed light on the importance of supporting the SWB of international students through building meaningful relationships. While SWB alone may not be a sufficient measure of mental health, it is an imperative factor to consider when developing prevention and intervention methods (Diener et al., 2017).

Even with an increased focus on investigating positive indicators in recent years, SWB and PTH are still typically conceptualized as two extremes on a single continuum as PTH (Greenspoon & Saklofske, 2001). In other words, most research on life satisfaction suggests that individuals experiencing high SWB do not experience PTH, and vice versa. According to this perspective, mental health status is represented by a point on a continuum with happiness at one end and PTH at the other end. However, recent variable-centered studies suggest that PTH and SWB are multidimensional (Lyons et al., 2012). By factor-analytic research with adolescents,

Wilkinson and Walford (1998) found support for a two-factor model of mental health comprised of distinguishable SWB and PTH. That is, an alternative viewpoint proposes a two-factor model of mental health, in which distress and well-being are two distinct but interrelated constructs (Antaramian, 2010; Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008).

Dual-Factor Model of Mental Health in College. Traditional mental health models focus on psychopathological symptoms; however, the dual-factor model of mental health proposes an integration of the separate, but related, constructs of PTH and SWB into a single, two dimensional framework that supplements the traditional mental health research paradigm to best conceptualize overall mental health. (Clark, 2020; Greenspoon & Saklofske, 2001; Xiao et al., 2021). See Figure 1 for a summary of the dual-factor model discussed in detail below.

Greenspoon and Saklofske (2001) implemented a person-centered approach to investigate a dual-factor model of mental health in elementary school students. Furthermore, they proposed a dual-factor model (DFM), which defines mental health as composed of two psychometrically distinct constructs but correlated continua of mental illness and positive mental health. That is, those elevated levels of PTH can coincide with high levels of SWB. In their study, they classified four groups of children by using the distinct constructs of PTH and SWB, including low PTH and high SWB, high PTH and low SWB, low PTH and low SWB, and high PTH and high SWB (Greenspoon & Saklofske, 2001). Keyes (2005) used confirmatory factor analysis to examine the DFM of mental health, in which one model included SWB and PTH on a single dimension, whereas another model involved the two distinct factors but correlated constructs. The findings demonstrated significantly better fit statistics for the two-factor model, supporting that well-being and distress are best conceptualized as two separate constructs rather than opposite poles on a single dimension (Keyes, 2005).

In later studies, DFM of mental health was refined to be classified into four quadrants of mental health status: complete mental health (low PTH and average-to-high SWB), troubled (elevated PTH and low SWB), vulnerable (low PTH and low SWB), and symptomatic but content (elevated PTH and average-to-high SWB). Suldo and Shaffer (2008) were the first to advance this terminology. Identifying which quadrant of mental health status a student is placed in can have crucial implications for how mental health providers screen and identify students in need of support and how educational settings prioritize intervention goals (Dileo, 2020; Suldo et al., 2016).

In a similar fashion, others have found that the absence of mental illness does not imply the presence of high levels of positive mental health and vice versa (Diener et al., 2002; Shoshani & Steinmetz, 2014; Sin & Lyubomirsky, 2009). Diener et al. (2002) established that the absence of PTH is not an adequate criterion to describe a person with complete mental health, particularly without high or even average levels of SWB (Diener et al., 2002; Seligman, 2008). In addition, these authors also argued that there is no guarantee to maintain one's mental health, even if an individual's mental illness has been resolved (Keyes, 2007; Suldo & Shaffer, 2008). Accordingly, they believed that integrating the positive indicator SWB and the negative PTH indicator in mental health assessment is critical to understanding mental health comprehensively (Cowen, 1994; Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008).

Several studies have considered the application of a dual-factor mental health model in children and adolescents (Antaramian, 2010; Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008). Suldo and Shaffer (2008) found further support for a DFM of mental health in a group of adolescents. In their study, a sample of 349 adolescents (10 to 16 years old) was recruited. The adolescents' PTH was assessed using three internalizing subscales of the Youth Self-Report

Form of the Child Behavior Checklist (YSR; Achenbach & Rescorla, 2001) and two externalizing subscales of the Teacher Report Form of the Child Behavior Checklist (TRF; Achenbach & Rescorla, 2001). Additionally, SWB was determined using a combined score on the Students' Life Satisfaction Scale (SLSS; Huebner, 1991) and the Positive and Negative Affect Schedule for Children (PANAS-C; Laurent et al., 1999). Consistent with the DFM, four distinct quadrants of adolescents were identified. They found that about 15% of adolescents exhibited PTH, suggesting that 85% of adolescents were unaffected by mental illness. However, Suldo and Shaffer (2008) found that among the same sample only 57% of adolescents had complete mental health, comprised of both the presence of high subjective well-being and the absence of psychological symptoms. These findings indicate that fewer adolescents have optimal mental health than would be expected using the traditional model of model health. Application of the DFM highlighted that nearly 30% of adolescents would likely be overlooked by traditional models despite still having low subjective well-being and therefore less than optimal mental health.

Antaramian (2010) found that the positive mental health group demonstrated higher school engagement and academic performance levels. Consistent with prior research investigating application of the DFM among adolescents (Suldo & Shaffer, 2008), Antaramian's (2010) findings indicated that distinguishing these four groups is important because students across groups differ in their educational functioning. For example, they found that the "Flourishing Adolescents" (low PTH and high SWB) reported increased classroom participation, felt a greater sense of belonging in school, and were more invested in their schools. Importantly, Antaramian (2010) suggested that it is crucial to investigate further the potential antecedents of group memberships by getting insight into relevant developmental pathways, preventing the

development of elevated levels of PTH, and promoting optimal levels of mental health. In another study, researchers also found that DFM was beneficially applied to distinguish children and adolescents with different mental health profiles (Lyons et al., 2012). Overall, evidence in studies indicated that four quadrants of membership also differed on individual characteristics and desirable outcomes, including academic achievement, self-esteem, extraversion, neuroticism, student engagement, perceived social support, and physical health (Antaramian, 2010; Greenspoon & Saklofske, 2001; Lyons et al., 2012; Suldo & Shaffer, 2008).

The evidence is much more limited for applying this model to college students. Only a few studies have empirically investigated the utility of a DFM of mental health in the college population (Antaramian et al., 2015; Eklund et al., 2011; Xiao et al., 2021). Eklund et al. (2011) explored the utility of a DFM of mental health among college students by using measures of positive well-being and clinical symptoms. They investigated life satisfaction, emotional symptoms, personal adjustment, and clinical symptoms within 240 college students. Results were consistent with previous research suggesting that PTH and SWB are multidimensional rather than two extremes on a single continuum. Results from this study also provided additional support for the four-quadric model of mental health. Additionally, results affirmed that these groups differed in their levels of hope, gratitude, locus of control, and attention problems. Therefore, indicators of both positive well-being and clinical symptoms were necessary to assess college students' full range of functioning in this study (Eklund et al., 2011). The application of DFM of mental health for college students supports that the goal is not only to be free from mental illness but also to move toward a goal of flourishing, which aligns with the purpose and aims of college life and education (Eklund et al., 2011).

Antaramian (2015) extended previous research from Eklund et al. (2011) by adding further evidence for the utility of DFM of mental health among college students. This study aimed to examine the DFM in the context of students' educational outcomes and explore whether students differed not only in their mental health profiles but also in their academic achievement and student engagement (Antaramian, 2015). Four quadrants of group memberships were identified based on varying levels of SWB and PTH in the study, further supporting the theory that positive well-being and psychological symptoms are not opposite ends of a single continuum. Noteworthy, the percentage of individuals in the group classified as "at-risk" (i.e., low SWB and low PTH) is more significant than the previous studies of children and adolescents, indicating that college students may be more likely to lack positive well-being even if there is the absence of psychological symptoms (Antaramian, 2015).

Similarly, Xiao et al. (2021) extended the applicability of DFM of mental health to the mental health screening of Chinese college students. The study results also indicated the importance of addressing both SWB and PTH in guiding mental health screening in college populations. However, the authors also suggested that more population groups among college students should be included in future studies to guide students' mental health screening and interventions.

The proposed study utilized the four mental health profiles established by the studies of DFM of mental health for college students (Antaramian, 2015; Eklund et al., 2011). Mental health status can be identified using the following four categories: "well-adjusted" (manifesting high levels of SWB and low levels of PTH symptoms), "at-risk" (low levels of PTH and also low SWB), "ambivalent" (average to high levels of SWB and high PTH), and "distressed" (low SWB along with high PTH) (Antaramian, 2015; Eklund et al., 2011).

Although early research supports its use in the college population, more research is needed to fully establish whether this model is appropriate for understanding college students' unique mental health needs, especially for international students. The present study seeks to build on previous evidence by applying the definition of mental health from DFM with demographically distinct college undergraduate student samples compared with prior research.

Move Beyond Maslow's Hierarchy of Needs- Student's Sense of Belonging in College

Maslow (1954) proposed the hierarchy of needs, consisting of five levels of increasingly complex needs of all humans: physiological needs, safety, love and belonging, self-esteem, and self-actualization. The term "belonging" originated from this model, and Maslow suggested that one must satisfy physiological needs before progressing to meet higher-level needs. In addition, Maslow further explained that the third level hierarchy of needs as the need for belonging and love, premising on a shared humanity that goes beyond racial, gender, social, ethnic, geographic, and religious differences (Zalenski & Raspa, 2006). However, although there is an emerging body of literature that argues belongingness is a fundamental need, Maslow's perception of belonging has been considered insufficient (Slaten et al., 2014).

Baumeister and Leary (1995) defined belonging as the perception of consistent interaction and persistent caring from others. They proposed that humans are driven to establish and maintain positive, significant, and lasting interpersonal relationships. Different from Maslow's hierarchy of needs, they believed that belonging is almost as essential as physiological needs (i.e., food, sleep, or water). Furthermore, they also described the main characteristics of the need to belong: (1) people need to have persistent interpersonal communications with others, and (2) people need to feel a stable and affective bond for each other's welfare. However, Lambert et al. (2013) recommended that the definition of belonging go beyond a general need

such as forming a positive social relationship. Alternatively, belongingness is referred to as subjective experiences based on relationships that provide security through a sense of belonging.

In the last decade, studies on the significance of the sense of belonging for the student outcomes of racial and ethnic minority student populations are emerging (Museus & Ravello, 2010; Strayhorn, 2012). Existing literature identified various factors accountable for promoting or hindering a sense of belonging for racial and ethnic minority student populations, including living on campus, interaction with a diverse group of friends, faculty interaction, college involvement, and school climate (Singh et al., 2018; Maestas et al., 2007; Museus & Maramba, 2011; Strayhorn, 2012).

Although many studies encourage movement toward understanding the concept of a sense of belonging to the university setting, little research has explored how international students feel about belonging in a university community (Slaten et al., 2016). Considering an increasing number of international students enrolling in U.S. higher education settings, examining factors impacting their sense of belonging is necessary. This construct is one of the critical factors to achieve in college settings (Strayhorn, 2012). International students, who are away from their original sources of belonging, are especially motivated to seek a sense of belonging in the possibly unfamiliar host country (Caligiuri et al., 2020). However, international students can find it challenging to achieve a sense of belonging because of foreign social norms, language barriers, cultural knowledge, and cultural differences in forming relationships (Rivas et al., 2019). For example, Bertram et al. (2014) found that the most common acculturative stressors among Chinese international students were feelings of isolation from the foreign environment, cultural differences, and language barriers.

Strayhorn (2012) argues that a sense of belonging is particularly essential for individuals who live in an unfamiliar or foreign environment. Students who cannot connect to their learning environment and lack a sense of belonging tend to have adverse outcomes. Furthermore, Strayhorn (2012) indicates that the "deprivation of belongingness needs often leads to diminished interest in life activities, loneliness, self-hatred, disengagement from life (often through suicide) or, in the context of education, disengagement from college through attrition" (p. 23). Chen and Zhou (2019) assert that the construct of a sense of belonging should extend to international students for the purpose of pushing institutions to better facilitate these students' positive learning experiences.

Generally, experiencing a sense of belonging can promote psychological well-being and adjustment among international college students (Rivas et al., 2019). Pittman and Richmond (2008) discovered that students who have a greater sense of belonging on campus feel more capable academically, evaluate themselves more positively, and are less likely to externalize problems. In Glass and Westmont's (2014) study, they examined the effects of belonging on academic success and cross-cultural interactions among international students. The results of their study indicated that a sense of belonging increased both cross-cultural interaction and average grades earned among international students. Please see Figure 2 for a visual summary of theoretical models, which is discussed in detail below.

An Ecological Perspective of Acculturation and Adaptation

The concept of acculturation is important to discuss before introducing a review of the stressors impacting international students. Over the past century, the increase in migration has brought attention to researchers exploring the processes that immigrants go through when settling in a foreign country (Smith & Khawaja, 2011). Although being an international student

is not equivalent to being an immigrant, the acculturation frameworks were introduced to understand international students' adaptation experiences (Park et al., 2017).

Meaning of Acculturation. A group of anthropologists initially introduced the concept of acculturation as a group-level phenomenon involving cultural change and adaptation (Redfield et al., 1936). The definition of acculturation developed by Redfield and colleagues (1936) is the most commonly used definition of acculturation in research: "Acculturation comprehends those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original culture patterns of either or both groups … under this definition, acculturation is to be distinguished from culture change, of which it is but one aspect, and assimilation, which is at times a phase of acculturation" (Redfield et al., 1936, p.149-150).

In this first commonly used definition of acculturation in research, acculturation is considered one aspect of the broader concept of culture change (which results from intercultural contact). In addition, it is thought to generate change in "either or both groups," which is how it is distinguished from assimilation (Berry, 2017). After two decades, another definition was introduced by Social Science Research Council (1954). Acculturation was further defined as "culture change that is initiated by the conjunction of two or more autonomous cultural systems. Acculturative change may be the consequence of direct cultural transmission; it may be derived from non-cultural causes, such as ecological or demographic modification induced by an impinging culture; it may be delayed, as with internal adjustments following upon the acceptance of alien traits or patterns; or it may be a reactive adaptation of traditional modes of life" (Social Science Research Council, 1954, p. 974).

Although these definitions have played a fundamental role in much work on acculturation, they faced criticism due to the lack of focus on individual acculturation (Graves, 1967). In other words, these definitions only have viewed acculturation as a group phenomenon with an emphasis on the groups' cultural change.

New Definitions of Acculturation. Correspondingly, new definitions of acculturation began to emerge, especially within the field of psychology. In 1967, Graves proposed two distinctive levels of acculturation: group and individual. At the group level, he defined acculturation as a collective process in which there is a change in either the native culture, host culture members, or both. Furthermore, he introduced the concept of psychological acculturation, which refers to change in an individual member's world view resulting from continuous firsthand contact in a culture-contact situation influenced directly by the external culture and by the changing culture of which the individual is a member. At this individual level, the psychological acculturation changes within the individual result from the contact with the host society, including changes in identity, values, attitudes, and behavior (Berry, 2017; Grave, 1967).

The psychological literature on acculturation further distinguishes between the group and individual acculturation, and an acculturating individual or group goes through a set of processes to achieve a long-term adaptation to settle in the host society (Berry, 1997). Berry (2017) pointed out that the relationships between the group and individual levels need to be carefully examined. Cultural changes in the group establish the basis for psychological changes in individuals. Understanding the cultural context is required to accurately interpret and describe the subsequent psychological changes in individuals. In addition, it is impossible for all individuals going through acculturation in a common cultural context to have the exact same experiences. As a result, the students who participate in the two levels (i.e., group and individual) of acculturation

may not necessarily share the same perceptions of the acculturation process (Berry, 1997; Eustace, 2007) and they may have different psychological consequences (Berry, 2017). In other words, “there is no simple relationship between cultural and psychological features of acculturation: not every group, nor every individual engages the process in the same way, nor evidences the same outcomes” (Berry, 2017, p. 17).

In considering issues relevant to international undergraduate students, we must identify the lens through which we examine these issues. In this specific context, international students come to the United States and enroll in higher education with its unique school climate. Brunsting et al. (2018) conducted a systematic review on predictors of undergraduate international student psychological adjustment to the U.S. universities and recommended researchers utilize Bronfenbrenner’s ecological model framework to map the factors influencing international students’ adjustment during their transition to study abroad.

Bronfenbrenner’s (1979, 1992) ecological theory was initially developed to understand human development with an emphasis on environmental forces interacting with physiological attributes to shape outcomes in individual behavior, psychology, and pathology. Bronfenbrenner’s ecological model is comprised of a five-dimensional system, whereby each system is nested in the subsequent systems, including microsystem, mesosystem, exosystem, macrosystem, and chronosystem, and transact over time (Bronfenbrenner, 1979). Notably, Byrd and McKinney (2012) posited that the ecological model suggests that mental health outcomes are the product of multiple factors operating at multiple levels (e.g., individual, interpersonal, and institutional), not the result of one single risk factor.

Bronfenbrenner’s conceptual framework supports the notion that one must consider the entire ecological system in which individuals live to fully understand their dynamic with the

environments (Byrd & McKinney, 2012). Kudo et al. (2017) was inspired by the ecological model and proposed a multi-layered ecological model that guided their systematic review of international students' intercultural friendship development. The authors introduced two dimensions, individual and environmental, with six levels embedded within each other. The individual dimension is represented as a microsystem that incorporates two levels: personal and interpersonal. The environmental dimension is represented at four levels: situational (mesosystem), institutional (exosystem), sociocultural (macrosystem), and global (chronosystem). This model has not been applied to studying AISs in the university context. Given the importance and complexity of the psychological outcomes of AISs, this model would allow educators at the university level to capture a better understanding of individual and contextual factors that influence AISs' holistic experience. Consistent with Kudo et al.'s model, the present study proposes focusing on multiple factors operating at the personal, interpersonal, and institutional levels related to the overall mental health of Asian international undergraduate students. Importantly, researchers suggest that it is problematic to only consider culture within the macrosystem because culture is not separate from the individual (Vélez-Agosto et al., 2017).

Individual Dimension: Personal (Microsystem). The most inner circle, a microsystem, is a "pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics" (Bronfenbrenner, 1979, p. 22). In other words, it refers to the interactions between the developing person and that person's immediate environment, including family, school, or friends (Byrd & McKinney, 2012).

Kudo and colleagues (2017) proposed that there are two levels of individual dimensions within the microsystem: personal and interpersonal. The *personal level* refers to "a student's attributes, dispositions, abilities, or resources at a given moment in his/her life (e.g., physical

characteristics, gender, motivation, agency, language ability, previous international experiences, region/country of origin)" (Kudo et al., 2017, p.103). Studies have shown that these individual-level factors impact certain psychological disorders (e.g., depression) and perceived stress levels (Chang et al., 2017; Steptoe et al., 2007). Chang et al. (2017) demonstrated that elevated depressive symptoms among international students may be shaped by the level of internalized cultural identity they carry from their home cultures. Another study provides additional evidence regarding higher depressive symptoms reported by college students in non-Western countries, with especially elevated rates in individuals from Pacific Asian societies compared with college students across 23 different countries (Steptoe et al., 2007). The findings of this study suggest that international students, particularly Asian students, may enter U.S. universities with an already heightened propensity for depression and it is therefore critical to further understand the specific challenges these students face to better inform future prevention and intervention programs (Shadowen et al., 2019).

With that said, there is not a single study that investigates ecological influences on psychological outcomes of AISs' adjustment over time that considers the possible individual differences within similar cultural groups. Even among AISs from a single country, there are individual differences in terms of language proficiency, acculturation status, and familiarity with the U.S. culture (Wang et al., 2012). A major acculturation stressor that international students face is their language proficiency, which often lead to academic and sociocultural barriers (Smith & Khawaja, 2011). Academically, language barriers contribute to difficulties in assignment writing, understanding lectures, or asking questions in class (Mori, 2000). Consistently, Martirosyan et al. (2015) found a relationship between English proficiency and academic performance in international students. Socially, language barriers can hinder international

students' attempts to engage with local students (Mori, 2000). Furthermore, previous studies have shown that language proficiency, social support, length of stay in the United States, perceived discrimination or prejudice, and homesickness are the most significant factors impacting international students' adjustment and acculturation stress (de Araujo, 2011; Smith & Khawaja, 2011). Overall, these studies have shown that individual-level factors in Asian international students influence certain psychological disorders (Rice et al., 2012), perceived stress (Li et al., 2013), and coping strategies and styles (Lee et al., 2014).

Individual Dimension: Interpersonal (Microsystem). Kudo et al. (2017) also proposed that the *interpersonal level* refers to "a student's experiences mostly in dyadic settings (e.g., anxiety, uncertainty, subjective cultural differences, language difficulties, cooperation, group identity, verbal and physical abuse, reciprocity, homophily)" (Kudo et al., 2017, p.103). Attending college can be a source of stress for some students due to new social relationships, increased academic demands, and housing arrangements (Mori, 2000). It can be a challenging experience for Asian international students as they attempt to adjust to different cultural norms and academic environments (Li & Lin, 2014). Vélez-Agosto et al. (2017) utilized Vygotsky's sociocultural theory to reconceptualize Bronfenbrenners' model. The authors argued that the acquisition of cultural forms of behaviors happened not only on the individual level, but also between people (interpsychological) and within the individual (intrapsychological).

Several studies have assessed the impact of interpersonal adjustment on mental health for Asian international college students (Chen et al., 2015; Chen et al., 2020). First, many Chinese international students' families expect their children to attend elite institutions. A culturally informed understanding of each family's expectations and motivations for sending their child to study in the United States is crucial when assessing psychological distress in an AIS (Chen et al.,

2015). Such high expectations can be tremendously burdensome and lead to perfectionism associated with depression in Chinese international students (Chen et al., 2015). Additionally, an emphasis on interpersonal relationships and responsibility is a potential source of stress for Chinese international students. As a result, they are less likely to seek help for psychological problems because it is considered to cause shame for the family (Zhang, 2003). Secondly, many international students experience some degree of cultural differences between their culture of origin and U.S. culture. The impact of cultural distance on the overall acculturation process has been widely documented (Meng et al., 2019; Nilsson & Anderson, 2004). AISs, particularly, may have increased difficulty making domestic friends compared to their European counterparts (Smith & Khawaja, 2011). Several researchers have observed that Asian cultures are typically collectivistic, which diverges from a Western cultural emphasis on individualism, assertiveness, and self-sufficiency over interdependence and relatedness (Mori, 2000; Smith & Khawaja, 2011; Yeh & Inose, 2003). Therefore, AISs may experience difficulties interacting or making friends within a Western cultural context. The recognition and incorporation of these cultural aspects into the consideration of mental health services are crucial for mental health providers, who are generally aligned to individual and interpersonal perspectives of mental health needs and treatments.

Environmental Dimension: Situational (Mesosystem) & Institutional (Exosystem). The mesosystem is defined as a "collection of microsystems and how these systems interact with each other" (Bronfenbrenner, 1977; Zhang, 2018). In other words, there are interrelations, also referred to as links, between the various settings in the microsystem that are referred to as the mesosystem. Lau and Ng (2014) found that it is important to recognize that the social connections at the microsystem level occur within one setting (e.g., classroom) and at the

mesosystem level these interactions take place across setting boundaries (e.g., between classrooms and the university). Kudo et al. (2017) conceptualized the mesosystem as a *situation level*, which refers to the "immediate settings in which a student shares experience with one or more persons, including potential or present relational partners (e.g., curriculum, group work, recreation and leisure activities, proximity, conational and international student communities)" (Kudo et al., 2017, p. 103). Studies have shown that the engagement of Asian international students in leisure has a positive association with gaining social support from friends and has a direct impact on school adaptation (Gomez et al., 2014; Hwang et al., 2016). For instance, many international students established their social networks with various campus activities, such as peer groups, clubs, recreational sports, and other activities that facilitate social involvement on campus.

However, Li and Stodolska (2007) claim Chinese international graduate students understand the importance of leisure but cannot enjoy leisure or afford leisure as free time activities when they study abroad. As a result, Chinese international graduate students experienced structural, intrapersonal, and interpersonal constraints in their leisure activities. The most prominent of these constraints are lack of time, language barriers and cultural differences, and lack of friends. For example, many students report that they are constrained in participating in leisure activities with mainstream domestic students because language and cultural barriers or limited social networks make them have fewer chances to find partners to share in leisure activities. Chavajay (2013) also indicated that international students tend to interact with other international students to gain more social-emotional satisfaction, perhaps due to a shared empathy for feeling like an outsider.

In Bronfenbrenner's theory, the exosystem is defined as "one or more settings that do not

involve the developing person as an active participant but in which events occur that affect, or are affected by what happens in that setting" (1979, p. 237). In other words, the exosystem is present when events that do not directly involve an individual still have an impact on the individual (Lau & Ng, 2014). According to Kudo and colleagues (2017), the *institutional level* refers to "the remote settings that do not directly involve a student but affects the situation containing the students (e.g., policies, plans, strategies, interventions or pedagogies aiming to promote intercultural interactions, campus size and location)" (Kudo et al., 2017, p. 103). In other words, the academic requirements, teaching practices, and the social and institutional climate can become critical factors that impact students' psychological health (Byrd & McKinney, 2012).

Campbell (2012) reported that university support enhanced intercultural contact between newly arrived international students and domestic students. Lehto et al. (2014) found that a welcoming and receptive campus culture can promote the interaction between international and domestic students. Furthermore, Cho and Yu's (2015) showed that university support is an influential factor in international students' psychological well-being. These studies emphasized the influences of personal, interpersonal, and contextual factors that may underscore international students' state of psychological well-being.

In recent years, many cultural challenges have been exacerbated by a sociopolitical context that is increasingly unwelcoming of non-citizens. Kataria (2018) found that proposed restrictions affecting several visa categories used by international students will make it even more difficult for future students to obtain visas. Considering these policy changes, some international students have expressed feeling anxious, discouraged, and even nervous about their plan and stay in the United States (Baer, 2017; Kataria, 2018). Others have become worried

about the limited opportunities for internship and job employment. While international students may be aware of the unique challenges they encounter, many of them are suffering from the emotional and mental toll associated with these challenges (Chen et al., 2020).

Even though the awareness of mental health needs for Asian international undergraduate students in higher education is rising, there is still a need to improve the accessibility to campus mental health resources (Xiong, 2018). Therefore, it is critical to better understand mental health culture on campus and student mental health coping strategies to identify the mental health needs of students and gaps in mental health services within higher education settings.

Resilience

Resilience has been associated with adapting to the university environment and recovering from adversity to maintain a relatively stable, healthy level of psychological functioning (Du & Wei, 2015). Studies show that resilient individuals can maintain their physical and mental health both through buffering negative consequences from difficult times (Conner & Davison, 2003) and improving psychological well-being (Ryff & Singer, 2000). Bajaj & Pande (2016) suggest that resilience could be viewed as an essential source of subjective well-being and found it to be positively correlated with life satisfaction and positive affect and negatively related to negative affect (Hu et al., 2015; Liu et al., 2012).

Among university students, resilience has been shown to be a significant predictor of successful coping (Chun & Poole, 2009; Pan, 2011). That is, higher levels of resilience have been associated with lower levels of psychological distress (Pidgeon et al., 2014). In another study, students were found to overcome challenging situations with optimism and resilience with active coping strategies that helped reduce their distress (Yakunina et al., 2013). Hartley (2012) also emphasized that resilience has been seen as an asset that supports university students'

mental health requirements within the university environment. Examining the role of resilience in university students will further contribute to knowledge in the field of mental health and well-being.

Resilience is widely defined as a personal trait or capacity in coping with, bouncing back from, overcoming, surviving, or successfully adapting to various adverse conditions or life stresses (Grotberg, 2003; Luthar & Ziegler, 1991). The results of previous studies supported Pan's (2011) resilience-based and meaning-oriented model of acculturation. Chun and Poole (2009) found that spirituality (i.e., praying or listening to sermons) helped international students overcome adjustment challenges and having supportive connections with friends and families allowed them to overcome the stress of adaptation (Han et al., 2013). Glass et al. (2015) concluded that Pan's resilience-based model (2011) was critical for identifying protective factors to support international students' resilience, including a student's sense of belonging.

Overall, Pan's (2011) study identifies some practical implications for resilience-based intervention for international students to reduce risk factors and promote protective factors (Masten & Reed, 2002). The first approach to improve international students' emotional well-being is by reducing the risk of acculturative hassles by strengthening their social networks, supporting their academic work, promoting cultural learning to reduce cultural distances, and reducing threat appraisal toward several particular acculturative hassles. Another approach is to enhance the proactive factors that promote resilience by operationalizing the factors in their micro and macro systems that might affect the acculturation experiences of international students (Park et al., 2017). For example, professionals can intentionally enhance a support network and build a solid infrastructure in social (e.g., interaction with domestic students and professors) and

ecological contexts (e.g., classroom), which create opportunities for interpersonal relationship formation (Glass et al., 2015; Rivas et al., 2019).

In addition, studies of resilience have shown that social connectedness is one of the significant protective factors that buffer acculturative stress (Caligiuri et al., 2020; Rivas et al., 2019) and increases self-confidence among international students (Wan et al., 1992). Social connectedness can help international students derive meaning from acculturative challenges, such as anxiety, depression, panic, and feelings of isolation (Smith &Khawaja, 2011). Similarly, Lin and Betz (2009) recommended that AISs be provided encouraging, supportive, and comfortable interactions with domestic students to facilitate a stronger connection with the institution and alleviate acculturative stress.

International students' sense of belonging is critical to address because it is related to academic success (Rivas et al., 2019), social interactions (Glass & Westmont, 2014), and stress management (Pittman & Richmond, 2008). Most recently, several studies have explored the concept of belonging and its relationship to acculturative stress and other psychosocial outcomes (Du & Wei, 2015; Wei et al., 2012). Furthermore, several studies have examined the relevance of a sense of belonging for AISs in higher education and its positive impact on the social connectedness of AISs (Ladum, 2019; Slaten et al., 2016). The following section will elucidate the concept of a sense of belonging as a theoretical framework and the effects of belonging on AISs' psychological adaptation.

Sense of Belonging Among College Students

Important Roles of Sense of Belonging

Recently, a growing number of studies have begun focusing on how a sense of belonging plays a crucial role in the academic success and development of college students (Pittman &

Richmond, 2008; Strayhorn, 2012). The construct of a sense of belonging has been applied to university students in a few studies (Pittman & Richmond, 2008; Slaten et al., 2014) and has indicated the positive influence of belonging on student outcomes, both in academic and psychological domains. A sense of belonging is significantly associated with positive educational, social, and psychological outcomes (Cho & Yu, 2015; Goodenow & Grady, 1993). Researchers also theorize that the importance of a sense of belonging is due to its contribution to academic motivation constructs, such as engagement and self-efficacy, which improve academic performance (Cortina et al., 2017; Kia-Keating & Ellis, 2007; Osterman, 2000). On the other hand, studies across cultures indicate that social rejection hinders the need for belonging. Social rejection decreases emotional well-being and increases susceptibility to self-defeating behaviors and social avoidance (Hendrickson et al., 2011; Mori, 2000).

Pittman and Richmond (2008) concluded that university students' belonging is related to students' experiences of stress and their engagement in academic activities. In addition, they organized several underlying factors contributing to university belonging, such as a sense of commitment to the institution, individual commitment to work in this setting, and a sense of one's abilities being recognized by others. Another qualitative study conducted by Slaten et al. (2014) at a large Midwestern university in the United States explored the factors that contributed to university belonging. The authors found four overarching themes pertinent to university belonging: (1) feeling valued by others in group settings, (2) sustaining meaningful personal relationships, (3) being aware of the campus culture, and (4) feeling supported by the university environment.

Sense of Belonging Among Asian International Students

While existing research has examined various issues related to AISs' adjustment and acculturation (Hyun et al., 2007; Zhou et al., 2008), the literature includes little exploration of protective factors influencing their responses to adjustment challenges or coping strategies. Most recently, several quantitative studies have examined the concept of belonging and its relations to acculturative stress and other psychosocial outcomes (Du & Wei, 2015; Wei et al., 2012). A sense of belonging may directly relate to psychological adaptation outcomes, or it may play a critical role between a stressor and the outcome. Baumeister and Leary (1995) found that experiencing a sense of social belonging has been linked to positive emotions (e.g., happiness) while being deprived of a sense of belonging has been linked to a variety of negative outcomes, such as higher levels of mental and physical illness. Several scholars concluded that a sense of belonging has practical benefits for international students and is one of the most frequently cited factors for college students' academic and subjective well-being (Glass et al., 2015; Singh et al., 2018). After acknowledging the importance of a sense of belonging for international students, examining AISs' sense of belonging on campus becomes critical. However, despite expanding research on the adjustment and difficulties of Asian international students in the United States (Hyun et al., 2007; Zhou et al., 2008), few studies focus on either the relationship between acculturation and acculturative stress or the effect of sense of belonging on this relationship related to AISs.

Given the continuous, dynamic demographic changes in the college student population internationally due to globalization, the need to understand more fully how AISs adapt and cope with acculturation experiences in their new host cultural environment is urgent and timely (Kuo, 2014). Therefore, this literature review aims to broaden knowledge regarding how AISs

experience their acculturative stress during the acculturation process in the United States. Such an undertaking aims to increase our understanding of how the sense of belonging relates to the level of acculturation and acculturative stress among AISs. Furthermore, the current study attempts to investigate further the role of a sense of belonging as a buffer for acculturative stress and negative psychological adaptation among AISs who experience cultural distance from the host cultural context. A better understanding of factors that predict or protect against specific consequences may provide a comprehensive understanding of the differential needs and foundation for designing strategies and resources to promote a sense of belonging for AISs. Lastly, this review will propose important issues for enhancing a better theoretical understanding of the adaptation pathways and outcomes of AISs, improving clinical practices and implementation in support of the psychosocial well-being of AISs, and making recommendations for school psychologists on how to cultivate a welcoming environment for the emergence of school belonging.

Factors Influencing Sense of Belonging Among Asian International Students

With the pressing need to assure having an impact on the greatest number of Asian international undergraduate students, a sense of belonging could play an important role in identifying key modifiable psychosocial factors associated with acculturative stress to promote positive transition and adjustment of Asian international undergraduate students to university life (Chen & Zhou, 2019; Slaten et al., 2016). Slaten et al. (2016) examined AISs' perspectives and their experience of belonging in a university setting. They found that several factors can potentially buffer the psychological distress experienced during their college adjustment, including (1) intrapersonal factor: self-efficacy or personal growth from college experience, (2) interpersonal factor: domestic friends, other international friends, friends from clubs, TAs,

professors, family members, (3) environmental factor: campus facilities, university price, or university resources, and (4) cultural factor: food, language, norms, or gender roles. For instance, the results from Slaten et al. (2016)'s study indicated that relationships with international students of similar national origin and domestic students are important for Asian international students to feel a sense of belonging on campus, even though the relationships with these two types of students might serve different functions. Social connections with students of similar nationality tended to increase AISs' sense of belonging by providing social support and a sense of security (Lee, 2005; Slaten et al., 2016). When AISs had the opportunity to interact with domestic students, they reported having a better understanding of U.S. cultural interpersonal interactions, which they suggested increased a sense of security and belonging in their campus experience.

Toward Including Evidence-Based Prevention Interventions within an MTSS Framework

Due to increasing diversity within the university classroom in the U.S., as well as a well-documented psychological barrier of Asian international undergraduate students, adjustment issues must be a central focus for the mental health providers. Providing high-quality mental health services is a major function within the framework of a school psychologist's job and is also a critical component within multi-tier system of supports (MTSS) (Brown-Chidsey & Steege, 2010). MTSS in institutional settings is structured to offer a systematic framework on prevention and problem solving for all students within the system. There are three tiered categorized by the level of risk and need: Tier 1 is *universal* level and it includes students who are in the general status and those who are thriving or unidentified, Tier 2 is *targeted* level and it includes students who need slightly more intensive intervention, individually or in groups, and Tier 3 is *intensive* level and it includes students who need intensive individualized interventions,

such as counseling services (Belser et al., 2016; Ockerman et al., 2012). The purpose of the current study aims at investigating how university settings can play an important role in providing effective prevention programs to meet students' needs.

Mrazek and Haggerty (1994) defined three levels of prevention interventions: universal, selective, and indicated interventions. The aim of universal prevention interventions is delivered to an entire population and often aim at integrating resources of the environment in the larger scale. For example, social-emotional curricula, classroom stress management strategies, and school-wide behavioral support (Domitrovich et al., 2008). In addition, universal interventions are supported by selective interventions and indicated interventions, which are offered to the selection of the specific population or specific problems that are at increased risk and have not responded to interventions earlier in the continuum (Domitrovich et al., 2008).

Need for Universal Prevention Intervention Program for College Students

Evidence-based Prevention Interventions for Promoting Mental Health

School-based universal mental health prevention programs have well-documented evidence of effectiveness for students in K-12 system (Corcoran et al., 2018; Drolet et al., 2013; Durlak et al., 2011; Valente et al., 2007). For instance, several findings have indicated that school-aged students who have participated in prevention programs have demonstrated lower levels of emotional distress (Durlak et al., 2011), behavioral problems (Durlak et al., 2011), substance use problems (Valente et al., 2007), and have reported higher levels of self-esteem and self-confidence, interpersonal skills (Drolet et al., 2013), and academic performance (Corcoran et al., 2018). In order to provide direct services for university students who need support from school, the goal of mental health preventive interventions should move beyond K-12 system. School mental health programs offer a range of mental health services that benefit the students,

including screening initiatives, intervention programs, psychoeducational workshops, and more. Through these services, at-risk university students are more likely to learn skills to combat adjustment difficulties, to be effectively identified early, and receive timely targeted interventions to address their mental and emotional challenges (Arora et al., 2019; Conley et al., 2016; Sulkowski & Joyce, 2012).

However, the impact of similar prevention programs at the higher educational level has received less attention for university students (Conley, 2013). Many prevention programs in higher education target specific problems such as anxiety, depression, suicide, or alcohol use (Buchanan, 2012; Larimer & Cronce, 2007; Rith-Najarian et al., 2019; Wolizky-Taylor et al., 2020). Although selective preventions in specific problem areas are salient, university settings provide a unique context for addressing mental health prevention more broadly (Conley et al., 2013; Rith-Najarian et al., 2019). University campuses are the context in which students with psychological distress are most likely to receive some type of services, particularly for those students with problems that do not meet diagnostic criteria (Pedrelli et al., 2015).

The transitional nature of university settings makes it an ideal environment for providing an evidence-based comprehensive mental health action plan along a continuum of primary prevention, psychoeducation, treatment, relapse prevention, and crisis response. The key point is to deliver prevention programs for students that prevent mental health problems before they develop (Conley et al., 2013). Such an approach could serve to reduce the incident and prevalence of mental health problems while reducing the demands placed on counseling centers and further build protective factors for all students, strengthening students' skill sets in response to stress or connecting resources on campus for individual needs (Domitrovich et al., 2008). Rith-Najarian et al. (2020) also pointed out that the prevention efforts allow more efficient

coordination between departments and resource allocation.

Despite a considerable amount of literature published on AISs, there is a shortage of evidence-based universal preventions that seek to reduce emotional and psychological distress and aid the adaptation of AISs to American college campuses. Given the importance of cultivating sustainable impact on the greatest number of Asian international students, there is a need to explore and further evaluate evidence-based universal preventive interventions offered in the higher education (Smith & Khawaja, 2011). Guided by previous research on promoting mental health among university students as a way of enhancing their well-being and preventing various adjustment difficulties, the relative effectiveness of different preventive intervention strategies and formats will be discussed in the following section.

Core Elements of Effective Preventive Interventions

Several systematic reviews of prevention programs for depression, anxiety, and stress in higher education settings have been explored (Conley et al., 2013; Fernandez et al., 2016; Huang et al., 2018; Reavley & Jorm, 2010; Regehr et al., 2013). However, findings have been inconsistent due to overlooked aspects of the dissemination process and the influences of contextual factors at multiple levels on the quality of program implementation in higher education (Wandersman et al., 2008). There is a lack of standardized prevention programs that have been implemented and evaluated across multiple student populations; it may be necessary to further explore commonalities across effective programs introduced within the past three decades (Conley et al., 2013). Rith-Najarian and his colleagues (2019) pointed out that identifying common elements across different prevention interventions can inform protocol design or adaptation within a given context or population to increase the compatibility of

treatments. This section reviews the core elements of universal mental health prevention programs and their impact on the controlled outcomes for university students.

Evidence-based Prevention Intervention Strategies. There have been several systematic and metanalytic reviews (Conley et al., 2013; Fernandez et al., 2016; Huang et al., 2018; Reavley & Jorm, 2010; Regehr et al., 2013) conducted on preventive interventions for university students' mental health issues. Conley et al. (2013) conducted a meta-analysis reviewing the effectiveness of universal mental health promotion and prevention programs for university students who experienced a range of adjustment outcomes, such as depression, anxiety, and stress. They also identified the most promising interventions and formats across 83 preventive interventions that appeared between 1967 and the end of 2010. They compared the results for different prevention intervention strategies and formats, including (a) *psychoeducation* focused on providing information to participants such as coping strategies or ways to relax, (b) *cognitive-behavioral* interventions centered on how cognition can be detected and used effectively to change emotions or behaviors, (c) *relaxation* interventions focused on incorporating techniques or exercises to induce physiological calming such as muscle relaxation, breathing exercise, (d) *mindfulness* intervention focused on skills designed to train the mind to facilitate present-focused in a nonjudgmental mode, (e) *meditation* intervention focused on applying various meditation techniques like transcendental meditation and yoga, and (f) *other* category including psychodrama, expressive writing, and social skills. The outcomes assessed in the literature fell into the following six major categories: *emotional distress, social and emotional skills, self-perceptions, interpersonal relationships, health, and academic performance*.

According to their findings, the most common intervention strategies employed were cognitive-behavioral techniques, followed by psychoeducational programs, relaxation strategies, meditation, and mindfulness training interventions. Notably, the authors also reported the proportion for which each intervention demonstrated statistically significant different outcomes (at the $p \leq .05$ level) and found that interventions that incorporated supervised skills practice, mindfulness interventions were the most effective (78.8%) across all outcomes combined compared with all other interventions including, cognitive behavioral interventions (55.8%), relaxation interventions (28.9%), meditation interventions (19.4%). Interestingly, psychoeducation programs did not demonstrate effectiveness for university students in this review due to a lack of skill-oriented practice. To note, interventions with supervised skill practice were equally effective in reducing emotional distress (i.e., depression, anxiety, and stress), enhancing self-perception, and improving social and emotional skills (Conley et al., 2013). Similar to Conley et al.'s findings, stress-reduced interventions for university students using cognitive-behavioral and mindfulness-based programs consistently showed a positive impact on student's well-being (Regehr et al., 2013).

Several scholars also evaluated the effectiveness and feasibility of mindfulness prevention interventions aimed at promoting university students' mental health and well-being (Dvořáková et al., 2017; Vidic & Cherup, 2019). Dvořáková et al. (2017) conducted a randomized controlled trial of an evidence-based universal mindfulness program called Learning to BREATH (L2B) in assisting the developmental transitions of first-year university students. The 8-session program included learning emotional regulation skills, introducing mindfulness techniques, and facilitating the learning in a supportive, group environment. In addition, participants were advised to intentionally practice mindfulness in their daily life with home

practice cards provided. The authors determined that participating in a mindfulness program in the first semester of their university experience had significant improvements in students' life satisfaction and reductions in depression, anxiety, sleep issues, and alcohol consequences compared to the control group. Another study conducted by Vidic and Cherup (2019) examined the effect of an elective seven-week mindfulness-based relaxation course on university student's stress, resilience, self-efficacy, and perfectionism. The study results provided promising evidence in decreasing overall levels of stress and increasing overall levels of resilience and self-efficacy in comparison with the control group. By embedding a course-based mindfulness program in the academic curriculum, higher education institutions can potentially overcome challenges related to adjustment issues and utilization of student support services, and in turn, provide a prevention approach to assisting students upfront instead of having students seek intensive interventions after the occurrence of a crisis (Vidic & Cherup, 2019).

Huang et al. (2018) also proposed to conduct a systematic review and meta-analysis to examine the effect size of post-intervention on university student's depression, anxiety, obsessive-compulsive disorder (OCD), and post-traumatic stress disorder (PTSD); further, they also aimed to identify factors that may contribute to the intervention effect. A total of 59 interventions targeting university students between 2000 and 2018 and representing 4 different intervention categories (cognitive-behavioral therapy, mindfulness-based interventions, attention/perception modification, and others) were included in this metanalysis. The authors found that both cognitive-behavioral therapy and mindfulness-based interventions were effective for depression and GAD. In addition, they reported that other interventions (e.g., exercise, music, peer support and personalized feedback) had the highest effect size for both depression and GAD among university students (Huang et al., 2018).

Based on the previous literature, prevention programs for university students have the potential to reduce the experience of depression, anxiety, and stress associated with college adjustments. However, there is little evidence that interventions are effective for all students given the studies included in these reviews had significant limitations: over-representation of interventions delivered to female students in Western countries, population samples composed almost entirely of students with mild to moderate mental health problems, and a lack of standard interventions developed and tested across multiple college populations and campuses (Buchanan, 2012; Reavley & Jorm, 2010). Indeed, with very limited intervention studies included in the most recent systematic literature review of international students' psychosocial adjustment to U.S. universities, future studies should evaluate the benefits of both mindfulness and cognitive-behavioral interventions and include interventions that have shown promise across different student groups (Brunsting et al., 2018; Conley et al., 2013; Reavley & Jorm, 2010).

Supervised Skills Practice and Format. The format and structure of effective preventive intervention should be taken into consideration and replicated in many higher education settings for best practice (Conley et al., 2013). Significantly, Conley et al. (2013) examined whether intervention strategy or format with the incorporation of supervised skills practice made a difference in intervention effectiveness. The authors identified that skill-oriented prevention programs often improved various adjustment outcomes for children and adolescents across settings. The literature is also clear that supervised skill practice over multiple session contributes to the success of skill acquisition and generalization for youth and adults (Durlak et al., 2011; Wilson et al., 2001). Conley et al. (2013) found that 75% of the interventions identified were skill-oriented programs, and 25% were psychoeducational. Among the skill-oriented interventions, 69% were employed with supervised skill practice. To note, inclusion of a

supervised skill practice component in the intervention was associated with an increased likelihood of positive outcomes.

Consistent with literature on children and adolescents (Durlak et al., 2011; Wilson et al., 2001), Conley et al. (2013) reported that interventions with supervised skills practice exceeded both skill-oriented interventions without supervised practice and psychoeducational program. To be specific, skill-oriented programs incorporating supervised skill practice were over 7 times more likely to obtain significant results than psychoeducational programs. In sum, the results indicate that skill-oriented programs that contain supervised skill practice, such as behavioral rehearsal and positive feedback, appear to be promising mental health promotion and preventive intervention for university students (Conley et al., 2013).

In terms of intervention formats, Conley et al. (2013) and Rith-Najarian et al. (2019) both examined the effectiveness of different delivery format of evidence-based prevention interventions. Rith-Najarian et al.'s (2019) reported that of the universal prevention programs included in their analyses, 72% were group-based, 16% were self-administered, and 12% were online computer-delivered. The authors indicated that it was difficult to draw a conclusion about differences in core element frequencies when comparing across three categories due to confounding issues. However, they suggested that self-administered programs had fewer and less diverse practice elements (Rith-Najarian et al., 2019). Significantly, Conley et al. (2013) found that preventive interventions delivered as a class were more effective than those delivered in small groups. The authors inferred that class-based interventions were more effective due to two main reasons: duration and motivation. They observed that, on average, class preventive interventions have longer duration (M = 25.3 hours, SD = 12.5) than the small-group programs (M = 8.6 hours, SD = 3.8). The authors also suggested that students were used to learning new

content in classes and they might be more engaged with course-based interventions led and evaluated by instructors (Conley et al., 2013). However, Rith-Najarian et al. (2020) argued that group-level delivery provided opportunities for participants to sign up with peers and friends, which leads to social cohesion and support.

In sum, meta-analytic studies suggest that some strategies, structures, and formats of universal prevention interventions produce larger effects than others (Conley et al., 2013; Fernandez et al., 2016; Huang et al., 2018; Reavley & Jorm, 2010; Regehr et al., 2013). For example, the findings highlight that supervised skills practice, mindfulness and cognitive-behavioral strategies, and class-based format are particularly effective (Conley et al., 2013; Huang et al., 2018). Unfortunately, most of the evidence-based intervention programs introduced in the reviews are limited to small sample sizes and have not investigated effectiveness for diverse student populations in higher education.

Advantages of Internet-based Mental Health Prevention Interventions

In recent years, the potential of the internet and telehealth services to promote and address mental health issues in higher education settings has become increasingly evident (Davies et al., 2014; Ebert et al., 2017; Harrer et al., 2018). The United Kingdom's Royal College of Psychiatrists recommended increasing the availability of evidence-based online interventions for university students (Royal College of Psychiatrists, 2011).

In 2020, many schools decided to suspend in-person classes in response to intensifying concerns surrounding COVID-19. This decision significantly affected students, both educational and psychosocially, as they experienced an abrupt cancellation of in-person courses, were forced to leave their campus community, and witnessed a loss of social activities (Tasso et al., 2021). Further, many reviews highlight documented the psychological impact of COVID-19 on college

students, including feeling anxiety and depressive symptoms and increased stress levels as a result of being far from home, socially isolated, experiencing decreased family income, contending with the uncertainty of university education and online courses, and navigating future employment (Browning et al., 2021; Charles et al., 2021).

Several benefits of offering online mental health prevention will be discussed, including convenience, cost-effectiveness, accessibility for students physically and geographically restricted, accessibility of content, and comparable effectiveness to face-to-face counseling (Barak et al., 2008; Ebert et al., 2018). Given the prevalence of mental health needs among university students, the standard model of one-on-one individual therapy delivery and even brief group intervention is insufficient and resource intensive. Online-based prevention and intervention programs are one way to bridge the gap and decrease mental health disparities (Eustis et al., 2018). Further, Rith-Najarian et al. (2020) found that there has been an increasing trend of internet-based prevention programs developed for depression, anxiety, and stress for university students. Given the habits of accessing health information online among university students, online-delivered interventions have become a natural extension for mental health prevention. Overall, online programming has the potential for larger reach and scalability to the entire campus, especially during the time of COVID-19 outbreak and the suspension in-person classes.

Previous meta-analytic studies have examined the effects of technology and computer-delivered interventions on college students' mental health. Davies et al. (2014) conducted a systematic search including 14 studies, primarily evaluating web-based cognitive behavioral therapy, and found moderate to large effects on depression, anxiety, and stress compared with control groups. Conley et al. (2016) examined technological mental health prevention programs

targeting students in higher education without any presenting problems (universal prevention) or with mild to moderate subclinical problems (indicated prevention). The authors found that preventions with skill training (e.g., email, online contact), both universal and indicated, were reported to be statistically significant. Overall, the effects of the standardized mean difference were from 0.20 to 0.34 on depression, anxiety, and stress outcomes in non-clinical student samples compared with control groups. However, non-skill-training interventions were only significant among indicated programs.

Given that previous research has clearly documented the potential of Internet-based interventions for preventive interventions (Conley et al.,2016; Ebert et al., 2018), more research is clearly needed to understand how Internet-based interventions should be designed and delivered to promote mental health in university students.

Purpose of Study

Only a limited amount of research has investigated international students' mental health (Pendse & Inman, 2017). Pendse and Inman (2017) found that among 6,191 empirical articles published in counseling psychology related journals from 1984-2014, only 1.37% focused on international students. Consistently, Zhang and Goodson (2011) underscore that researchers do not pay enough attention to international's mental health while reviewing articles on international students from 1990-2009. To this end, the aim of this study is to examine Asian international student's mental health by evaluating the effectiveness of a 10-week resilience-based prevention intervention (titled "*Resilience and Wellness for College and Beyond, RWCB"*), incorporating the utility of a DFM of mental health in the college population, and including U.S. student comparison group. Moreover, the inclusion of U.S. students as a comparison group provides an opportunity to fully explore AISs' mental health in a higher

education setting. In order to achieve an integrated understanding of AISs' mental health, RWCB preventive class included supervised skill practice that aims to reduce psychological distress and acculturative stress, improve resilience, increase the sense of belonging, and promote overall subjective well-being.

In an effort to meet the mental health needs of the greatest number of U.S. and Asian international undergraduate students, universities could play an important role in identifying the key modifiable psychosocial factors to promote positive transition and adjustment of U.S. and Asian international undergraduate students to university life. Overall, this study will examine the impact of a universal preventive intervention on the mental health of undergraduate students and identify what dependent variables changed through a pre- and post-test. This study was expected to identify the usefulness of a universal prevention class for the mental health of undergraduate students and to serve as a basis for all students as well as to enhance our understanding of Asian international undergraduate students' acculturative stress and consider the students' psychological and environmental contexts (i.e., higher levels of resilience, sense of belonging, and subjective well-being).

Research Questions and Hypotheses

The specific research questions and specific hypotheses for this study were as follows:

Research Question #1a: How are measures of resilience, sense of belonging, psychological distress, and subjective well-being associated with one another at baseline among *all undergraduate students*?

RQ#1b: How are measures of resilience, sense of belonging, psychological distress, acculturative stress, and subjective well-being associated with one another at baseline in *Asian international students*?

Hypothesis #1a & b: It was predicted that student measures of resilience, sense of belonging, and subjective well-being are positively correlate with one another at baseline. It was also predicted that psychological distress (and acculturative stress) will be negatively associated with an individual's resilience, sense of belonging, and subjective well-being. It was also predicted that Asian international students will experience higher levels of psychological distress along with lower levels of resilience, sense of belonging, and well-being than U.S. students. Previous research showed that Asian international students reported a higher rate of depression and anxiety than the average rate compared with U.S. students due to experiencing a higher level of acculturative stress (Hamamura & Laird, 2014; Xiong, 2018).

Research Question #2: What are the relationships of undergraduate student baseline scores of resilience, sense of belonging, psychological distress, and subjective well-being associated with post-test outcome scores? And were post-test outcome scores related to their pre-class level, class standing (i.e., first-year vs. non first-year), generation (first-generation vs. non first-generation), and skill practice attendance among *all undergraduate students*?

Hypothesis #2: It was hypothesized that preliminary effects linking the intervention to the outcome measures would be found. It was predicted that the post-test outcome scores in psychological distress, resilience, sense of belonging, and subjective well-being were associated with students' pre-class levels. Studies showed that first-year and first-generation college students struggle with more mental health problems (Bruffaerts et al., 2018; Perry, 2016). This hypothesis was based on previous research (Conley et al., 2013) that showed that interventions with supervised skills practice effectively reduced emotional distress (i.e., depression, anxiety, and stress), enhanced self-perception, and improved social and emotional skills. Similar to Conley et al.'s findings, stress-reduced interventions for university students using cognitive-

behavioral and mindfulness-based programs consistently showed a positive impact on students' well-being (Regehr et al., 2013). Overall, it was predicted that undergraduate students' class standing, generation, or skill practice attendance would be associated with post-test scores.

*Research Q*uestions #3: What are the relationships of student baseline scores of resilience, sense of belonging, psychological distress, and subjective well-being associated with post-test outcome scores? And were post-test outcome scores related to their gender and demographic backgrounds (i.e., Asian American students) among *all undergraduate students?*

Hypothesis #3: It was predicted that baseline levels of resilience, sense of belonging, and subjective well-being, and psychological distress would be associated with student outcomes. Research showed that female and Asian American students report more mental health problems in their lifetime compared to male and non-Asian students (Asher BlackDeer et al., 2021). Additionally, it was hypothesized that female and Asian students would be associated with higher post-test score in subjective well-being and lower post-test score in psychological distress.

*Research Q*uestions #4: What are *Asian international students'* baseline scores of resilience, sense of belonging, psychological distress, and subjective well-being associated with post-test outcome scores; and what is the relationship of post-test outcomes related to their pre-class level, length of on-campus living, English proficiency, and skill practice attendance?

Hypothesis #4: It was hypothesized that Asian international students who have lived on campus longer would report lower level of psychological distress, higher level of sense of belonging, resilience, and subjective well-being than would Asian international students who have lived outside of the campus (Soria & Roberts, 2021). It was also predicted that Asian international students who reported higher English proficiency would report lower level of psychological distress, higher level of sense of belonging (Yao, 2016), resilience and subjective

well-being than would Asian intentional students who reported less English proficiency (Shadowen et al., 2019). In addition, it was hypothesized that Asian international students who attended more supervised skill practices would report lower levels of psychological distress, higher level of sense of belonging, resilience, and subjective well-being than would Asian international students who attended less skill practices. Overall, it was predicted Asian international students' living status, English proficiency, or skill coach attendance will be associated with their post-test scores.

*Research Q*uestions #5: What is the relationship of Asian international students' baseline scores of acculturative stress to post-test outcome scores? And were post-test outcome scores related to their pre-class level of acculturative stress, class standing, English proficiency, and post-intervention sense of belonging?

Hypothesis #5: It was hypothesized that Asian international students who have lived in the United States longer would report lower levels of acculturative stress than would Asian international students who have lived in the U.S. for less time. It was also hypothesized that Asian international students who reported higher English proficiency would report lower levels of acculturative stress. In addition, it was expected that Asian international students who reported higher English proficiency would report lower levels of acculturative stress. Overall, it was predicted that Asian international students' class standing, English proficiency, or post-class sense of belonging will be associated with their post-test scores.

Chapter 3: Methods

Study Design

A quasi-experimental study design was used for this exploratory study, and a descriptive statistical approach was used to summarize the data (i.e., frequency counts and percentages). This study utilized an uncontrolled repeated-measures design to evaluate the effectiveness of "Wellness and Resilience for College and Beyond*"* (RWCB) preventive class where internet- and class-based and group coaching sessions met weekly for 10 weeks covering a structured online curriculum designed to improve college students' resilience, well-being, and mental health. The curriculum is described in the appendix A.

Participants

Participants were recruited from the class enrollment roster of a course taught quarterly at the undergraduate level and designed as a preventive intervention class at the University of Washington. All students enrolled in the course were invited to participate in an online survey assessing a broad range of scales including measures related to students' life stressors, coping skills, and subjective well-being (other constructs were assessed as well, though not used in this study).

The present study was drawn from extant data from the Autumn quarter of 2020. The data were collected over two time periods: September 2020 (Time 1) and December 2020 (Time 2). In the original dataset, a total number of 252 out of 317 undergraduate students enrolled took part in an RWCB preventive intervention and completed the online survey in September 2020 (Time 1, response rate = 79%). In December 2020 (Time 2), a total number of 251 students participated in the online survey (response rate = 79%). However, some of the respondents did not provide completed data for all variables of interest for this study across Time 1 and Time 2.

Hence, to finalize the number of respondents who could be included in the analysis, separate data sets were created by using multiple imputations. In total, 204 students completed the online survey at both time periods (81% retention rate). Three students were removed due to missing critical variables in this study. For the final analyses of this study, a total of 201 college students were included (N = 201; 153 U.S. students and 48 international students; see Table 1 for more information).

Respondent's ages ranged from 18 to 29 years with a mean of 19.78 years (SD = 1.78 years); 28.4% were freshmen; 27.9% were first-generation college students; 28.9% were male (n = 58) and 71.1% were female (n = 143). The majority (46.3%) of students reported they were Asian or Southeast Asian, 29.9% were White or Caucasian, 7.0% were Hispanic, Latino/a, or Spanish Origin, 3.5% were Black or African American, 1.5% were Middle Eastern or North African, and 11.9% were multi-racial.

International status: According to the United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2009), international students are defined as "students who have crossed a national or territorial border for the purpose of education and are now enrolled outside their country of origin" (p. 250). International students known as non-resident aliens in the United States, are on a F-1 visa. F-1 visa is a non-immigrant student visa for students from a country other than the U.S. enrolled part-time or full-time. For the purpose of this study, international undergraduate students were identified based on their classification as international students with F-1 visa in the survey. The eligibility criteria are Asian international undergraduate students that are selected based on: (a) English as a second language student and (b) who obtained F-1 visa to study in the United States. The selection criteria are important to exclude unrepresentative samples, such as the immigrant population.

The majority of the sample (76.1%) were U.S. students (in-state and out-of-state), and 23.9% of the sample included international students from China, Hong Kong, India, Indonesia, Taiwan, Mexico, and Canada. In the international student sample, 95% were from Asia (n = 46), and 5% were from North and South America (n = 2). Among all AISs, 69.6% were female and 19.6% were first-year students. Their age ranged from 18 to 25 years (M = 19.89 years, SD = 1.46 years). The questionnaire also contained a single time asking the students to report their English proficiency in TOEFL or IELTS. Their scores were categorized on a scale ranging from 1 (poor) to 7 (excellent) by applying the total score comparison table from ETS.

Procedures

This study was conducted after receiving approval from the Institutional Review Board (IRB) at the University of Washington. Students self-selected through registration for the course and were not randomly assigned. Some students dropped or added the class later, therefore these students were unavailable for both the pre-and post-test and were not included in the sample.

This study was introduced to all students enrolled in the class by the primary investigator (PI) on the first day of class. Details and purpose of the study and a Statement of Informed Consent (see Appendix B) were provided in an email to assure the rights of participants. Participants clicked on a link in the email to access the online survey via Qualtrics with total anonymity. Each student received an access code listed in the email in order to log in to the survey increasing the likelihood to complete more of the survey and more likely to provide substantive answers to sensitive questions (Heerwegh & Lossveldt, 2002). In addition, the participants were notified that their data would be kept safe, and their information secured using encryption, rigorous firewalls, and passwords. The contact email of the primary researcher was provided to the participants for follow-up questions or information. The survey participation was

voluntary and responses were used solely for educational research purposes and not evaluative purposes. Thus, students who chose not to participate were not penalized for not participating nor did nonparticipation impact any grading for the course.

Participants completed online questionnaires at baseline (pre-intervention) and again during the final exam week of the Autumn quarter (post-intervention) voluntarily. The invitation included a unique identifier code (school ID) which allowed the researcher to send a reminder email to subjects who did not respond to the survey a week later. The identifiable information was not removed. However, all respondents were assigned a random ID as a unique identifier to contact for survey completion.

An incentive or reward structure was offered to motivate participants. Upon students' completion of participation, their name was entered into a drawing for a $50 dollars gift card. According to the social exchange approach, it is important to offer expected rewards that the participant will trust for responding to a survey (Dillman et al., 2014).

Research Design

The current study employed a preliminary, exploratory-focused, and uncontrolled repeated-measures design to evaluate the current internet-based universal preventive intervention addressing the mental health needs of undergraduate students within a university school-based setting. This study employed procedures consistent with pilot studies (Clarkson et al., 2019) in addition to a single group, nonrandomized pretest-posttest single group design (Harris et al., 2006; Mathias et al., 2018). Quasi-experimental study designs are such that randomly assigned groups are not utilized in some education research due to ethical, practical, and methodological concerns (Gopalan et al., 2020). In this study, the independent variables were pre-class level of measures and demographic characteristics. Participants enrolled in the same preventive class.

The dependent variables were post-intervention levels in resilience, sense of belonging, psychological distress, and subjective well-being. Using a quasi-experimental, pretest-posttest design, data collected and analyzed will focus on examining the effectiveness of the intervention.

Resilience and Wellness for College and Beyond Preventive Intervention

Intervention Content

The RWCB class serving as the universal preventive intervention for this study was a five-credit elective course that fulfilled a general education requirement for degree attainment (e.g., it filled 5 of the necessary 10 credits for Individual and Society). The course was designed using three evidence-based therapeutic interventions, Dialectical Behavior Therapy (Linehan, 1993; 2015), Acceptance and Commitment Therapy (Hayes, 2004), and Positive Psychology (Seligman, 2002). The RWCB class was structured to meet university criteria and attendance, class participation, weekly written assignments, and reading were required. Each week different concepts related to skills or resilience were explored. Weekly topics included an introduction to resilience, mindfulness, values clarification, willpower and distress tolerance, gratitude, cognitive restructuring, emotional regulation, interpersonal effectiveness skills, and therapeutic lifestyle changes.

The original RWCB was developed at the University of Washington and was designed to be delivered by a 170-minute face-to-face lecture. The online RWCB is a modified version 10-week internet-based preventive program whose main objective is to teach skills and strategies to cope with daily life stressors in order to enhance resilience, promote a sense of belonging, and increase well-being. The RWCB ran on Zoom, a web-based online learning platform. The intervention consists of 10-week interactive modules designed for weekly lectures (See Appendix A). In addition to 170-minute interactive lectures, each module is also followed by a

50-minute weekly quiz section for students to work with their assigned peer group to practice the skills introduced. Students worked with the same peer group (around 5-6 group members) for the entire quarter and they were also encouraged to practice skills outside of class. Among the tools that the platform provided, participants were able to join their weekly breakout room to practice the structured activity with supervised skill coaching provided by graduate teaching assistants and graduate volunteers.

Intervention Delivery

Each weekly 170-minute class, the primary investigator (PI) and instructor delivered an interactive internet-based lecture, including mindfulness practices and Poll Everywhere. The format and structure of this preventive intervention could be taken into consideration and replicated in many higher education settings for best practice (Conley et al., 2013). Significantly, Conley et al. (2013) examined whether intervention strategy or format with the incorporation of supervised skills practice made a difference in intervention effectiveness. The authors found that skill-oriented prevention programs often have been effective in changing various adjustment outcomes for children and adolescents across settings. The literature is also clear that supervised practice over multiple sessions contributes to the success of skill acquisition and generalization for youth and adults (Durlak et al., 2011; Wilson et al., 2001).

For peer groups, students were placed into seven to eight groups with 5-6 students per group. These groups met 50-minutes each week and engaged in structured, supervised skill practice activities for 10 consecutive weeks. Peer groups were led by two graduate students trained as interventionists to provide supervised skill coaching for students. In order to ensure clinical proficiency in delivering elements of the intervention, the supervision and training were delivered in a mentorship-style format by PI and instructor. The supervision was provided on a

weekly basis during the initial intervention time and then one hour per week as part of a staff meeting.

Intervention Participation

Peer group section attendance records showed that the average attendance rate was 91.82%. Each group session incorporated team-building exercises and activities to facilitate skill acquisition in the group as well as introduced a homework reflection that prompted students to synthesize their key learning takeaways in the group. Students were expected to participate in at least seven synchronous skill coaching sessions.

Measures

The pre-and post-intervention surveys included measures of protective factors (resilience, sense of belonging, subjective well-being) and symptomatology (psychological distress and acculturative stress).

Student Demographics Information. A demographics profile was presented to ask the participants about several variables, including gender, age (in years), race, ethnicity, self-reported English ability, funding sources, years of study at the University of Washington, years of living in a university residence, and length of residence in the United States. This section also contained two items asking the students to identify how many lectures and quiz sections they attended synchronously. The precise data of quiz section attendance data was retrieved from a teaching platform and attendance sheet.

Protective Factors

Subjective Well-being. Students' Life Satisfaction Scale (SLSS; Huebner, 1991) was used for this study as a proxy for measuring subjective well-being. Each item was rated on a 6-point Likert scale (0= Strongly Disagree; 6= Strongly Agree), with higher score values indicating a

greater individual life satisfaction or subjective well-being. Examples of items of SLSS included, "I have a good life," "I have what I want in life," or "My life is just right." Two reverse-scored items reflected dissatisfaction or desire for change, including "I would like to change many things in my life" and "I wish I had a different kind of life." The SLSS demonstrated adequate internal consistency ($\alpha = 0.82$) and 2-week test-retest reliability ($r = 0.74$; Weber et al., 2014). Construct validity was also supported through significant negative correlations between scores on the SLSS and measures of anxiety, depression, and loneliness (Danielsen et al.,2009; Gilman & Huebner, 2003; Huebner, 1991).

Resilience. In order to assess individual levels of resilience, the resilience subscale of Psychological Capital Questionnaire- Short Version (PCQ-12) was used in this study (Avey et al., 2011), which was developed in consultation with one of the authors of the original version (Luthans, et al., 2007). The items of the PCQ-12 are distributed by Mind Garden, Inc., and contains four subscales: (a) self-efficacy- 3 items; (b) hope- 4 items; (c) optimism- 2 items; and (d) resilience- 3 items. Each item was rated on a 6-point Likert-type scale from 0 (strongly disagree) to 6 (strongly agree), with higher score values indicating a stronger level of resilience. The possible scores ranged from 6 to 18. Examples of items in the resilience subscales are: "I can be "on my own", so to speak, if I have to, regarding to my schoolwork," "I usually take stressful things in stride," and "I can get through difficult times at school because I've experienced difficulty before." Krasikova et al (2015) reported internal consistency reliability for the scale was .96. In another study that examined PCQ-12 across 12 national cultures, the Cronbach alpha coefficients ranged from .84 to .92 (Wernsing, 2014).

Sense of Belonging. The Psychological Sense of School Membership Scale (PSSM; Goodenow, 1993) is an 18-item Likert-type scale measuring the construct of school membership, or the

extent, to which participants feel accepted, included, and supported by others in the school environment. Sample items included, “I feel proud of belonging to the UW,” “People here notice when I’m good at something,” and “Sometimes I feel as if I don’t belong here.” Each item was rated on a 5-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree), with higher score values indicating a stronger sense of school membership. Goodenow (1993) reported the internal consistency of the scale as .80. In other studies, the Cronbach alpha coefficients ranged from .72 to .91 (Isakson & Jarvis, 1999; Stevens et al., 2007).

Symptomatology

Psychological Distress. The Brief Symptom Inventory-18 (BSI-18; Derogatis, 2000), a brief self-report of the 53-itme BSI (Derogatis & Melisaratos, 1983), was used to assess general psychological distress in clinical and community populations. Responses were rated on a five-point Likert-type scale, ranging from 0 (not at all) to 4 (extremely). Total scores range from 0 to 24, and the sum of the entire dimensions constitutes the global severity index (GSI), with higher numbers indicating experiencing more distress. Derogatis (2000) reported acceptable-to-good internal consistency for three subscales and GSI in a community sample, with Cronbach’s alpha of .74 (Somatization), .84 (Depression), .79 (Anxiety), and .89 (GSI). Lu et al. (2019) reported the internal consistency coefficient of the subscales (Somatization, Depression, Anxiety) and the total score was good in all subgroups, ranging from .80 to .93.

Acculturative Stress. The Acculturative Stress Scale for International Students (ASSIS; Sandhu & Asrabadi, 1994) was used to assess difficulties encountered by international students with personal, social, and environmental changes upon arriving in a new country. The ASSIS is the most widely used questionnaire to identify the acculturative stress of international students. By using this questionnaire, it is possible to compare the research results of this study effort with

previous research. The ASSIS, a 36-item measure assessing acculturative stress of international students, consists of seven factors: Fear (4 items), Guilt (2 items), Homesickness (4 items), Perceived Hate (5 items), Perceived Discrimination (8 items), Stress due to Change/Culture Shock (3 items), and Nonspecific Concerns (10 items). Sample items included, "I feel nervous to communicate in English," "I am denied what I deserve," and "I miss the country and people of my nation origin." Each item was rated on a 5-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree), with higher score values indicating a higher level of acculturative stress. Reliability has been shown in other research with samples of international students attending college in the U.S. to range from 0.87 to 0.97 (Constantine et al., 2004; Sandhu & Asrabadi, 1998; Yeh & Inose, 2003). In the present study, to reduce the confusing items and number of items that participants must answer, we removed two items from the ASSIS: "I feel sad to consider my people's problem" and "I have to frequently relocate for fear of others." Also, three items from ASSIS were revised to offer an easy-to-understand survey for international students: "I feel rejected when people are disrespectful (sarcastic) toward my cultural values" "I feel angry that my people are considered lower (inferior) than other people here," and "I generally keep a low key (low profile) due to fear from other ethnic groups."

Data Analysis Plan

Data from the online survey was merged and aligned into one final data set and items were effect coded for gender, race, ethnicity, self-reported English ability, skill coaching attendance, years of study at the University of Washington, and years of living in a university residence. The SPSS v.28 (IBM Corporation, Armonk, NY) was utilized for data analysis. In order to interpret the results, all predictor and outcome variables were standardized. The key questions for this study were to determine if an internet-based universal preventive program

would decrease symptomatology and acculturative stress and whether the prevention intervention would improve the sense of belonging, resilience, and subjective well-being. The analyses included correlational analyses and multiple linear regressions using sequential predictor entries.

A quasi-experimental study design was used for this exploratory study and a descriptive statistical approach was used to summarize the data (i.e., frequency counts and percentages). This study aims to investigate the effectiveness of an internet-based universal preventive class among U.S. students and Asian international undergraduate students at the University of Washington. Further, the results of the study will help to identify supports and stressors in order to meet college students' mental health and wellness needs. For data collection and analysis, in the present study, quantitative methodology was utilized. Descriptive analyses were utilized to investigate levels of resilience, sense of belonging, subjective well-being, psychological distress, and acculturative stress among international college students. Descriptive analyses were also used to provide information about the demographic composition of the study sample.

Baseline Characteristics of U.S. and Asian International Undergraduate Students

Descriptive statistics for the researcher-created demographic questionnaire were computed and reported. In addition, descriptive statistics were computed to check the normality of the item distribution. All valid responses were identified based on the descriptive statistics. A histogram was reviewed to identify outliers in the data distribution. Items with skewness and kurtosis of less than an absolute value of one can be considered normally distributed for statistical analyses (Field, 2018). Pretest measures examined provided an average estimate of where student scores were before the intervention was administered. This study also employed paired t-tests to investigate changes in students' experiences over 10-week. Summary statistics and zero-order correlations among the pretest are presented. Pearson's correlation coefficient

was utilized to examine the relationship among these same measures at baseline and demographic status. The means, standard deviations, and frequency statistics of the measures were calculated and presented for research question #1.

Predicting Posttest Outcomes among All Participants

Multiple linear regressions were used to check whether significant changes had occurred between T1 (pre-class) to T2 (post-class) for all participants. Statistical significance was regarded as p-value $\leq .05$. Data were analyzed using multiple linear regression with sequential (block) predictor entry. Sequential predictors entry specifically allows for testing incremental variance accounted for as predictor(s) are added to the model. Since only one university was recruited for analysis in the study, there was no potential nesting issue. Independence, normality, linearity, and homoscedasticity or the residual were examined to attend to statistical assumptions of multiple regression models.

To understand the covariates that can guide future research on this intervention, multiple linear regression models were fit to predict the student post-class scores using baseline levels of resilience, sense of belonging, subjective well-being, and psychological distress. The multiple linear regression analysis utilized a sequential (block) predictor entry. Block entry allows for testing changes in variance uniquely accounted for as predictors are entered into the model at different stages, or blocks (Tabachnick & Fiedell, 2013). Block 1 included pre-class level (baseline), Block 2 included the class standing (first-year vs. non first-year) and first-generation, and Block 3's added predictor was students' skill coaching attendance. The final models after all predictors were entered were (for question#2):

$$\text{Post\_Resilience} = b_0 + b_1 * \text{ZPre\_Resilience}$$

$+b_2$ *FirstYear + b_3 *FirstG

$+b_4$ *ZAttendance

Post_Belonging = b_0

$+b_1$*ZPre_Belonging

$+b_2$ *FirstYear + b_3 *FirstG

$+b_4$ *ZAttendance

Post_Wellbeing = b_0

$+b_1$*ZPre_Wellbeing

$+b_2$ *FirstYear + b_3 *FirstG

$+b_4$ *ZAttendance

Post_Distress = b_0

$+b_1$*ZPre_Distress

$+b_2$ *FirstYear + b_3 *FirstG

$+b_4$ *ZAttendance

Predicting Posttest Outcomes: Asian Students

To understand the covariates that can guide future research of this intervention for different populations, multiple linear regression models were chosen to predict the student changes scores using baseline levels of resilience, sense of belonging, subjective well-being, and psychological distress. The multiple linear regression analysis utilized a sequential (block) predictor entry. Block entry allows for testing changes in variance uniquely accounted for as

predictors are entered into the model at different stages, or blocks (Tabachnick & Fiedell, 2013). Block 1 included pre-class level (baseline), Block 2 included gender, and Block 3's added predictor was students' racial and ethnic backgrounds. The final models were as follows (for question #3):

$$\text{Post\_Resilience} = b_0 + b_1\text{*ZPre\_Resilience} + b_2\text{*Female} + b_3\text{*Asian}$$

$$\text{Post\_Belonging} = b_0 + b_1\text{*ZPre\_Belonging} + b_2\text{*Female} + b_3\text{*Asian}$$

$$\text{Post\_Wellbeing} = b_0 + b_1\text{*ZPre\_Wellbeing} + b_2\text{*Female} + b_3\text{*Asian}$$

$$\text{Post\_Distress} = b_0 + b_1\text{*ZPre\_Distress} + b_2\text{*Female} + b_3\text{*Asian}$$

Predicting Posttest Outcome among Asian International Students

To understand the covariates that can guide future research of this intervention for Asian international students, multiple linear regression models were chosen to predict the student posttest scores using baseline levels of resilience, sense of belonging, subjective wellbeing, and psychological distress. The multiple linear regression analysis utilized a sequential (block) predictor entry. Block entry allows for testing changes in variance uniquely accounted for as predictors are entered into the model at different stages, or blocks (Tabachnick & Fiedell, 2013). Block 1 included pre-class level (baseline), Block 2 included lengths of campus living and included students' English proficiency, and Block 3's added predictor was students' skill coaching attendance. The final models after all predictors were entered were (for question #4):

$$\text{Post\_Resilience} = b_0 + b_1\text{*ZPre\_Resilience} + b_2\text{*ZQuartersResLiving} + b_3\text{*ZEnglish} + b_4\text{*ZAttendance}$$

$$\text{Post\_Belonging} = b_0 + b_1\text{*ZPre\_Belonging} + b_2\text{*ZQuartersResLiving} + b_3\text{*ZEnglish} + b_4\text{*ZAttendance}$$

$$\text{Post\_Wellbeing} = b_0 + b_1\text{*ZPre\_Wellbeing} + b_2\text{*ZQuartersResLiving} + b_3\text{*ZEnglish}$$

$+b_4$*ZAttendance

Post_Distress $= b_0$

$+b_1$*ZPre_Distress

$+b_2$*ZQuartersResLiving $+b_3$*ZEnglish

$+b_4$*ZAttendance

Relationships between Acculturative Stress and AISs' Other Demographic Variables

Standard multiple regression analysis was used to determine the association of background characteristics variables (i.e., class standing and self-reported English proficiency) with the outcome variable (i.e., acculturative stress). Three predictors (pre-class level, class standing, and English proficiency score) were entered into the regression model. Multiple linear regression analysis for the continuous outcome variable were used to examine the associations between student status (Asian international students) and outcome variable in the total study sample while controlling for demographic characteristics and enrollment variables as outlined above. A significance (alpha) level of $p \leq .05$ was employed for all tests.

Pre-class level, class standing, and English ability were effect coded in order to meaningfully interpret results in the final model. Block 1 included pre-class level (baseline). Block 2 included the effect of class standing and self-reported English proficiency. Block 3 included the effect of post-intervention sense of belonging. The final model after all predictors were entered was (for question #5):

Post_Acculturative $= b_0$

$+b_1$*ZPre_Acculturative

$+b_2$*FirstYear$+b_3$*ZEnglish

$+b_4$*ZPost_Belonging

In the model above, acculturative stress is equal to the conditional mean (b_0), plus the unique effect of pre-class level ($b_{1),}$ unique effects of class standing and English proficiency ($b_2 - b_3$), and the unique effect of post-class sense of belonging (b_4).

Chapter 4. Results

Participant demographic characteristics are summarized in Table 1 and described in the following paragraphs. The first section focuses on the data collected at baseline, including student demographics and the descriptive statistics for the pretest measures of interest. Research question 1, which examines the correlation of those baseline measures among all undergraduate students and the AIS group, is detailed in this first section. Research question 2, which examines the post-class outcomes on all undergraduate students who participated in the preventive intervention by controlling their baseline level, class standing, first-generation, and skill coaching attendance. Lastly, research question 3 addresses the relationship in pretest-posttest outcomes among Asian U.S. students by controlling their gender.

The second section will serve as the multiple regression analysis to determine the post-class outcomes on AISs. Research questions 4 to 5 are addressed through the dataset on AIS only. Research question 4examines the post-class outcomes on all AIS who participated in the preventive intervention by controlling their baseline level, length of living on campus, English proficiency, and skill coaching attendance. Finally, research question 5 examined the pretest-posttest outcomes in acculturative stress of AISs by controlling baseline level, class standing, English proficiency, and post-intervention sense of belonging.

Preliminary Analysis

The percent of missing data varied across variables and cases, and it was determined that using case-wise deletion was untenable due to the substantial reduction in viable cases (Li et al., 2015). Thus, multiple imputation (MI) was used to handle missing data (Enders, 2017). The basic premise of multiple imputation is that missing data can be approximated such that the imputed values do not bias parameter estimates and that the uncertainty of these estimates is reasonable (Enders, 2017). Multiple imputation with a sufficient number of imputations is

preferable to full information maximum likelihood because even on the order of 3 to 5 imputations can yield excellent results (Schafer &Olsen, 1998; Kang, 2013). MI more effectively retains statistical power (Graham et al., 2007). The remaining 201 participants had surveys with less than 7% missing data, which were missing at random. Due to the non-monotonous nature of the missing data, Markov Chain Monte Carlo computation and predictive mean matching were used (Rubin, 1986; van Buuren et al., 2006). Multiple imputation was carried out using IBM SPSS Version 28.0 and pooled results of the 5 imputations were used in subsequent analysis (Little & Rubin, 2002).

Study Results

Paired Samples T-Tests: Changes in Measures from Baseline to Post-Class

As seen in Table 2, for the overall sample, there was a statistically significant difference in college students' sense of belonging ($p = 0.014$) between baseline and post-class. Similarity, there was a significant increase from baseline to post-class in participant's subjective well-being ($p = 0.007$). Student scores on the resilience numerically increased from pretest ($M = 13.03$, $SD = 2.70$) to posttest ($M = 13.13$, $SD = 2.40$), $p = .0616$, $d = 0.04$ but did not reach statistical significance. On the psychological distress measure, Brief Symptom Inventory (BSI-18), scores decreased from pretest ($M = 35.04$, $SD = 13.21$) to posttest ($M = 34.40$, $SD = 13.18$), $p = .436$, $d = 0.05$; not statistically significant.

Interestingly, the results from the subgroup analysis didn't suggest similar patterns in score changes in the four measures between baseline to post-class. Further analysis confirmed the observed increase in total sense of belonging ($p = 0.020$) and subjective well-being ($p < 0.001$) for non-Asian domestic students, as well as a significant decrease in participants' psychological distress ($p = 0.004$). Additional findings from other subgroups (e.g., Asian

American students, international students, and Asian international students) suggested that no significant changes in measures in resilience, sense of belonging, subjective well-being, psychological distress, and acculturative stress.

Correlational Analysis for Undergraduate Participants

Research Question #1a. How are measures of resilience, sense of belonging, psychological distress, and subjective well-being associated with one another at baseline among all undergraduate students?

Means, standard deviations, and zero-order correlations among all variables are given in Table 3. Pretest measures examined provided an average estimate of where all undergraduate student scores were before the intervention was delivered. On the baseline measure of Resilience (a subscale of Psychological Capital Questionnaire- Short Version), possible scores ranged from 6 to 18, while the sample's mean score was 13.04 (SD = 2.70). The Psychological Sense of School Membership Scale (PSSM) scores can range from 5 to 90. The calculated mean score was 63.17 (SD = 10.93). Student's Life Satisfaction Scale can range from 6 to 42. The sample mean on this measure was found to be 29.73 (SD = 3.82). The last student outcome measure of psychological distress was assessed through the Brief Symptom Inventory-18, which can yield scores ranging from 5 to 90. The sample mean on this measure was found to be 35.05 (SD = 13.21). Subscale scores on the total psychological distress included: depression (M = 12.87, SD = 5.62), anxiety (M = 12.12, SD = 5.32), and somatization (M = 10.12, SD = 4.25).

Pearson correlation coefficients were calculated between the pretest measures to evaluate their relationship at baseline. There were some significant relationships found between all four students' reported measures. Resilience was positively correlated with sense of belonging (r = .35, $p < 0.001$) and subjective well-being (r = .16, $p < 0.05$) at baseline. Sense of belonging

and subjective well-being were positive correlated at baseline ($r = .27$, $p < 0.001$). As expected, the measures of sense of belonging and subjective well-being were significantly and negatively correlated with psychological distress measure ($r = -.31$ and -.40, respectively, $p < 0.001$).

No other significant relationships were found between class standing (first-year student) and all four students' reported measures. Similarly, there was no significant relationships between first generation and all four students' reported measures. Correlations between gender (female) and psychological distress were positive and statistically significant, $r = .19$, $p < 0.01$.

Correlational Analysis for the Asian International Student Group

Research Question #1b: How are measures of resilience, sense of belonging, psychological distress, acculturative stress, and subjective well-being associated with one another at baseline for Asian international students?

Means, standard deviations, and zero-order correlations among all variables are given in Table 4. Pretest measures examined provided an average estimate of where AIS scores were before the intervention was delivered. On the baseline measure of Resilience (a subscale of Psychological Capital Questionnaire- Short Version), possible scores ranged from 6 to 18, while the sample's mean score was 11.87 ($SD = 2.96$). The Psychological Sense of School Membership Scale (PSSM) scores can range from 5 to 90. The calculated mean score was 62.72 ($SD = 11.97$). Student's Life Satisfaction Scale can range from 6 to 42. The sample mean on this measure was found to be 30.94 ($SD = 4.98$). AIS's psychological distress was assessed through the Brief Symptom I nventory-18, which can yield scores ranging from 5 to 90. The sample mean on this measure was found to be 31.41 ($SD = 13.18$). Subscale scores on the total psychological distress included: depression ($M = 11.52$, $SD = 5.39$), anxiety ($M = 10.24$, $SD = 4.77$), and somatization ($M = 10.07$, $SD = 4.66$). The last AISs outcome measure of acculturative stress was evaluated by

the Acculturative Stress Scale for International Students with possible scores ranging from 36 to 180. The sample mean on this measure was found to be 88.28 (*SD* = 21.32).

Pearson correlation coefficients were calculated between the pretest measures to evaluate their relationship at baseline. There were some significant relationships found between all five students' reported measures. As expected, the measures of sense of belonging and subjective well-being were significantly and negatively correlated with psychological distress measure (r = -.41. and -.30, respectively, $p < 0.01$ and $p < 0.05$). In addition, sense of belonging was significantly and negatively correlated with acculturative stress (r = -.31, $p < 0.05$). Psychological distress and acculturative stress were positive correlated at baseline (r = .32, $p < 0.05$).

Class standing (freshmen) was positively correlated with resilience (r = .15), sense of belonging (r = .28), subjective well-being (r = .08), and negatively correlated with psychological distress (r = -.12) and acculturative stress (r = -.03); but did not reach statistical significance. There was a significant negative relationship between length of living on campus and resilience (r = -.35, $p < 0.05$). In addition, there was a positive significant direct relationship between quarters living on campus and psychological distress (r = .38, $p < 0.001$). Importantly, gender (female) was positively correlated with resilience (r = .29, $p < 0.05$). No significant correlations were obtained between the English proficiency and the students' baseline measures.

Regression Models for Undergraduate Participants

Research Question #2*: What are the relationships of undergraduate student baseline scores of resilience, sense of belonging, psychological distress and subjective well-being associated with post-test outcome scores? And were post-test outcome score related to their pre-class level, class*

standing (i.e., first-year vs. non first-year), generation (first generation vs. non first-generation), and skill practice attendance among all undergraduate students?

Resilience. Multiple linear regression with sequential predictor entry was used to predict post-intervention resilience. The results showed that baseline level, which comprised the first block, did account for significant variation, $R^2 = 0.25$ ($R^2_{adjusted} = 0.25$), $F(1, 199) = 65.90$, $p < 0.001$. Controlling for demographic variables, the main effects of demographic variables (first-year and first-generation) together (in Block 2) did not account for significant variance in post-intervention resilience, $R^2_{change} = 0.00$, $F_{change}(2, 197) = 0.17$, $p = 0.846$. Not surprisingly, skill coaching attendance, which had non-significant zero-order correlation of $r = -0.01$ did not account for significant unique variation in post-class resilience after accounting for freshmen and first generation status, $R^2_{change} = 0.00$, $F_{change}(1, 196) = 0.00$, $p = 0.963$.

Results from the final block, with all predictors entered in the model, showed that the average undergraduate students' resilience points was 4.36 ($SE = 0.06$), holding all other variables constant, $t(196) = 71.18$, $p < 0.001$. Pre-class resilience's unique relationship with post-class resilience was estimated to be $b = 0.40$ points ($SE = 0.05$), $t(196) = 8.08$, $p < 0.001$, $sr^2 = 0.25$; for every standard deviation increase in pre-class resilience, we expect a 0.40-point increase in post-class resilience, holding all else constant. However, given the lack of significance of Block 2 and Block 3, it was not surprising that none of the demographic variables (first-year and first-generation) and skill coaching attendance uniquely predicted post-class resilience (slope coefficient t-test ps = 0.610, 0.874, 0.963, respectively).

Sense of Belonging. Multiple linear regression with sequential predictor entry was used to predict post-intervention sense of belonging. The results showed that baseline level, which comprised the first block, did account for significant variation, $R^2 = 0.51$ ($R^2_{adjusted} = 0.50$), $F(1,$

199) = 203.40, $p < 0.001$. Controlling for demographic variables (first-year and first-generation), the main effects of demographic variables together (in Block 2) did not account for significant variance in post-class sense of belonging, $R^2_{change} = 0.01$, $F_{change}(2, 197) = 2.79$, $p = 0.064$. Not surprisingly, skill coaching attendance, which had non-significant zero-order correlation of $r = 0.05$ did not account for significant unique variation in post-class sense of belonging after accounting for freshmen and first generation status, $R^2_{change} = 0.00$, $F_{change}(1, 196) = 0.04$, $p = 0.833$.

Results from the final block, with all predictors entered in the model, showed that the average undergraduate students' post-class sense of belonging points was 3.57 ($SE = 0.04$), holding all other variables constant, t (196) = 103.34, $p < 0.001$. Pre-class sense of belonging's unique relationship with post-class sense of belonging was estimated to be $b = 0.40$ points ($SE = 0.03$), t (196) = 13.93, $p < 0.001$, $sr^2 = 0.48$; for every standard deviation increase in pre-intervention level, we expect a 0.40-point increase in post-intervention sense of belonging, holding all else constant. However, given the lack of significance of Block 2 and Block 3, it was not surprising that none of the demographic variables (first-year and first-generation) and skill coaching attendance uniquely predicted post-class sense of belonging (slope coefficient t-test ps = 0.279. 0.071, 0.833, respectively).

Subjective Well-being. Multiple linear regression with sequential predictor entry was used to predict post-intervention subjective well-being. The results showed that baseline level, which was entered into the model first, accounted for 17% of the variance in post-class subjective well-being, $F(1, 199) = 40.84$, $p < 0.001$. Whether or not students are freshmen or first-generation, which had not significant zero-order (direct) correlations of $r = 0.08$ and -0.06 with post-class subjective well-being, accounted for additional 1% of variance in post-class level, after

controlling for baseline level, $F(2, 197) = 0.98$, $p = 0.378$. Surprisingly, skill coaching attendance, which had a significant zero-order correlation of $r = 0.16$, did not account for significant unique variation in post-class subjective well-being after accounting for baseline level, class standing, and first-generation, $R^2_{change} = 0.01$, $F_{change}(1, 196) = 3.01$, $p = 0.084$.

Results from the final block, with all predictors entered in the model, showed that the average undergraduate students' post-class subjective well-being points was 4.38 ($SE = 0.05$), holding all other variables constant, $t\ (196) = 95.51$, $p < 0.001$. Pre-class subjective well-being's unique relationship with post-class subjective well-being was estimated to be $b = 0.24$ points ($SE = 0.04$), $t\ (196) = 6.28$, $p < 0.001$, $sr^2 = 0.16$; for every standard deviation increase in pre-class level, we expect a 0.24-point increase in post-class subjective well-being, holding all else constant. Given the insignificance of Block 2, it was not surprising that the demographic variable (first-year or first-generation student) did not uniquely predict subjective well-being (slope coefficient t-test $p = 0.272$, 0.962, respectively). Finally, skill coaching attendance was also didn't uniquely predictive of subjective well-being ($p = 0.084$).

Psychological Distress. Multiple linear regression with sequential predictor entry was used to predict post-class psychological distress. The results showed that baseline level, which was entered into the model first, accounted for 37% of the variance in post-class psychological distress, $F(1, 199) = 118.36$, $p < 0.001$. Controlling for demographic variables, the main effects of demographic variables (freshmen and first-generation) together (in Block 2) did not account for significant variance in post-class psychological distress, $R^2_{change} = 0.00$, $F_{change}(2, 197) = 0.19$, $p = 0.830$. In addition, skill coaching attendance also did not account for significant unique variation in post-class psychological distress after accounting for first-year and first generation status, $R^2_{change} = 0.01$, $F_{change}(1, 196) = 2.81$, $p = 0.096$.

Results from the final block, with all predictors entered in the model, showed that the average undergraduate students' post-class psychological distress points was 1.91 (SE = 0.05), holding all other variables constant, t (196) = 37.55, $p < 0.001$. Pre-class psychological distress's unique relationship with post-class psychological distress was estimated to be b = 0.45 points (SE = 0.04), t (196) = 10.79, $p < 0.001$, $sr^2 = 0.37$; for every standard deviation increase in pre-class level, we expect a 0.45-point increase in post-class psychological distress, holding all else constant. Given the lack of significance of Block 2 and Block 3, it was not surprising that none of the demographic variables (freshmen and first-generation) and skill coaching attendance uniquely predicted psychological distress (slope coefficient t-test ps = 0.750, 0.984, 0.096, respectively).

Research Question #3*: What are the relationships of undergraduate student baseline scores of resilience, sense of belonging, psychological distress, and subjective well-being associated with post-test outcome scores? And were post-test outcome scores related to their gender and demographic backgrounds (i.e., Asian students) among all undergraduate students?*

Resilience. Multiple linear regression with sequential predictor entry was used to predict post-class resilience. The results showed that baseline level, which comprised the first block, did account for significant variation, $R^2 = 0.25$ ($R^2_{adjusted} = 0.25$), $F(1, 199) = 65.90$, $p < 0.001$. Controlling for gender (female), the main effects of gender (in Block 2) did not account for significant variance in post-intervention resilience, $R^2_{change} = 0.00$, $F_{change}(1, 198) = 0.182$, $p = 0.670$. Interestingly, the main effects of their demographic background (in Block 3: Asian students) did account for significant variance in post-class resilience, $R^2_{change} = 0.03$, $F_{change}(1, 197) = 8.94$, $p = 0.003$.

Results from the final block, with all predictors entered in the model, showed that the average undergraduate students' resilience points was 4.37 (SE = 0.05), holding all other variables constant, t (197) = 81.906, $p < 0.001$. Pre-class resilience's unique relationship with post-class resilience was estimated to be b = 0.37 points (SE = 0.05), t (197) = 7.37, $p < 0.001$, $sr^2 = 0.20$; for every standard deviation increase in pre-class resilience, we expect a 0.37-point increase in post-class resilience, holding all else constant. Given the lack of significance of Block 2, it was not surprising that gender didn't uniquely predict post-class resilience (slope coefficient t-test p = 0.644). Interestingly, students' demographic status uniquely predicted post-class resilience (slope coefficient t-test p = 0.003). In other words, undergraduate students who are Asian were predicted to have a 0.30-point decrease in resilience compared to those who are not Asian students (double the coefficient due to use of effect coding), holding all else constant.

Sense of Belonging. Multiple linear regression with sequential predictor entry was used to predict post-class sense of belonging. The results showed that baseline level, which comprised the first block, did account for significant variation, $R^2 = 0.51$ ($R^2_{\text{adjusted}} = 0.50$), $F(1, 199) = 203.40$, $p < 0.001$. Controlling for gender (female), the main effects of gender (in Block 2) did not account for significant variance in post-intervention sense of belonging, $R^2_{\text{change}} = 0.00$, $F_{\text{change}}(1, 198) = 0.03$, $p = 0.855$. Similarity, the main effects of their demographic background (in Block 3: Asian) did not account for significant variance in post-class sense of belonging, $R^2_{\text{change}} = 0.00$, $F_{\text{change}}(1, 197) = 1.45$, $p = 0.229$.

Results from the final block, with all predictors entered in the model, showed that the average undergraduate students' post-intervention sense of belonging points was 3.58 (SE = 0.03), holding all other variables constant, t (197) = 115.15, $p < 0.001$. Pre-class sense of belonging's unique relationship with post-class sense of belonging was estimated to be b = 0.40

points (SE = 0.03), t (197) = 14.12, $p < 0.001$, $sr^2 = 0.50$; for every standard deviation increase in pre-class level, we expect a 0.40-point increase in post-class sense of belonging, holding all else constant. However, given the lack of significance of Block 2 and Block 3, it was not surprising that gender didn't uniquely predict post-intervention sense of belonging (slope coefficient t-test p = 0.857). Finally, Asian student status was not uniquely predictive of post-class sense of belonging, b = -0.03 points (SE = 0.03), t (197) = -1.21, p = 0.229.

Subjective Well-being. Multiple linear regression with sequential predictor entry was used to predict post-class subjective well-being. The results showed that baseline level, which was entered into the model first, accounted for 17% of the variance in post-class subjective well-being, $F(1, 199) = 40.84$, $p < 0.001$. Controlling for gender (female), the main effects of gender (in Block 2) did not account for significant variance in post-class subjective well-being, $R^2_{change} = 0.00$, $F_{change}(1, 198) = 0.92$, $p = 0.338$. Similarly, the main effects of their demographic background (in Block 3: Asian students) did not account for significant variance in post-class subjective well-being, $R^2_{change} = 0.01$, $F_{change}(1, 197) = 1.29$, $p = 0.257$.

Results from the final block, with all predictors entered in the model, showed that the average undergraduate students' post-class subjective well-being points was 4.35 (SE = 0.04), holding all other variables constant, t (197) = 105.70, $p < 0.001$. Pre-class subjective well-being's unique relationship with post-class subjective well-being was estimated to be b = 0.24 points (SE = 0.04), t (197) = 6.47, $p < 0.001$, $sr^2 = 0.17$; for every standard deviation increase in pre-class level, we expect a 0.24-point increase in post-intervention subjective well-being, holding all else constant. However, given the lack of significance of Block 2 and Block 3, it was not surprising that gender didn't uniquely predict post-intervention subjective well-being (slope coefficient t-test p = 0.339). Finally, Asian domestic student status was not uniquely predictive

of post-class subjective well-being, b = -0.04 points (SE = 0.04), t (197) = -1.14, p = 0.257. In other words, undergraduate students who are Asian were predicted to have a 0.08-point decrease in subjective well-being compared to those who are not Asian (double the coefficient due to use of effect coding), holding all else constant; however, it was not found to be statistically significant.

Psychological Distress. Multiple linear regression with sequential predictor entry was used to predict post-class psychological distress. The results showed that baseline level, which was entered into the model first, accounted for 37% of the variance in post-class psychological distress, $F(1, 199) = 118.36$, $p < 0.001$. Controlling for gender (female), the main effects of gender (in Block 2) did not account for significant variance in post-class psychological distress, $R^2_{change} = 0.00$, $F_{change}(1, 198) = 0.22$, $p = 0.638$. Not surprisingly, demographic status, which had non-significant zero-order correlation of r = -0.01, did account for significant unique variation in post-class psychological distress after accounting for gender (female), $R^2_{change} = 0.01$, $F_{change}(1, 197) = 3.74$, $p = 0.055$.

Results from the final block, with all predictors entered in the model, showed that the average undergraduate students' post-class psychological distress points was 1.94 (SE = 0.05), holding all other variables constant, t (197) = 42.61, $p < 0.001$. Pre-class psychological distress's unique relationship with post-class psychological distress was estimated to be b = 0.47 points (SE = 0.04), t (197) = 11.00, $p < 0.001$, $sr^2 = 0.38$; for every standard deviation increase in pre-class level, we expect a 0.47-point increase in post-class psychological distress, holding all else constant. Given the lack of significance of Block 2 and Block 3, it was not surprising that gender and Asian status didn't uniquely predict psychological distress (slope coefficient t-test p = 0.591 and 0.055, respectively).

Regression Models for the Asian International Participants

Research Question #4*: What are Asian international students' baseline scores of resilience, sense of belonging, psychological distress, and subjective well-being associated with post-test outcome scores; and what is the relationship of posttest outcomes related to their pre-class level, length of on-campus living, English proficiency, and skill practice attendance?*

Resilience. Multiple linear regression with sequential predictor entry was used to predict post-class resilience. The results showed that baseline level, which comprised the first block, did not account for significant variation, $R^2 = 0.02$ ($R^2_{adjusted} = 0.00$), $F(1, 44) = 0.86$, $p = 0.359$. Controlling for demographic variables, the main effects of demographic variables (quarters living on-campus and English proficiency) together (in Block 2) also did not account for significant variance in post-class resilience, $R^2_{change} = 0.03$, $F_{change}(2, 42) = 0.55$, $p = 0.584$. Not surprisingly, skill coaching attendance, which had non-significant zero-order correlation of $r = -0.13$ did not account for significant unique variation in post-class resilience after accounting for quarters living on-campus and English proficiency, $R^2_{change} = 0.03$, $F_{change}(1, 41) = 1.49$, $p = 0.230$.

Results from the final block, with all predictors entered in the model, showed that the average AISs' resilience points was 4.02 ($SE = 0.11$), holding all other variables constant, t (41) = 38.65, $p < 0.001$. Pre-class resilience's unique relationship with post-class resilience was estimated to be $b = 0.11$ points ($SE = 0.12$), t (41) = 0.98, $p = 0.616$, $sr^2 = 0.02$; for every standard deviation increase in pre-class, we expect a 0.11-point increase in post-class resilience, holding all else constant; however, it was not found to be statistically significant. Given the non-significance of Block 2 and Block 3, it was found that number of quarters living on-campus,

English proficiency, and skill coaching attendance did not uniquely predict post-class resilience (slope coefficient *t*-test $p = 0.616$, 0.342, 0.230, respectively).

Sense of Belonging. Multiple linear regression with sequential predictor entry was used to predict post-intervention sense of belonging. The results showed that baseline level, which comprised the first block, did account for significant variation, $R^2 = 0.28$ ($R^2_{adjusted} = 0.26$), $F(1,44) = 16.93$, $p < 0.001$. Controlling for demographic variables, the main effects of demographic variables (number of quarters living on-campus and English proficiency) together (in Block 2) did not account for significant variance in post-class sense of belonging, $R^2_{change} = 0.01$, $F_{change}(2, 42) = 0.30$, $p = 0.743$. As expected, skill coaching attendance, which had non-significant zero-order correlation of $r = 0.09$ did not account for significant unique variation in post-class sense of belonging after accounting for quarters living on-campus and English proficiency, $R^2_{change} = 0.00$, $F_{change}(1, 41) = 0.10$, $p = 0.755$.

Results from the final block, with all predictors entered in the model, showed that the average undergraduate students' post-intervention sense of belonging points was 3.58 ($SE = 0.07$), holding all other variables constant, $t\ (41) = 51.16$, $p < 0.001$. Pre-class sense of belonging's unique relationship with post-class sense of belonging was estimated to be $b = 0.28$ points ($SE = 0.07$), $t\ (41) = 4.03$, $p < 0.001$, $sr^2 = 0.28$; for every standard deviation increase in pre-class level, we expect a 0.28-point increase in post-class sense of belonging, holding all else constant. Given the lack of significance of Block 2, it was not surprising that the demographic variables (number of quarters living on-campus and English proficiency) didn't uniquely predict sense of belonging (slope coefficient *t*-test *p*s = 0.446 and 0.819, respectively). Further, skill coaching attendance also didn't uniquely predict sense of belonging, $b = 0.02$, $SE = 0.07$, $t\ (41) = 0.31$, $p = 0.755$.

Subjective Well-being. Multiple linear regression with sequential predictor entry was used to predict post-class subjective well-being. The results showed that baseline level, which was entered into the model first, accounted for 6% of the variance in post-class subjective well-being, $F(1, 44) = 2.87$, $p = 0.097$. AISs' English proficiency and length of living on-campus accounted for an additional 3% of variance in post-class level, after controlling for baseline level, $F(2, 42) = 0.67$, $p = 0.516$. As expected, skill coaching attendance, which had a significant zero-order correlation of $r = 0.40$, account for significant unique variation in post-class subjective well-being after accounting for baseline level, class standing, and first-generation, $R^2_{change} = 0.14$, $F_{change}(1, 41) = 7.55$, $p < 0.01$.

Results from the final block, with all predictors entered in the model, showed that the average undergraduate students' post-intervention subjective well-being points was 4.44 ($SE = 0.10$), holding all other variables constant, $t\ (41) = 42.93$, $p < 0.001$. Pre-class subjective well-being's unique relationship with post-class subjective well-being was estimated to be $b = 0.17$ points ($SE = 0.10$), $t\ (41) = 1.63$, $p = 0.110$, $sr^2 = 0.05$; for every standard deviation increase in pre-intervention level, we expect a 0.17-point increase in post-intervention subjective well-being, holding all else constant; however, it was not found to be statistically significant. Given the lack of significance of Block 2, it was not surprising that the demographic variables (English proficiency and quarters living on campus) didn't uniquely predict subjective well-being (slope coefficient t-test $p = 0.689$ and 0.285, respectively). Finally, as mentioned above, skill coaching attendance was uniquely predictive of subjective well-being, $b = 0.28$ points ($SE = 0.10$), $t\ (41) = 2.75$, $p < 0.01$, $sr^2 = 0.14$. As expected, students who attended skill coaching group were predictive to have a 0.28-point increase in subjective well-being compared to those who had lower attendance in skill coaching practices, holding all else constant.

Psychological Distress. Multiple linear regression with sequential predictor entry was used to predict post-class psychological distress. The results showed that baseline level, which was entered into the model first, accounted for 32% of the variance in post-class psychological distress, $F(1, 44) = 20.54$, $p < 0.001$. Controlling for demographic variables, the main effects of demographic variables (quarters living on-campus and English proficiency) together (in Block 2) did not account for significant variance in post-class resilience, $R^2_{change} = 0.02$, $F_{change}(2, 42) = 0.72$, $p = 0.495$. Similarly, skill coaching attendance did not account for significant unique variation in post-class psychological distress after accounting for quarters living on-campus and English proficiency, $R^2_{change} = 0.00$, $F_{change}(1, 41) = 0.01$, $p = 0.917$.

Results from the final block, with all predictors entered in the model, showed that the average undergraduate students' post-intervention psychological distress points was 1.95 ($SE = 0.10$), holding all other variables constant, $t\ (41) = 19.71$, $p < 0.001$. Pre-class psychological distress's unique relationship with post-class psychological distress was estimated to be $b = 0.52$ points ($SE = 0.12$), $t\ (41) = 4.34$, $p < 0.001$, $sr^2 = 0.30$; for every standard deviation increase in pre-class level, we expect a 0.52-point increase in post-class psychological distress, holding all else constant. Given the lack of significance of Block 2, it was not surprising that the demographic variables (number of quarters living on-campus and English proficiency) didn't uniquely predict psychological distress (slope coefficient t-test ps = 0.247 and 0.914, respectively). Further, skill coaching attendance also didn't uniquely predict psychological distress, $b = -0.01$, $SE = 0.10$, $t\ (41) = -0.11$, $p = 0.917$.

Research Question #5: *What is the relationship of Asian international students' baseline scores of acculturative stress to post-test outcome scores? And were post-test outcome scores related to*

their pre-class level of acculturative stress, class standing, English proficiency, and post-intervention sense of belonging?

Multiple linear regression with sequential predictor entry was used to predict post-class acculturative stress. The results showed that baseline level, which was entered into the model first, accounted for 28% of the variance in post-class acculturative distress, $F(1, 44) = 16.75$, $p < 0.001$. Controlling for demographic variables, the main effects of demographic variables (Freshmen and English proficiency) together (in Block 2) didn't account for significant variance in post-intervention resilience, $R^2_{change} = 0.00$, $F_{change}(2, 42) = 0.21$, $p = 0.816$. Importantly, post-class sense of belonging, which had significant zero-order correlation of $r = -0.52$ did account for significant unique variation in post-class acculturative stress after accounting for Freshmen and English proficiency, $R^2_{change} = 0.14$, $F_{change}(1, 41) = 9.96$, $p < 0.01$.

Results from the final block, with all predictors entered in the model, showed that the average undergraduate students' post-class acculturation distress points was 2.38 ($SE = 0.09$), holding all other variables constant, t (41) = 25.80, $p < 0.001$. Pre-class acculturative stress's unique relationship with post-class acculturative stress was estimated to be $b = 0.27$ points ($SE = 0.08$), t (41) = 3.26, $p < 0.01$, $sr^2 = 0.15$; for every standard deviation increase in pre-class level, we expect a 0.27-point increase in post-class acculturative stress, holding all else constant. Given the lack of significance of Block 2, it was not surprising that the demographic variables (first-year student and English proficiency) didn't uniquely predict post-intervention acculturative stress (slope coefficient t-test ps = 0.689 and 0.907, respectively). As expected, AISs' post-class sense of belonging uniquely predicted post-class acculturation stress, $b = -0.24$ points, $SE = 0.08$, t (41) = -3.16, $p < 0.01$, $sr^2 = 0.14$. In other words, AISs with higher post-class sense belonging were predicted to have a 0.24-point decrease in post-class acculturative stress.

Chapter 5: Discussion

Summary of Findings

This study evaluates a pilot implementation of a universal internet-based prevention class ("RWCB") using psychometric measures of resilience, sense of belonging, subjective well-being, and psychological distress at baseline and after-intervention among undergraduate students enrolled in a 10-week class. The primary exploratory aim of the intervention was to (a) examine relationships in resilience, sense of belonging, subjective well-being, psychological distress, and acculturative stress between pre-class and post-class, and (b) if relationships would also apply to the AIS group. Additionally, this study was designed to examine whether demographic statuses (e.g., class standing, first-generation, gender, quarters living on-campus, and English proficiency) were associated with implementation outcomes and to investigate the moderating role of demographic statuses in relation to each of the five implementation outcomes (resilience, sense of belonging, subjective well-being, psychological distress, and acculturative stress). Correlational analyses and multiple linear regression with sequential predictor entry were used to investigate these relationships.

Correlational Findings on All Participants (Hypothesis #1a)

The hypothesis#1a states that student measures of resilience, sense of belonging, and subjective well-being would positively correlate with one another at baseline. It was also predicted that psychological distress would be negatively correlated with an individual's resilience, sense of belonging, and subjective well-being. The hypothesis also stated that class standing, generational status, and gender would be associated with student measures mentioned above. Results fully supported some of these hypotheses.

As hypothesized, the protective factors (e.g., resilience, sense of belonging) and subjective well-being showed significant positive correlations with each other. This finding mirrors results in other studies that resilience and a sense of belonging can be viewed as essential sources of subjective well-being and it was found to be positively correlated with life satisfaction (Liu et al., 2012; Hu et al., 2015). In addition, psychological distress was negatively correlated with an individual's resilience (Pidgeon et al., 2014), sense of belonging (Hendrickson et al., 2011; Pittman & Richmond, 2008), and subjective well-being (Glass et al., 2015; Singh et al., 2018).

Inconsistent with previous research, there was a negative correlation between class standing (first-year students) and psychological distress (Brandy et al., 2015; Bruffaerts et al., 2018). But it didn't reach statistical significance in this study. Based on the results from a previous study, first-year college students are at higher risk of experiencing mental health challenges by facing new social networks, academic stress, and living arrangements (Brandy et al., 2015). Similarly, class standing (i.e., first-year college student) was found to be positively associated with a sense of belonging in this study, but it was not statistically significant. These results were consistent with prior studies, which found no significant differences between first-year students and second- to fourth-year undergraduate students (Gopalan et al., 2022). However, this pattern may be due to differences in other background factors or to the types of institutions students attend. More in-depth studies of belonging at 4-year metropolitan public universities during the COVID-19 pandemic are needed to further clarify these findings and the processes.

Prior research indicates the negative relationship between generational status and sense of belonging (Gopalan & Brady, 2020; Stebleton et al., 2014), as well as subjective well-being (Stebleton et al., 2014). The findings of this study also indicate that first-generation college

students tend to have lower ratings of sense of belonging and life satisfaction than non-first-generation students, even though it didn't reach statistical significance. The current study also attempted to support the findings of past research on gender differences in emerging adults' transition to college. Several studies have suggested that females experience higher percentages of stress, depression, and anxiety than males (Asher BlackDeer et al., 2021; Gao et al., 2020). Consistently, female is also found to be positively correlated with psychological distress in this study. As expected, students identifying as female were more likely to report higher percentages of stress, depression, and anxiety than those identifying as male (Asher BlackDeer et al., 2021).

Correlational Findings on Asian International Participants (Hypothesis #1b)

The hypothesis #1b stated that AISs' measures of resilience, sense of belonging, and subjective well-being would positively correlate with one another at baseline. It was also predicted that psychological distress (and acculturative stress) would be negatively correlated with an individual's resilience, sense of belonging, and subjective well-being. Also, the hypothesis stated that class standing, length of living on campus, gender, and English proficiency will be associated with student measures mentioned above.

As suggested theoretically, in multiple studies with international students, researchers have previously found links between resilience and positive student outcomes, including better subjective well-being, (Glass et al., 2015; Pan, 2011) and a higher sense of belonging (Grüttner, 2019). Additionally, a heightened sense of belonging also indicates higher subjective well-being (Glass et al., 2015; Singh et al., 2018). The results of this study found positive relationships between positive student outcomes, however, these relationships were statistically insignificant. One explanation for the findings of on these measures is considering whether these measures fit the norms of people from diverse backgrounds.

Importantly, the findings of this study predicted that acculturative stress would be negatively correlated with individual's sense of belonging (Hyun et al., 2007; Zhou et al., 2018). Furthermore, the finding of this study is also consistent with previous research showing that AISs report a higher rate of depression and anxiety due to experiencing higher levels of acculturative stress (Hamamura & Laird, 2014; Liao et al., 2012; Xiong, 2018). The results of this study indicate acculturative stress holds potential as an important factor in the psychosocial adjustment and mental health of international students and deserves further careful study.

Previous studies have demonstrated that first-year international college students are at higher risk of experiencing mental health challenges due to the demands of having to adapt to a new social, cultural, and educational environment (Koo et al., 2021). Inconsistent with previous studies, there was no significant correlation between class standing (first-year student) and psychological distress (Koo et al., 2021). Surprisingly, this study also found no statistically significant association between first-year students and acculturative stress levels, which was supported by several previous studies (Koo et al., 2021; Su et al., 2021). The results were contrary to prior research possibly due to the fact that many of the first-year international students who engaged in distance learning stayed in their home country during the COVID-19 pandemic and did not experience the typical cross-cultural challenges international students residing in the host culture experience.

International student acculturation literature remains inconsistent regarding gender difference as it pertains to overall adjustment concerns. The findings in this study were consistent with a previous study by Zhang and Jung (2017) that reported no significant differences in acculturative stress by gender and major. However, gender comparison of

acculturative stress is an underdeveloped area of study; thus, focused studies are needed to explore the relationship between gender and acculturative stress among international students.

International students who reported better English ability show lower levels of acculturative stress (Poulakis et al., 2017). The current study, on the other hand, found no statistically significant association between English and acculturative stress level. Such controversial results might be due to the likelihood of gathering inaccurate data from self-reported English proficiency.

Regression Findings on All Participants (Hypothesis #2 & #3)

The hypothesis #2 predicted that preliminary effects linking the intervention to the outcome measures would be found. It was predicted that pre-class levels would associate with post-test in the measures of resilience, sense of belonging, and subjective well-being, and psychological distress. In addition, it was also predicted that undergraduate students' class standing, generational status, or skill practice attendance would be associated with post-test scores.

Findings suggest that there were significant positive relationships between pre- and post-test in resilience, sense of belonging, subjective well-being, and psychological stress between the first week of the quarter and the end of the fall 2020 quarter. Whether or not students are first-year students wasn't uniquely predictive of resilience, sense of belonging, and subjective well-being. In other words, student who are first-year students weren't predicted to have significant increases in sense of resilience, sense of belonging, and subjective well-being. However, the first year in college is accompanied with transitions and new stressors, in comparison with other years (Dvořáková et al., 2017; Levin et al., 2014). Many studies reported that first-year college students are more likely to drop out for emotional and psychological problems (Bradburn &

Carroll, 2002; Perry, 2016; Pittman & Richmond, 2008). Given the complexity of challenges associated with transitioning into college, effective universal preventive interventions may be necessary to facilitate a healthy and integrated developmental transition to young adulthood.

Similarity, generational status was not uniquely predictive of resilience, sense of belonging, subjective well-being, and psychological distress. Surprisingly, even though it was not statistically significant, first-generation students were associated with post-test sense of belonging, in a negative direction. That is to say, students who are first-generation were predicted to have a lower sense of belonging after the class. One potential reason could be that many first-generation students were more likely to experience financial hardships during the pandemic and were less likely to be able to consistently attend virtual classes on time (Soria et al., 2021). Additionally, campus closure may have precluded social connectedness, which reduces the likelihood of school belongingness for this particular group (Stebleton et al., 2014). This potential limitation suggests the importance of in-person learning for students, and especially first-generation students.

Furthermore, the relationships among measures and skill coaching attendance were examined in this study. Inconsistent with previous research (Conley et al., 2013; Mathias et al., 2018), this study didn't find that participation in skill coaching was a significant predictor in reducing psychological distress and improving subjective well-being. In other words, supervised skill practice didn't make a difference to positive student outcomes in this study (Conley et al., 2015; Conley et al., 2016). In the most recent meta-analysis of the impact of universal preventive technology-delivered interventions for higher education students, Conley et al. (2016) found that universal skill-training interventions with supervised skill practice demonstrated a stronger pattern of effects in reducing depression, anxiety, stress, and increasing interpersonal

relationship, compared to interventions lacking supervised skill practice. However, in this study, skill coaching practice didn't uniquely predict improvement in resilience, sense of belonging, subjective well-being, and psychological distress. It is possible that the pandemic posed a challenge to remaining meaningfully connected with others and fostering mental health. Kaye-Kauderer et al. (2021) found that the implementation of social distancing is crucial to slow the viral spread; however, it may also come with significant costs when not supplanted with other forms of connection (e.g., online learning). A second possibility is that the challenges associated with connection and interaction with peers and faculty during the pandemic greatly altered how students achieve resilience and belonging via skill practice group. It is possible that their perception of sense belonging, or how it should feel relative to their experience transitioning to college, has been disrupted (Potts, 2021). In addition, a possible explanation for the lack of significant findings related to skill coaching practice in fostering subjective well-being and decreasing psychological distress may be due to the persistent negative impact from COVID-19 on students' mental health regardless of whether they sought or received services (CCMH, 2022).

Several meta-analytic reviews have indicated that universal programs with supervised skill practice that are offered via face-to-face or technology-delivered formats demonstrate positive effects on college students' mental health (Conley et al., 2013; Conley et al., 2015; Conley et al., 2017). However, resilience and sense of belonging are an underdeveloped area of the related study; thus, continued studies are needed to determine the active ingredients of interventions and explore the possible outcomes that can be expected in preventive services at higher education settings. Future research could continue to evaluate the amount or nature of supervised practice played a role.

Hypothesis #3 predicted that preliminary effects linking the intervention to the outcome measures would be found for Asian students. It was predicted that pre-class levels would be associated with post-test in the measures of resilience, sense of belonging, and subjective well-being, and psychological distress. In addition, it was also predicted that undergraduate students' gender and ethnicity (Asian) would be associated with post-test scores.

The current study showed that whether or not a student identifies as female didn't uniquely predict resilience, sense of belonging, subjective well-being, and psychological distress. Although some literature has indicated that males showed higher resilience (Erdogan et al., 2015) and subjective well-being scores than females (Batz & Tay, 2018), other studies reported the opposite results or no differences (Batz et al., 2018; Esteban-Gonzalo, 2021; Lucas & Gohm, 2000). Some studies offer explanations regarding the causes of gender differences in subjective well-being, arguing that this variation is determined by biological, cultural, and individual factors (Batz et al., 2018; Freeman et al., 2007; Kurnia et al., 2021; Lucas & Gohm, 2000). In light of the influence of social context and social expectations, future studies are encouraged to consider gender factors in their attempts to increase college students' resilience, sense of belonging, and mental health.

The results of this study showed that students' identification as Asian was not uniquely predictive of posttest outcomes in sense of belonging, subjective well-being and psychological distress. Taking the results of pre-post score changes into account (paired samples t-test), the findings of this study were consistent with previous studies that demonstrates that Asian American students report lower belonging and perceived less institutional support than White/Caucasian students (Ingram 2012; Johnson et al., 2007). Additionally, a lack of sense of belonging is associated with reduced well-being and increased psychological distress (Choi et al.,

2021). Not to mention, Asian and Asian American students have also experienced an increase in anti-Asian discrimination, stereotyping, stigmatization, as well as acts of violence throughout the pandemic (Chen et al., 2020). Importantly, situational factors (e.g., the pandemic, increased anti-Asian discrimination) may have significantly impacted Asian student's mental health. Indeed, a STOP AAPI HATE press release identified that 31.6% of reported anti-Asian incidents were occurring on public street, 6% were occurring on school sites, and 2.9% on university sites from March 2020 to June 2021 (Horse et al., 2020). Nearly 96% of international students in this study are from Asia and it's possible that their increased psychological distress was associated with experiencing increased racism and microaggressions, the added burden of interpersonal (e.g., worries about the COVID-19 situation in their home countries; experience increased stress resulting from the shifting of face-to-face classes to completely online classes; difficulty in job hunting and career planning) and institutional (e.g., immigration issues connect to international border closure and travel restrictions) concerns during COVID-19 pandemic (Bhojwani et al., 2020; Xiong et al., 2022).

Taken together, the results of this study provide compelling evidence that highlight the association between various forms of stressors and mental health outcomes among Asian American and AIS college students. Our study contributes to this literature by examining Asian American and AIS students' mental well-being during the COVID crisis. Notwithstanding the value of this work, future research will be necessary to assess the impact of the quality of class involvement on sense of belonging and to understand factors related to each ethnic groups' resilience, sense of belonging and subjective well-being to various degrees.

Regression Findings on Asian International Participants (Hypothesis #4 & #5)

Hypothesis #4 predicted that preliminary effects linking the intervention to the outcome measures would be found for AISs. It was predicted that pre-class levels would be associated with post-test scores for the measures of resilience, sense of belonging, and subjective well-being, and psychological distress. In addition, it was also predicted that AISs' class standing, generational status, or skill practice attendance would be associated with post-test scores.

Several research studies suggest that AISs experience higher rates of stress, depression, and anxiety than their non-Asian counterparts (Xiong, 2018; Zhang & Goodson, 2011). However, AISs are less likely to seek out mental health services due to stigma, unawareness, language concerns, issues of referral, and counseling training (Williams et al., 2018). The current study proposed to find an alternative universal approach to increase the awareness of mental health and availability on services. It is exciting that this study has extended the effect to the AIS group. As seen in Table 2, AISs showed no significant score changes in resilience, sense of belonging, and subjective well-being between pre-RWCB and post-RWCB. Consistent with previous paired samples t-test results in this study, AISs also showed a positive correlation with psychological distress in this study; but did not reach statistical significance. In other words, AIS reported higher degree of psychological distress after the prevention class. This finding stems from some earlier studies. For example, Gebregergis (2018) found that acculturative stress and perceived discrimination have been associated with greater psychological distress. Other explanations in the literature include Cheng et al.'s (2021) research that showed socio-demographic stratification factors may also interact with the influence of COVID-19 racism. The authors argued that recent immigrants may experience more acculturation stress and be susceptible to more stress than other populations. In addition, a report conducted by MentalHelp

(2016) reported that 31% of students stated that midterms and finals are their most significant causes of stress. The post-intervention survey of this study was collected through finals week and it appears to be consistent with previous studies that students' individual characteristics may be influenced by their situational and personal factors which eventually affects their psychological distress levels. Although our findings are not consistent with the findings from a previous study by Conley et al. (2013) examining universal programs designed to prevent distress in higher education, this study's findings suggest that international students encounter different stressors, which may cause them to experience more symptomatology during the final exam week or potentially increased mental health issues experienced by all during the pandemic.

The current study also attempted to support the findings in previous research regarding impacts of campus living and English proficiency on international student's adjustment (Garvey et al., 2020; Soria & Roberts, 2021; Yeh & Inose, 2003). Prior research suggests that students living on campus experience a higher sense of belonging, resilience, and a more welcoming perception of campus climate (Garvey et al., 2020; Johnson, 2007; Soria & Roberts, 2021). In contrast to previous studies, the findings of this study found that the length of on-campus living did not predict a student's resilience, sense of belonging, subjective well-being, or psychological distress. The findings of this study might be impacted by the fact that many universities closed their campuses during this time due to the COVID-19 pandemic and this shutdown has resulted in many of students to re-evaluate their on-campus housing. In contrast to Beiter et al. 's (2015) finding, this study didn't find that students living in the dorm showed a significant decrease in average anxiety and depression score compared to students living off-campus. Notably, the studies reviewed above only concerned themselves with whether or not a student was living on

campus, not how long or resident students' perceptions of the residence hall environment, both of which may influence their level of psychological distress.

Several studies have shown a link between students' English abilities and overall adaptation and academic success at a host university (Wang et al., 2015; Yeh & Inose, 2003). Yeh & Inose (2003) reported that individuals with better English ability reported fewer adjustment difficulties and less acculturative stress. Inconsistently, English proficiency has not been found to be significantly correlated with resilience, sense of belonging, subjective well-being, and psychological distress in this study. One possible explanation for the lack of significant results is that additional factors (e.g., distance learning, global pandemic, personal differences) that were not considered in the current study interfered with the ability to detect significant associations.

Furthermore, the relationships among measures and skill coaching attendance were examined in hypothesis #4. Different from the previous results for all participants, this study found that participation in skill coaching sessions was a significant predictor of subjective well-being for AIS group, instead of reducing psychological distress. One explanation is that AISs's SWB may be enhanced overall by increasing cross-cultural interactions and social connectedness (Glass & Westmont, 2014; Sabouripour & Roslan, 2015). Another explanation is that supervised skill practice provides opportunities for individuals to learn and apply new skills that prompt adjustment and foster well-being. In addition, Conley et al. (2015) revealed that supervised skill practice allows interventionists to evaluate how targeted skills are being mastered which provides insight into how to effectively support students and provide guidance on how to best incorporate the skills into their daily life. This finding provides strong support to researchers to

link supervised skill practice to increase skill mastery and promote subjective well-being of AIS group.

In hypothesis #5, this study predicted that preliminary effects linking the intervention to acculturative stress would be found for AISs. It was predicted that pre-class levels would be associated with post-test in the measures of acculturative stress. In addition, it was also predicted that AISs' class standing, English proficiency, or post-class sense of belonging would be associated with post-test scores.

The results of this study found that AIS's pre-class level of acculturative stress significantly predicted post-class acculturative stress. Interestingly, a closer examination of the individual outcome subscale (i.e., post-class sense of belonging) was a significant predictor in post-class acculturative stress for AISs that participated in the RWCB class. This is an important piece of data that should inform future research to incorporate strategies to enhance AISs' sense of belongingness towards positively affecting international students' acculturation. Similar to previous research, in a more diverse, though still predominantly Asian, sample of students, results indicated that social support and belonging diminished adjustment challenges and strengthen positive acculturative outcomes (Bai, 2016; Brunsting et al., 2018).

To conclude, for universal preventive intervention programming, there are several potential advantages of a simultaneous group-level delivery approach are recommended, rather than individual delivery or restricted to specific problem behavior (Rith-Najarian et al., 2020). First, the universal preventive intervention targets the whole population. That is to say, the purpose of the universal preventive intervention is to maximize the reach to college students who are dealing with new developmental challenges, role transitions, and daily stressors (Conley et al., 2013). Supporting this idea, the RWCB preventive class is designed to "all students," as

opposed to specific sub-groups. However, the study demonstrated that participation in RWCB class is associated with higher post-class sense of belonging and subjective well-being for overall sample while only having mixed results for Asian American and AISs.

Next, previous research has found that the universal preventive approach delivered explicitly to “all students” helps decrease the traditional view of mental health, decreases the stigma of seeking mental health, and attracts a high proportion of previously underserved students (Conley et al., 2015; Williams, 2019; Wong et al., 2019). However, the findings of this study are not consistent with Conely et al.'s study (2015) that universal interventions were beneficial for underrepresented students; therefore, it further exploration of effective avenues for improving outcomes for ethnic minority students is needed.

Finally, class- and group-level delivery allows college students to participate with their peers and friends at the same time, which could provide support for engaging with the preventive intervention and fostering belongingness. This proposed benefit is supported by the research findings of Glass & Westmont (2014), who found that inclusive curricula involving multicultural content or discussion among students with different backgrounds is a significant predictor of cross-cultural interaction for students. Additionally, co-curricular involvement among students enhances their sense of belonging. The findings of this study also provide strong evidence to support the importance of linking classroom experiences to increased cross-cultural interaction between domestic and international students (Glass & Westmont, 2014).

Practice Implications

There are several practical implications of the current findings for higher education settings. First, the findings of this study affirmed that domestic students benefited significantly from an internet-based prevention class. The findings clearly indicated the structured 10-week

prevention class had significant improvements on sense of belonging and subjective well-being for the overall sample immediately following the intervention. Furthermore, non-Asian domestic students not only showed significant increases in post-class sense of belonging and subjective well-being, but also demonstrated a significant decrease in post-class psychological distress. These findings provide strong support to researchers that a preventive intervention implemented at a universal level in the higher education setting could have a substantial impact at the university level (Levin et al., 2014). Notably, a strong emphasis should be placed on creating culturally responsive strategies to spread effective implementations to "all" students.

Second, the results provide insight into promising formatting designs for delivering effective preventive interventions in many higher education settings for best practice (Conley et al., 2013). The study underscored the utility of a class-delivery with supervised skill practice. Namely, the results of supervised skill practice over multiple sessions contributed to the success of increasing subjective well-being for AISs. Importantly, the findings highlight the importance of preventive intervention designed to help college students, especially AISs, cope with and overcome the transitions and unique stressors they face on the college campus. The findings of this study also emphasize the importance of a universal preventive intervention necessary to help diverse college students to prevent long-term mental health problems (Reavley & Jorm, 2010).

Third, this study also extends growing research that focuses on system-level considerations that support college students' mental health, including their resilience and sense of belonging. By applying Bronfenbrenner's (1977) ecological framework, this study provides meaningful insights into structures that directly or indirectly affect domestic and AISs within and between different levels of the environment. In the absence of an existing evidence-based universal mental health prevention for college and AISs, relying on known practice elements can

provide an evidence-informed approach, rather than using a current treatment that is inappropriate to the context or the specific population. Based on the success of prevention practices introduced by many scholars, several guidelines and best practices are also recommended for universities to adopt for AISs. By intentionally ensuring that culturally responsive evidence-based preventive interventions are in place, colleges can be well-positioned to facilitate the adaptation and integration of AISs on U.S. campuses. Drawing on Byrd and McKinney's (2012) recommendations, the combined effects of both individual and institutional levels offer the most promising help to students' mental health. This finding suggests a need for a more systematic mental health approach in which mental health services and initiatives could be effectively delivered to AISs in need of support. Therefore, the intervention process in this study will be discussed to target the institutional level of support for AISs.

The following paragraph proposes four actions institutions across the country could take to address AISs' mental health seeking behaviors and needs: (a) increase awareness of mental health services (Williams et al., 2018), (b) create a welcoming environment that fosters a sense of belonging (Cho & Yu, 2015; Liu, 2009), (c) provide culturally responsive practices (Mori, 2000; Williams et al., 2018), and (d) recruit culturally responsive services staff/counselors (Olivas & Li, 2006).

1. Increase Awareness of Mental Health. Previous studies have shown that AISs are unaware of the mental health services offered on campus, which leads to the underutilization of counseling services (Lee et al., 2014; Williams et al., 2018). Drawing on the previous findings, it is crucial for international students to be well informed and be made comfortable with seeking and using the mental health services available at their universities. Hyun et al. (2007) found that many universities felt like they did an excellent job in promoting their counseling services to

students; however, their study indicated that these efforts did not reach international students. One way to improve international students' awareness of mental health services could be accomplished through the development of system-wide protocols and networks that remind international students about the importance of mental and emotional health, as well as its impact on their academic performance (Chen et al., 2020). Such protocols could begin with integrating information about mental health and incorporating mental health awareness checklist at international student orientation. This initial check can then be followed with periodic campus events or workshops to sensitize international students about coping with cultural adjustment stresses.

In addition, it can be helpful to design follow-up programs in partnership with international student organizations, academic advisors, or host families where applicable (Chen et al., 2020; Zhang, 2018). Yakushoko et al. (2008) reported that international students learn about the mental health services provided on campus through three major ways: friends, academic advisors, or mental health counselors. In addition, studies showed that international students prefer to seek help from their academic advisors rather than going to counseling centers in the first place (Bradley et al., 1995; Poyrazli, 2015). Therefore, training on the mental health needs of AISs for members who have close contact with them is necessary to increase their awareness of mental health (Xiong, 2018). For example, training about detection of mental health concerns and adjustment struggles of AISs for faculty members may be helpful in addressing AISs' mental issues at the early stage. Overall, collaboration with the student and academic affairs department is necessary to make all subsets of an institutional populace aware of the services available to international students and help them in navigating their unfamiliar environment (Williams et al., 2018).

2. Create Welcoming Learning Environments that Foster a Sense of Belonging. Cho & Yu (2015) determined that international students heavily relied on the host university in various ways, including educational, social, financial, and cultural support. The authors revealed that support from the organization (i.e., university support) increased international students' school-life satisfaction and reduced their psychological stress. Importantly, the university is the place where international students begin to build their social networks with diverse groups of people, such as domestic students, faculty members, academic advisors, national fellows, etc. Glass et al. (2015) also emphasized on the importance of social ties between international students and professors. The authors highlighted that the positive interactions with professors with affective concern and equitable classroom dialogue fostered cross-cultural interactions and created an inclusive campus climate for international students. Similarly, Mallinckrodt and Leong (1992) found that quality relationships with faculty, as well as the quality of instruction perceived by students, can provide a strong protective function against the development of depression in international students undergoing stress. Additionally, Prieto-Welch (2016) established that a group approach is critical in helping to address international student's needs, focusing on the importance of social support, decreasing isolation, and normalizing their experiences. Furthermore, he recommended using peers, domestic students, and senior international students to help new international students navigate their learning and resources on campus.

Several strategies and recommendations to enhance collaboration across campus in working with international students were introduced by Prieto-Welch (2016). Many of the suggestions, including institutional climate, acculturation challenges, and the impact of cultural values, are relevant for anyone in the institution who works with international students to take into consideration. Altogether, the perception that the institution honors diversity had the largest

effect on the sense of belonging for both domestic and international students, it had a relatively larger positive effect on AISs (Glass & Westmont, 2014).

3. *Offering Culturally Responsive System-wide Support Program*. Although a considerable body of research focused on group interventions for international students, there are limited course- or system-based prevention programs implemented in higher education to enhance coping and aid adjustment for AISs (Carr et al., 2003; Smith & Khawaja, 2011; Smith & Khawaja, 2014). For example, Smith and Khawaja (2014) developed the STAR program (strengths, transition, adjustments, and resilience) to enhance coping self-efficacy among international students. Kirsch et al. (2014) also introduced the Student Support Network (SSN) training program to support international students participating in like-minded events (i.e., international student support group). However, much of the research fails to identify the influence of ecological factors at multiple levels on AISs. When the university attempts to provide effective and comprehensive services across the institution and in the community, they should take the individual, contextual, and cultural variations in real-life settings into consideration (Michael et al., 2014). In order to enable students in need to benefit directly from the institution, the goal of collaborative models is to improve the availability, accessibility, and integrity of mental health services in the institution (Kronick, 2002). Collaboration is the foundation of the school-mental health services. To be more specific, interdisciplinary and cross-system collaborations are emphasized in this study.

4. Culturally Responsive Staff/Counselors. Chen et al. (2020) pointed out the importance of training international student officers and staff to be culturally sensitive in their interactions with international students. Notably, a counselor's cultural sensitivity and self-awareness are essential components of working with international students effectively (Mori, 2000; Yakunina

et al., 2011). Zhang and Dixon's (2001) study showed that AISs perceive the culturally sensitive counselor as more trustworthy and credible than the culturally neutral counselor (i.e., did little to acknowledge clients' cultural differences and experiences). Their findings support the belief that a counselor's level of sensitivity to diversity significantly impacts a minority client's experiences in counseling.

However, many counselors have admitted that they have received little to no training in how best to address issues related to international students (Biever et al., 2011; Yoon & Portman, 2004). Nilsson et al. (2004) indicated that the low return rate of international students in counseling centers is due to a lack of cultural sensitivity on the part of intake counselors. Furthermore, Zhang and Dixon (2001) determined that counselors who embrace cultural sensitivity and responsiveness can dramatically influence the international students' perception of the counselor as trustworthy and will directly affect whether international students return to counseling services after an initial intake session. The low utilization rate and the fact that nearly one-third of international students prematurely terminate services (i.e., discontinue the counseling sessions before they get the assistance) (Nilsson et al., 2004; Pendse & Inman, 2017) highlights the importance of providing culturally responsive services for international students.

Finally, language and low language proficiency may be another barrier to help-seeking behaviors, as well as the cultural differences between mental health professionals and AISs (Prieto-Welch, 2016). Researchers recommend that bicultural or bilingual personnel can be a valuable source of consultations on various cultural issues, such as knowledge regarding collectivistic values and acculturation challenges of AISs (Prieto-Welch, 2016). With sufficient representation of cultural diversity, staff and counselors can strengthen international students' belief that their unique experiences will be understood (Mori, 2000).

The purpose of an interdisciplinary team is to build collaboration among professionals from different backgrounds *within* the system (Michael et al., 2014). In particular, it is crucial for providers of mental health services to facilitate a meeting to clarify roles, missions, and responsibilities to enhance the accessibility of services and availability of information. Furthermore, school professionals are encouraged to understand that cultivating connections *between* those inside and outside the system can create avenues for U.S. and AISs to get resources, information, and accessibility to services (Michael et al., 2014). For example, Chinese international students reported insufficient information associated with their study and life in the host country, such as education system, administrative information, visa application, academic resources, and cultural diversity (Yan & Sendall, 2016; Zhang & Zhou, 2010).

Research has also shown that mental health services have been significantly underused by AISs due to unfamiliarity with the concept of counseling, stigma of mental health treatment seeking, and mismatch between counselors (Mori, 2000; Park et al., 2017; Young, 2017). Given these barriers, it is important to hear the voices of AISs and communities in remedying them. Li and Lin (2014) mentioned that creating a bridge between AISs, school, and community will guide the new direction of supporting the students.

Limitations of the Present Study

There are several limitations that should be addressed concerning this study. First, this study relied entirely on self-report questionnaires which can pose difficulties among students who may be reluctant to respond truthfully due to social desirability or struggle to respond accurately because of lack of self-awareness. In addition, self-report measures for three items of Psychological Capital Questionnaire on resilience were used. Therefore, it is unclear whether the measures accurately reflect participants' actual resilience level. For example, individuals could

report low resilience because of their dissatisfaction regarding "school." Future researchers can think of other objective ways to validate participants' self-report of their resilience and select new measures that can avoid participants' inaccurate interpretation of their resilience.

Second, the study took place at one public university and students were self-selected to enroll in class. Compared to their peers, participants in this study might be more motivated and show more interest in mental health-related courses. In addition, teaching assistants and volunteers for each skill coaching section may also confound the results. Given these limitations, it is not possible to make causal claims based on this research. However, the observed differences can give insight into the association between taking an internet-based preventive class and self-reported resilience, sense of belonging, subjective well-being, psychological distress, and acculturation stress in higher education settings. Also, our findings are based on data from one university and may therefore not be generalized to other universities or to college students in general.

Third, the sample was small relative to the pool of international college students available. Further, data collection difficulties were compounded by a rather lengthy questionnaire and timeline that could have decreased students' participation rates. While 68 international undergraduate students participated in the survey at time point 1, only 46 AISs with valid data remained at time point 2, suggesting that those who completed the survey may not be representative of the target population. The small sample size limits the ability to generalize the findings in this study. Even though the sample was a small representation of the overall AIS population, it provides insight into international students in general.

Furthermore, there was no control group in this study so the changes observed cannot be attributed definitively to this preventive intervention and may have occurred secondary to other

events or factors. Future research should assess the role of further mediators and moderators of the observed process. Factors like loneliness, discrimination, intolerance to uncertainty, or previous mental health history, may also influence individuals' mental well-being during the pandemic.

In addition, there is a need for school-based universal mental health programs to determine long-term effects. Many of the previous studies had a pre and pos-test design; however, it is important to examine the long-term impacts of results after an intervention has concluded. The current study continues to collect 3-, 6-, and 12-month follow up. Future researchers should take this into consideration and aim to implement preventive interventions with long-term follow up of participants in higher education settings. Future investigators should address the long-term effects of universal preventive intervention, sustainability of impact over time, and whether students need continued support to maintain benefits.

Finally, there are several different ways in which the results of this study could be developed further. In keeping with Strayhorn's (2021) recommendations about the advantages of qualitative methods, a mixed study would be useful to let U.S. and AISs describe in rich detail how the internet-based preventive class influenced their campus experiences and thereby affected their resilience, sense of belonging, subjective well-being, and psychological distress. Therefore, a qualitative inquiry discussing how students view these factors and more importantly how they explain these factors from their cultural perspectives, can help educators and counselors develop more efficient components in mental health interventions for college students.

Conclusion

Despite this study's limitations, the current findings illustrate the importance of further investigation into college students' mental health in their classes and universities. The purpose of this study was to provide a comprehensive lens for institutions to better understand the challenges of mental health in college students and discuss the importance of collaboration within the systems to provide recommendations to assist students in coping with their adjustment.

This study provided practical guidance for researchers to develop evidence-based preventive classes that increased sense of belonging and subjective well-being for non-Asian domestic students. Most importantly, findings from this study provide evidence of supervised skill coaching and its impact on subjective well-being for AISs. In addition, sense of belonging was found to have a unique effect on acculturative stress, in a negative direction. Given the crucial role of universities in supporting student's mental health, there is a critical need to understand the factors that perpetuate the inequity in educational and psychological outcomes among the Asian international undergraduate students and their implications for policymaking that ensure the future well-being of Asian international undergraduate population. Future research also is needed for the university to be adequately addressed culturally appropriate practices for AISs on university campuses.

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Appendix A

Summary of the content in the RWCB curriculum

Theme	Module	Objective
Welcome & Introduction	Week 1. Introduction to resilience	An overview of key concepts that are pivotal of the course. Concepts of well-being and the resilience will be discussed and defined.
Acceptance-Oriented Skills	Week 2. Awareness and empowerment through mindfulness-based practices	Discuss the theory and research of mindfulness and learn how to use mindfulness practices to become more aware of themselves, others, and their surroundings.
	Week 3. Value clarification and commitment	Discuss the importance of value clarification and commitment to living consistently with values identified.
	Week 4. Willpower and distress tolerance	Learn the science behind willpower and distress tolerance skills to withstand daily difficulties in life.
Change-Oriented Skills	Week 5. Choosing you attention and practicing gratitude	Learn evidence-based methods to shift attention effectively to more positive and healthy stimuli.
	Week 6. Identifying unhelpful thoughts and altering them to be helpful	Learn how to restructure unhelpful thoughts to develop more helpful ways of thinking based on related research around cognitive restructuring.
	Week 7. Managing intense negative emotions and cultivating positive emotions	Learn how to effectively manage intense emotions based on emotion and behavioral theories.
	Week 8. Connecting with others in meaningful ways	Acknowledge the relevance of meaningful relationships and how they can be helpful to promote well-being. Evidence-based and research-backed strategies for effective communication are presented.
	Week 9. Therapeutic lifestyle change (TLCs)	Encourage students to develop healthy lifestyles by introducing nine strategies and how they promote mental wellness.
Summary	Week 10. Developing a resilience plan for the future	This module summarizes all modules and provide students a road map to live their life with resilience.

Appendix B

Statement of Informed Consent

Title of Research:
The Impact of an Undergraduate Wellness and Resilience Course on Student Outcome

Investigator and Department:
Dr. James Mazza
Professor, School Psychology Program
322 Miller Hall, Box 353600
University of Washington

Why am I being invited to take part in this research?
You are being invited to take part in this research study because you are currently enrolled in the Wellness and Resilience course and because you have expressed an interest in doing so. It is hoped that your participation in this study will be used to provide insight into directions for future course development and undergraduate student mental health services.

Why is this research being done?
The Wellness and Resilience course is designed as a prevention-oriented social emotional skill-development course that aims to reduce the severity of current mental health issues, prevent mental health challenges from starting, and to promote mental wellness for life through the development and practice of emotion regulation skills, coping strategies, and decision-making abilities. The purpose of this project is to help our research and teaching team better understand the effects of participating in the Wellness and Resilience course on undergraduate student mental health. Specifically, this research is interested in the impact of skill development and practice on short and long-term outcomes as they relate to issues regarding mental health and wellness, emotion regulation and coping strategies, life satisfaction and resilience, and sense of belonging and social support. Our team is seeking to better understand how undergraduates use the skills and content from this course in their daily lives and how the integration of these skills into their daily routines contributes to their overall resilience and well-being.

What should I know about this research?
As a research participant, you are being asked to participate in an online survey. Your participation in this survey is voluntary and you may choose to withdraw your participation at any time during the course of the survey. Should you choose to discontinue an individual survey, simply close the browser. If you would like to be removed from future invitations to participate in any additional surveys, please contact the research team at UWResilienceResearch@uw.edu. There are no penalties for withdrawing from this study. All of the data collected will be held anonymously, although your email address will be collected and stored separately. The purpose of collecting the email address is to contact you in regards to possible incentives for your participation in this research. All student responses will be used solely for educational research purposes and not evaluative purposes, as such your answers will have absolutely no bearing on your final grade for the course.

Who can I talk to about this research?
If you have questions, concerns, or complaints, please contact the research team at UWResilienceResearch@uw.edu or the research team leader, Dr. James Mazza, at (206) 616-6373.

This research has been reviewed and approved by an Institutional Review Board. You may talk to them at 206-543-0098 or e-mail them at: hsdinfo@uw.edu for any of the following:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research subject.
- You want to get information or provide input about this research.

How long will I be in this research?
If you fully participate in this study, you will complete five surveys within a 15-month period. You will complete the first survey immediately before you begin your participation in the course content, the second survey immediately following your completion of the course, and follow up surveys at 3, 6, and 12 month intervals after completing the course.

What happens if I agree to be in this research?
This study is based on self-report measures that will occur over five stages of data collection, once immediately before and four times following your participation in the Wellness and Resilience course. Each time, you will be asked to complete the forthcoming survey to the best of your ability (approximately 30-40 minutes). Questions in this survey will ask you about your current mental health, current stressors and adverse experiences, coping strategies and emotion regulation skills, resilience and life satisfaction, and sense of belonging on campus. You are free to skip any questions you do not wish to answer. Your participation in this research for all stages is voluntary. Should you wish to discontinue in this research, you may withdraw your participation at any time.

What are the possible risks or discomforts in participating in this study?
The current research has minimal risks associated with it. However, you may find some of these questions may bring up minor emotional discomfort or distress. Others may find the survey questions useful in expressing their feelings regarding their past and current mental health issues. If at any time, you wish to withdraw from participation, you will not be penalized in any way. If at any time, you feel distressed by any questions or responses on this survey, you are encouraged to contact the research team right away at 206-616-6373 or reach out to a local mental health organization. These local resources may include:

- The UW Crisis Clinic at 866-427-4747 if you need immediate support
- The National Suicide Prevention Hotline at 1.800.273.TALK
- The UW Counseling Center at 206-543-1240 to schedule an appointment with a counselor
- MentalHealth.gov to find additional resources

This information is also provided on the Wellness and Resilience course resource page and will be provided to you again at the end of the survey every time you complete it.

Confidentiality will be maintained through de-identified data, although your UW Student ID number will be kept and used to link self-report surveys across data collection periods and help us access UW related data (i.e., GPA, major, other academic indicators). In addition, we will be asking you for the best contact email address, so that we can conduct follow-up surveys in order to complete this study as well as providing communication regarding incentives. No identifying information will be associated with your survey responses during the course of your participation in this research project.

What happens to the information collected for this research?
Online administration of this survey allows for anonymous responding by participants. All data will be reported in aggregate (by cohort). To the extent allowed by law, we limit the viewing of your personal information to people who have to review it. Efforts will be made to keep your personal information confidential. We cannot guarantee absolute confidentiality and we will work to make sure that no one sees your survey responses without approval. Because we are using the Internet, there is a chance that someone could access your online responses without our or your permission. Your identity will be held in confidence in reports in which the study may be published. All surveys will be stored on a secured drive. The principal investigators will be the only people who have access to the data.

What will you gain from taking part in this research?
If you agree to take part in this research, you will initially earn extra credit towards your final grade in the Wellness and Resilience course. As previously outlined, the content of student responses will be used for educational research purposes only and as such your extra credit will be awarded solely based on your completion of the consent form and your answers will have no connection to your grade for the course. Following your completion of the course, each time you complete the consent form, you will be entered into a raffle for a $50 gift card for your time and effort.

Do you consent to participate in this survey?
Click Yes/No button

Figure 1.

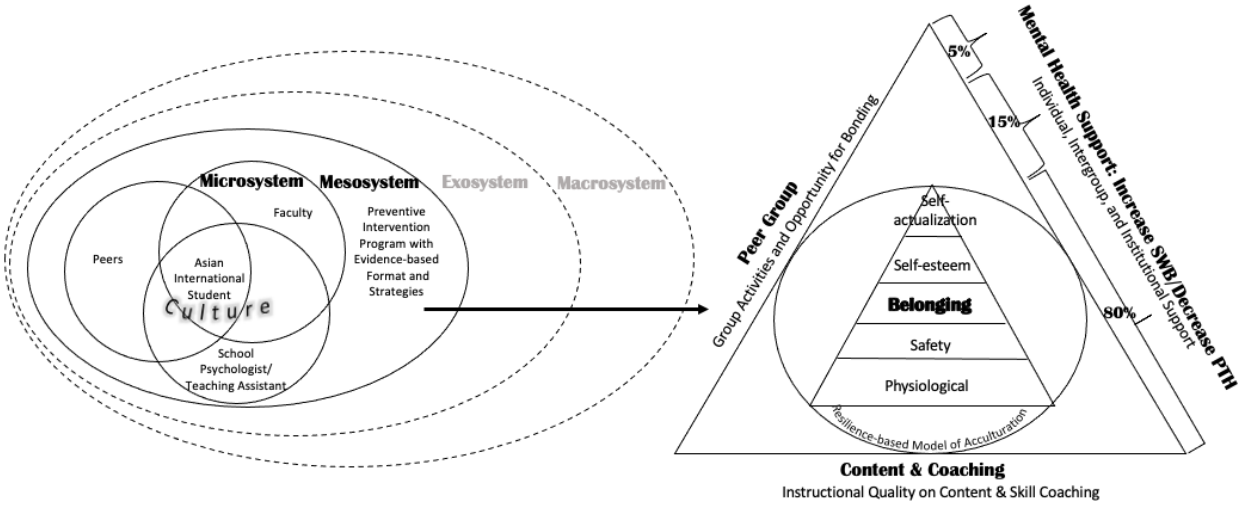
Terms Used for the Dual-factor Model of Mental Health for College Students

		Subjective Well-Being (SWB)	
		High	**Low**
Psychopathology (PTH)	**Low**	**Well-adjusted** High SWB-low PTH/Complete Mental Health/Flourishing	**At-risk** Low SWB-low PTH/Incomplete mental health/Vulnerable
	High	**Ambivalent** High SWB-high PTH/Incomplete mental health/Symptomatic but content	**Distressed** Low SWB-high PTH/Mental illness and languishing/Troubled

Note: this table was made with reference to Antaramian (2015) and Eklund et al.'s literature (2011).

Figure 2.

Theoretical Models



Theoretical Models: Bronfenbrenner Ecosystem Theory (Bronfenbrenner, 1977; Vélez-Agosto et al., 2017), Dual-Factor Model of Mental Health (Greenspoon & Saklofske, 2001), Maslow's Hierarchy of Needs- Sense of Belonging (Maslow, 1954), Pan's Resilience-based Model of Acculturation (Pan, 2011), and Multi-Tier System of Support (Brown-Chidsey & Steege, 2010)

Table 1.

Demographic Characteristics of Study Participants

	U.S. Students				Asian International Students			
Demographic Characteristics	*n*	*%*			*n*	*%*		
Gender								
Female	110	71.9			32	69.6		
Male	43	28.1			14	30.4		
Years at UW								
First-year	49	32.0			9	19.6		
Second-year	54	35.3			21	45.7		
Third-year	24	15.7			5	10.9		
Fourth-year	18	11.8			8	17.4		
Transfer student	8	5.20			3	6.50		
First-Generation								
First-Generation	45	29.4			11	23.9		
Non-First Generation	108	70.6			35	76.1		
Race					--	--		
White or Caucasian	60	39.2			--	--		
Asian or Southeast Asian	46	30.1			--	--		
Black or African American	7	4.60			--	--		
Hispanic, Latino/a, or Spanish Origin	13	8.50			--	--		
Middle Eastern	3	2.00			--	--		
Two or more races	24	15.7			--	--		
	M	*(SD)*	*Min*	*Max*	*M*	*SD*	*Min*	*Max*
Skill Coaching Attendance	91.58	12.09	22.22	100	92.51	12.18	33.33	100
Length of Residence Living	--	--	--	--	2.90	2.95	0	11
English Proficiency	--	--	--	--	3.17	0.88	1	5
Baseline Measures								
Resilience (PCQ-12)	13.37	2.53	6	18	11.87	2.96	3	18
Sense of Belonging (PSSM)	63.41	10.70	36	87	62.72	11.97	36	87
Subjective Wellbeing (SLSS)	29.39	3.29	18	37	30.94	4.98	10	40
Psychological Distress (BSI-18)	35.97	13.09	18	77	31.41	13.18	18	79
Acculturative Stress (ASSIS)	--	--	--	--	88.28	21.32	36	128

Note. $N = 153$. $N = 46$. PCQ-12 = Psychological Capital Questionnaire (6-point Likert scale); PSSM = Psychological Sense of School Membership (5-point Likert scale); SLSS = Subjective Well-being (6-point Likert scale); BSI-18 = Brief Symptom Inventory (5-point Likert scale); ASSIS = Acculturative Stress Scale for International Students (5-point Likert scale). Skill Coaching Attendance = mean score. U.S. student intervention participants were on average 19.75 years old ($SD = 1.87$); Asian international student intervention participants were on average 19.89 years old ($SD = 1.46$)

Table 2.

Paired Samples t-tests: Pre- and Post-test Scores by Outcome Variables, mean (SD)

Outcome Variable	Pretest mean (SD)	Posttest mean (SD)	Mean Differences	*d*	*p*-value
Overall Sample (N= 201)					
Resilience	13.03 (2.70)	13.13 (2.40)	0.10	0.04	*0.616*
Sense of Belonging	63.17 (10.93)	64.57 (10.15)	1.40	0.13	*0.014**
Subjective Well-being	29.73 (3.82)	30.56 (4.04)	0.83	0.21	*0.007***
Psychological Distress	35.04 (13.21)	34.40 (13.18)	-0.64	0.05	*0.436*
Non-Asian U.S. students (n= 107)					
Resilience	13.57 (2.43)	13.76 (2.40)	0.19	0.08	*0.418*
Sense of Belonging	63.93 (10.63)	65.60 (10.01)	1.67	0.16	*0.020**
Subjective Well-being	29.61 (3.10)	30.79 (3.42)	1.18	0.36	*<0.001****
Psychological Distress	37.27 (13.12)	34.21 (12.20)	-3.06	0.24	*0.004***
Asian U.S. students (n= 46)					
Resilience	12.91 (2.72)	12.65 (2.29)	-0.26	0.10	*0.371*
Sense of Belonging	62.22 (10.89)	62.56 (10.94)	0.34	0.03	*0.719*
Subjective Well-being	28.89 (3.67)	29.67 (3.80)	0.78	0.21	*0.218*
Psychological Distress	32.96 (12.65)	34.17 (13.90)	1.21	0.09	*0.474*
International students (n= 48)					
Resilience	11.96 (2.95)	12.17 (2.10)	0.21	0.08	*0.665*
Sense of Belonging	62.40 (11.70)	64.20 (9.56)	1.80	0.17	*0.243*
Subjective Well-being	30.81 (5.04)	30.88 (5.33)	0.07	0.01	*0.941*
Psychological Distress	32.09 (13.27)	35.05 (14.76)	2.96	0.21	*0.112*
Asian International Students (N= 46)					
Resilience	11.87 (2.96)	12.11 (2.10)	0.24	0.09	*0.634*
Sense of Belonging	62.72 (11.97)	64.53 (9.66)	1.81	0.17	*0.257*
Subjective Well-being	30.94 (4.98)	30.98 (5.33)	0.04	0.01	*0.963*
Psychological Distress	31.41 (13.18)	34.20 (14.13)	2.79	0.21	*0.144*
Acculturative Distress	88.28 (21.32)	85.65 (22.16)	-2.63	0.12	*0.405*

Note. Results were reported from the pooled data. *p*-values were based on paired *t*-test. *d was based on Cohens' effect size.*

** p < 0.05, ** p < 0.01, *** p < 0.001.*

Table 3.

Correlation Matrix between Measures Collected at Baseline (All Undergraduate Students)

Measure	*M*	*(SD)*	1.	2.	3.	4.	5.	6.	7.
1. Resilience (PCQ-12)	13.04	(2.70)	--						
2. Sense of Belonging (PSSM)	63.17	(10.93)	.35 ***	--					
3. Subjective Wellbeing (SLSS)	29.73	(3.82)	.16 *	.27 ***	--				
4. Psychological Distress (BSI-18)	35.05	(13.21)	-.10	-.31 ***	-.40 ***	--			
5. First-year	0.29	(0.46)	.05	.08	-.02	-.07	--		
6. First-generation	0.28	(0.45)	-.02	-.11	-.06	-.02	-.16 *	--	
7. Gender (female)	0.71	(0.45)	-.02	.03	-.02	.19 **	-.00	.03	--

Note. N=201. PCQ-12 = Psychological Capital Questionnaire (6-point Likert scale; mean score); PSSM = Psychological Sense of School Membership (5-point Likert scale; mean score); SLSS = Subjective Well-being (6-point Likert scale; mean score); BSI-18 = Brief Symptom Inventory (5-point Likert scale; mean score). First-year dummy-coded with 1= freshmen, 0= others (sophomore, junior, or senior); First-generation dummy-coded with 1= First-generation, 0= Non First-generation; Gender was dummy coded with female as reference group.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4.

Correlation Matrix between Measures Collected at Baseline (Asian International Students)

Measure	*M*	*(SD)*	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Resilience (PCQ-12)	11.87	(2.96)	--								
2. Sense of Belonging (PSSM)	62.72	(11.97)	.23	--							
3. Subjective Wellbeing (SLSS)	30.94	(4.98)	.16	.27	--						
4. Psychological Distress (BSI-18)	31.41	(13.18)	-.28	-.41 **	-.30 *	--					
5. Acculturative Stress (ASSIS)	88.28	(21.32)	-.14	-.31 *	-.26	.32 *	--				
6. First-year	0.20	(0.40)	.15	.28	.08	-.12	-.03	--			
7. Quarters Living on Campus	2.90	(2.95)	-.35 *	-.13	.04	.38 **	.03	-.47 ***	--		
8. Gender (female)	0.70	(0.47)	.29 *	.19	.00	.05	.18	.33 *	-.25	--	
9. English Proficiency	3.17	(0.88)	.04	-.01	.03	-.12	.02	-.04	.14	-.19	--

Note. N=46. PCQ-12 = Psychological Capital Questionnaire (6-point Likert scale; mean score); PSSM = Psychological Sense of School Membership (5-point Likert scale; mean score); SLSS = Subjective Well-being (6-point Likert scale; mean score); BSI-18 = Brief Symptom Inventory (5-point Likert scale; mean score). First-year dummy-coded with 1= freshmen, 0= others (sophomore, junior, or senior); Gender was dummy coded with female as reference group.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5.

Model Results for Resilience Posttest (All Undergraduate Students)

	Block 1					Block 2					Block 3				
	R^2_{total}		R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2
Model Fit	0.25	***	0.25			<0.1	0.25	0.24			<0.1	0.25	0.23		
Coefficients															
Intercept				4.37 ***					4.36 ***					4.36 ***	
Pretest				0.40 ***	0.25				0.40 ***	0.25				0.40 ***	0.25
First-year									-0.03	<0.1				-0.03	<0.1
First-generation									0.01	<0.1				0.01	<0.1
Attendance														<0.1	<0.1

Note. N= 201. Results are reported from the pooled data. Block 1 *F*-change test *df* = 1,199; Block 2 *df* = 2,197; Block 3 *df* = 1,196. Class standing were effect coded with first-year student as reference group; First-generation effect-coded with 1= First-generation, -1= non-first-generation; Pre-class test and supervised skill coaching attendance standardized.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 6.

Model Results for Sense of Belonging Posttest (All Undergraduate Students)

	Block 1					Block 2					Block 3				
	R^2_{total}		R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2
Model Fit	0.51	***	0.50			0.01	0.52	0.51			<0.1	0.52	0.51		
Coefficients															
Intercept				3.58 ***					3.57 ***					3.57 ***	
Pretest				0.41 ***	0.51				0.40 ***	0.48				0.40 ***	0.48
First-year									0.04	<0.1				0.03	<0.1
First-generation									-0.06	<0.1				-0.06	<0.1
Attendance														0.01	<0.1

Note. N= 201. Results are reported from the pooled data. Block 1 *F*-change test *df* = 1,199; Block 2 *df* = 2,197; Block 3 *df* = 1,196. Class standing were effect coded with first-year student as reference group; First generation effect-coded with 1= First-generation, -1= non-first-generation; Pre-class test and supervised skill coaching attendance standardized.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 7.

Model Results for Subjective Well-Being Posttest (All Undergraduate Students)

	Block 1					Block 2					Block 3				
	R^2_{total}		R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2
Model Fit	0.17	***	0.17			0.01	0.18	0.17			0.01	0.19	0.17		
Coefficients															
Intercept				4.37	***				4.38	***				4.38	***
Pretest				0.24	***	0.17			0.24	***	0.17			0.24	***	0.16
First-year									0.05		<0.1			0.05		<0.1
First-generation									-0.02		<0.1			<0.1		<0.1
Attendance														0.07		0.01

Note. N= 201. Results are reported from the pooled data. Block 1 *F*-change test *df* = 1,199; Block 2 *df* = 2,197; Block 3 *df* = 1,196. Class standing were effect coded with first-year student as reference group; First generation effect-coded with 1= First-generation, -1= non-first-generation; Pre-class test and supervised skill coaching attendance standardized.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 8.

Model Results for Psychological Distress Posttest (All Undergraduate Students)

	Block 1					Block 2					Block 3				
	R^2_{total}		R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2
Model Fit	0.37	***	0.37			<0.1	0.37	0.37			<0.1	0.38	0.37		
Coefficients															
Intercept				1.92	***				1.92	***				1.91	***
Pretest				0.45	***	0.37			0.45	***	0.37			0.45	***
First-year									-0.02		<0.1			<0.1	
First-generation									0.01		<0.1			<0.1	
Attendance														-0.07	

			<0.1

Note. N= 201. Results are reported from the pooled data. Block 1 *F*-change test *df* = 1,199; Block 2 *df* = 2,197; Block 3 *df* = 1,196. Class standing were effect coded with first-year student as reference group; First generation effect-coded with 1= First-generation, -1= non-first-generation; Pre-class test and supervised skill coaching attendance standardized.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 9.

Model Results for Resilience Posttest (All Undergraduate Students)

	Block 1				Block 2					Block 3				
	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2
Model Fit	0.25 ***	0.25			<0.1	0.25	0.24			0.03 **	0.28	0.27		
Coefficients														
Intercept			4.37 ***					4.38 ***					4.37 ***	
Pretest			0.40 ***	0.25				0.40 ***	0.25				0.37 ***	0.20
Female								-0.02	<0.1				-0.03	<0.1
Asian													-0.15 **	<0.1

Note. N= 201. Results are reported from the pooled data. Block 1 *F*-change test *df* = 1,199; Block 2 *df* = 1,198; Block 3 *df* = 1,197. Gender were effect coded with female student as reference group; Demographic background was effect-coded with 1= Asian student, -1= non-Asian student; Pre-class test standardized.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 10.

Model Results for Sense of Belonging Posttest (All Undergraduate Students)

	Block 1					Block 2					Block 3				
	R^2_{total}		R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2
Model Fit	0.51	***	0.50			<0.1	0.51	0.50			<0.1	0.51	0.50		
Coefficients															
Intercept				3.58 ***					3.58 ***					3.58 ***	
Pretest				0.41 ***	0.51				0.41 ***	0.51				0.40 ***	0.50
Female									0.01	<0.1				0.01	<0.1
Asian														-0.03	<0.1

Note. N= 201. Results are reported from the pooled data. Block 1 *F*-change test *df* = 1,199; Block 2 *df* = 1,198; Block 3 *df* = 1,197. Gender were effect coded with female student as reference group; Demographic background was effect-coded with 1= Asian student, -1= non-Asian student; Pre-class test standardized.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 11.

Model Results for Subjective Well-Being Posttest (All Undergraduate Students)

	Block 1				Block 2					Block 3				
	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2
Model Fit	0.17 ***	0.17			<0.1	0.17	0.17			<0.1	0.18	0.17		
Coefficients														
Intercept			4.37 ***					4.35 ***					4.35 ***	
Pretest			0.24 ***	0.17				0.24 ***	0.17				0.24 ***	0.17
Female								0.04	<0.1				0.04	<0.1
Asian U.S.													-0.04	<0.1

Note. N= 201. Results are reported from the pooled data. Block 1 *F*-change test *df* = 1,199; Block 2 *df* = 1,198; Block 3 *df* = 1,197. Gender were effect coded with female student as reference group; Demographic background was effect-coded with 1= Asian student, -1= non-Asian student; Pre-class test standardized.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 12.

Model Results for Psychological Distress Posttest (All Undergraduate Students)

	Block 1					Block 2					Block 3				
	R^2_{total}		R^2_{adj}	b	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	b	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	b	sr^2
Model Fit	0.37	***	0.37			<0.1	0.37	0.37			0.01	0.39	0.38		
Coefficients															
Intercept				1.92	***				1.93	***				1.94	***
Pretest				0.45	*** 0.37				0.46	*** 0.37				0.47	*** 0.38
Female									-0.02	<0.1				-0.03	<0.1
Asian														0.08	0.01

Note. N= 201. Results are reported from the pooled data. Block 1 *F*-change test *df* = 1,199; Block 2 *df* = 1,198; Block 3 *df* = 1,197. Gender were effect coded with female student as reference group; Demographic background was effect-coded with 1= Asian student, -1= non-Asian student; Pre-class test standardized.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 13.

Model Results for Resilience Posttest (Asian International Students)

	Block 1				Block 2					Block 3				
	R^2_{total}	R^2_{adj}	*b*		sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2
Model Fit	0.02	<0.1				0.03	0.04	<0.1			0.03	0.08	<0.1		
Coefficients															
Intercept			4.03	***					4.03	***				4.02	***
Pretest			0.10		0.02				0.07	<0.1				0.11	0.02
On-Campus									-0.07	<0.1				-0.06	<0.1
English									0.10	0.02				0.10	0.02
Attendance														-0.13	<0.1

Note. N= 46. Results are reported from the pooled data. Block 1 *F*-change test *df* = 1,44; Block 2 *df* = 2,42; Block 3 *df* = 1,41. Pre-class test, length of on campus living, English proficiency, supervised skill coaching attendance standardized.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 14.

Model Results for Sense of Belonging Posttest (Asian International Students)

	Block 1				Block 2					Block 3				
	R^2_{total}	R^2_{adj}	*b*		sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2
Model Fit	0.28 ***	0.26				0.01	0.29	0.24			<0.1	0.29	0.22		
Coefficients															
Intercept			3.58	***					3.58	***				3.58	***
Pretest			0.28	***	0.28				0.28	*** 0.29				0.28	*** 0.28
On-Campus									0.05	0.01				0.05	0.01
English									-0.02	<0.1				-0.02	<0.1
Attendance														0.02	<0.1

Note. N= 46. Results are reported from the pooled data. Block 1 *F*-change test *df* = 1,44; Block 2 *df* = 2,42; Block 3 *df* = 1,41. Pre-class test, length of on campus living, English proficiency, supervised skill coaching attendance standardized.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 15.

Model Results for Subjective Well-Being Posttest (Asian International Students)

	Block 1				Block 2					Block 3				
	R^2_{total}	R^2_{adj}	*b*		sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2
Model Fit	0.06	0.04				0.03	0.09	0.03			0.14 **	0.23	0.16		
Coefficients															
Intercept			4.42	***					4.42	***				4.44	***
Pretest			0.19		0.06				0.19	0.06				0.17	0.05
On-Campus									-0.06	<0.1				-0.04	<0.1
English									0.12	0.03				0.11	0.02
Attendance														0.28 **	0.14

Note. N= 46. Results are reported from the pooled data. Block 1 *F*-change test *df* = 1,44; Block 2 *df* = 2,42; Block 3 *df* = 1,41. Pre-class test, length of on campus living, English proficiency, supervised skill coaching attendance standardized.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 16.

Model Results for Psychological Distress Posttest (Asian International Students)

	Block 1				Block 2					Block 3				
	R^2_{total}	R^2_{adj}	*b*		sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2
Model Fit	0.32 ***	0.30				0.02	0.34	0.29			<0.1	0.34	0.28		
Coefficients															
Intercept			1.95	***					1.95	***				1.95	***
Pretest			0.46	***	0.32				0.52	*** 0.33				0.52	*** 0.30
On-Campus									-0.13	0.02				-0.13	0.02
English									0.01	<0.1				0.01	<0.1
Attendance														-0.01	<0.1

Note. N= 46. Results are reported from the pooled data. Block 1 *F*-change test *df* = 1,44; Block 2 *df* = 2,42; Block 3 *df* = 1,41. Pre-class test, length of on campus living, English proficiency, supervised skill coaching attendance standardized.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 17.

Model Results for Acculturative Stress Posttest (Asian International Students)

	Block 1				Block 2					Block 3				
	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2	R^2_{change}	R^2_{total}	R^2_{adj}	*b*	sr^2
Model Fit	0.28 ***	0.26			0.01	0.28	0.23			0.14 **	0.42	0.37		
Coefficients														
Intercept			2.40 ***					2.36 ***					2.38 ***	
Pretest			0.35 ***	0.28				0.35 ***	0.27				0.27 **	0.15
First-year								-0.07	<0.1				-0.04	<0.1
English								-0.01	<0.1				-0.01	<0.1
Post-Belonging													-0.24 **	0.14

Note. N= 46. Results are reported from the pooled data. Block 1 *F*-change test *df* = 1,44; Block 2 *df* = 2,42; Block 3 *df* = 1,41. Class standing were effect coded with first-year student as reference group; Pre-class test, English proficiency, and post-class sense of belonging standardized.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.