How maladaptive perfectionism relates to depression among Asian international students: testing the mediating effects of acculturative stress and perceived social support

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How Maladaptive Perfectionism Relates to Depression Among Asian International Students: Testing the Mediating Effects of Acculturative Stress and Perceived Social Support

By

Jungeun Kim

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Abstract

This study investigates how maladaptive perfectionism relates to depression among Asian international students by examining the mediating effects of acculturative stress and perceived social support. Given the recent emphasis on assessing situation-specific stress (Dunkley, Zuroff, & Blankstein, 2003) and examining the generalizability of the stress-mediation hypothesis (Hewitt & Flett, 2002; Hewitt, Flett, & Ediger, 1996) and the social disconnection model (Hewitt, Flett, Sherry, & Caelian, 2006), both direct and indirect relationships were hypothesized among the four constructs of interest, i.e., maladaptive perfectionism, acculturative stress, perceived social support, and depression. Specifically, this study tested acculturative stress and perceived social support as mediators of the relation between maladaptive perfectionism, defined as a tendency to set rigidly high standards and to be displeased with anything less, and depression. It was hypothesized that depressed individuals who have maladaptive perfectionism could be explained partly by their acculturative stress and perceived social support.

Participants in the study were Asian international students not from an English-speaking country (including Canada), who had been in the U.S. for less than 10 years. Maladaptive perfectionism, the independent variable, was measured with the Concern over Mistakes and Doubts about Actions subscales of the Frost Multidimensional Perfectionism Scale (FMPS; Frost, Marten, Lahart, & Rosenblate, 1990) and the Discrepancy subscale of the Almost Perfect Scale — Revised (APS-R; Slaney, Rice, Mobley, Trippi, & Ashby, 2001). Acculturative stress and perceived social support, the mediator variables, were assessed using the Acculturative Stress Scale for International Students (ASSIS; Sandhu & Asrabadi, 1994) and the Reliable Alliance, Attachment, and
Guidance subscales of Social Provision Scales (SPS; Cutrona & Russells, 1987), respectively. Depression, the criterion variable, was measured using the Center for Epidemiological Studies—Depression Scale (CES–D; Radloff, 1977).

Structural Equation Modeling (SEM) showed that while acculturative stress partially mediated a strong association between maladaptive perfectionism and depression, perceived social support was not a significant predictor of depression. Thus, the hypothesized mediation effect of perceived social support relating maladaptive perfectionism to depression was not tested and thus not supported. Further implications, limitations, and areas for future research are discussed.
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Chapter I

Statement of the Problem

Adler (1964) described striving for perfection as a necessity of the human experience, a motive that finds expression in both normal and neurotic forms. Adler’s view of perfectionistic striving as an innate human nature parallels Maslow’s (1954) hierarchy of needs, in a sense that human beings, facing environmental challenges, continue to survive and thrive through completion and self satisfaction. Yet, perfectionism has been typically viewed as a pervasive neurotic style that has various negative outcomes, including feelings of failure, guilt, indecisiveness, procrastination, shame, and low self-esteem (e.g., Pacht, 1984; Sorotzkin, 1985). Additionally, these conceptualizations of perfections have assumed a universal approach to perfectionism and have not considered the influence of culture.

Some researchers, however, conceptualize perfectionism as a broad personality construct with multidimensional facets (e.g., Enns & Cox, 2002; Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). Refining the definition of perfectionism, some authors have contrasted adaptive or normal perfectionism, i.e., setting realistic goals that are motivated by a need to achieve and enjoy, with maladaptive or neurotic perfectionism, which refers to setting unrealistic goals that are motivated by a need to avoid failure (e.g., Hewitt & Flett, 1991; Slaney, Ashby, & Trippi, 1995). Slaney and Ashby (1996), for example, conceptualized maladaptive perfectionism as a discrepancy, i.e., a tendency of setting rigidly high standards and being displeased with anything that does not meet these standards, which can lead to emotional distress as a consequence. People who display maladaptive perfectionism tend to criticize their negative performances (Dunkley et al.,
by doing so, they are unlikely to appreciate their own efforts or view their performance in a positive light. Given the association between maladaptive perfectionism and psychological outcomes, a closer examination on the nature and mechanism of the relationship is warranted. Among the various psychological outcomes of maladaptive perfectionism, depression has been identified as one of the more common responses (Hewitt, Flett, & Ediger, 1996; Rice, Leever, Christopher, & Porter, 2006).

Using a longitudinal design, Hewitt et al., for example, demonstrated that socially prescribed perfectionism, one indicator of maladaptive perfectionism, was associated with elevated depression, even after four months. Given that maladaptive perfectionism has been regarded as a difficult problem to treat and a significant causal factor for depression (Blatt, Zuroff, Bondi, Sanislow, & Pilkohis, 1998), it is necessary to investigate other variables that potentially explain how maladaptive perfectionism can lead to depression. In the present study, two such factors, acculturative stress and perceived social support, were examined.

**Perfectionism and Stress**

Previous theory and research have focused on the role of perfectionism in the relationship between stress and depression (Hewitt et al., 2002). It was noted that a maladaptive perfectionistic style may exacerbate or prolong the experience of stress, which can subsequently magnify the discrepancy between a person’s real self and ideal self. On the other hand, recent studies have expanded the link between perfectionism and psychologically functioning by suggesting that negative aspect of perfectionism can actually generate stressful situations, in turn causing depression. Studies have supported this hypothesis for college students (Chang, 2000; Chang, Watkins, & Banks, 2004), and
adults in the community (Cox, Clara, & Enns, 2009). Findings from these studies supported Hewitt and colleagues’ (1996) contention that “perfectionistic behavior can generate stress that stems, in part, from the tendency for perfectionists to evaluate stringently, focus on negative aspects of performance, and experience little satisfaction” (p. 276). However, aside from Chang et al.’s finding that Black women reported greater stress and maladjustment than White women due to maladaptive perfectionism, previous research on the stress-mediation model has focused solely on experiences of White individuals, thus limiting their generalizability to the dominant racial group in the U.S.

Studies that explored the relation of perfectionism to ethnicity suggest that members of Asian groups generally tend to possess more perfectionistic sensibilities than White Americans (Castro & Rice, 2003; Chang, 1998; Peng & Wright, 1994; Yee, 1992). In one study, Asian-American participants, compared with Caucasian-American participants, reported feeling more concerned about their mistakes and behaviors (Castro & Rice, 2003). It may be that the demands and expectations for achievement in collectivistic cultures lead members of Asian ethnic groups to strive for perfection (Ho, Holmes, & Cooper, 2004). If this is the case, Asian international students, who are said to possess generally high expectations for successful academic performance in the U.S. (Wei, Heppner, Mallen, Ku, Liao, & Wu, 2007), may be at particular risk for developing depressive symptoms, especially if their perfectionism is maladaptive rather than adaptive.

With the increasing number of Asian international students in the U.S., it is important for psychologists to understand the considerable needs of these students, given the high levels of adjustment-related stressors that they encounter (Chen, 1999).
According to the 2009 Open Door report on college enrollment (Institute of International Education, 2009), the number of international students in the U.S. increased 7.7% over the previous year, to an all-time high of 671,616 in the 2008-2009 academic year. Approximately 56% of these students were from Asian countries, with students from India being in the majority, followed by students from China, South Korea, and Japan.

Many Asian international students, especially those who come from East Asian countries, tend to pursue perfection, feeling pressured to succeed in school (Wei et al., 2007). Additionally, the perceived incompatibility between the students’ culture of origin and U.S. culture can be a source of stress, i.e., acculturative stress, since the greater the perceived disparity between cultures, the greater the distress (Benet-Martínez & Haritatos, 2005). Ultimately, acculturative stress may lead to reduced health, including anxiety, depression, psychosomatic symptoms, and feelings of isolation (Berry, Kim, Minde, & Mok 1987; Rivera, 2008; Williams & Berry, 1991).

Perfectionism and Social Support

Another consideration related to both perfectionism and depression is the role of perceived social support, which is particularly important for international students who are distant from their families, friends, and cultures of origin. Dunkley et al. (2000) and Hewitt et al. (2002) demonstrated that people who report high levels of maladaptive perfectionism are generally unwilling to seek help from others and perceive that available support is inadequate. That is, individuals with maladaptive perfectionistic traits are likely to perceive others’ support and acceptance are consistently unavailable. This finding may have much implication for Asian international students, especially those who may have limited social support systems and resources during their early stages of stay in
the U.S. However, considering that the majority of participants in the studies of Dunkley et al. (2000) and Hewitt et al. (2002) were European Americans, further study with different samples seems to be required to generalize the findings.

Similarly, Hewitt, Flett, Sherry, and Caelian (2006) proposed a social disconnection model, which states that individuals who perceive that other people have set excessively high standards for them may feel a sense of detachment from others and a disconnection from their environment, which can in turn lead to depression. A recent investigation (Sherry et al., 2008) in a largely Asian sample found that perceived social support, rather than actually received social support, partially mediated the association of perfectionism and depression. Further investigation of the social disconnection model is needed to increase our understanding of the role of perceived social support in depression for people who set excessively high standards for their performance.

The present study examined the potential mediating effects of acculturative stress and perceived social support on the relationship between maladaptive perfectionism and depression in a sample of Asian international students (see Figure 1).
Figure 1. Hypothesized Model of the Relationship between Maladaptive Perfectionism and Depression.
Chapter II

Review of Literature

This chapter presents a literature review for the present study, beginning with theory and research on perfectionism and the influence of maladaptive perfectionism on depression. Research on perfectionism with Asians is included in a review of cultural influences on perfectionism, followed by a review of related studies on general and acculturative stress and perceived social support. The chapter concludes with the hypotheses to be tested in the present study.

Maladaptive Perfectionism

Since Adler (1964) described striving for perfection as a necessity of the human experience, various aspects of perfectionism have been explored, particularly with regard to the influence of perfectionism on depression and negative affect (e.g., Sorotzkin, 1985). According to Hewitt and Flett (1991), before the early 1990s there were few systematic attempts to investigate the perfectionistic personality style. Prior to that time, perfectionism was a psychoanalytic construct, being understood as a pervasive neurotic style that was associated with various negative outcomes, including feelings of failure, guilt, indecisiveness, procrastination, shame, and low self-esteem (e.g., Sorotzkin, 1985). Unlike these unidimensional conceptualizations of perfectionism, which focused on the pathological element, recent researchers have emphasized the multidimensional facets of perfectionism (e.g., Enns & Cox, 2002; Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). The following sections summarize these major conceptualizations of perfectionism as they appear in the contemporary literature.
Hewitt and Flett (1991, 2002) described three dimensions of perfectionism: *self-oriented perfectionism, other-oriented perfectionism, and socially prescribed perfectionism*. The major difference among these dimensions is “the object to whom the perfectionistic behavior is directed (e.g., self-oriented vs. other-oriented) or to whom the perfectionistic behavior is attributed (e.g., socially prescribed perfectionism)” (Hewitt & Flett, 1991, p. 457). First, self-oriented perfectionism involves perfectionistic motivation and setting excessively high standards for oneself. This motivation is reflected in the aspiration to achieve perfection as well as the desire to avoid failure. Second, other-oriented perfectionism refers to holding unrealistically high standards of performance for others and strictly evaluating their performance. Other-oriented perfectionism is related to lack of trust, hostility toward others, and other-pointed blame (Hewitt & Flett, 1991). However, other-oriented perfectionism may also promote desirable attributes, such as management ability or facilitating motivation of others (Hewitt & Flett, 1991). Third, socially-prescribed perfectionism is the perception that other people have set excessively high standards for oneself. This dimension of perfectionism has consistently been associated with several forms of distress, including depression, anxiety, hopelessness, and suicidal ideation (Cox et al., 2002). According to Hewitt and Flett (1991), latter findings demonstrate that a discrepancy between the real self and the “must” self, with excessive standards imposed by significant others, can lead to vulnerable emotional states.

Similar to Hewitt et al. (1991), Frost and colleagues (1990) defined perfectionism as possessing high standards with excessively critical self-evaluations in pursuit of those standards. These authors proposed six dimensions of perfectionism: *Concern over mistakes*, considered to be the primary aspect of perfectionism (Cox et al., 2002),
involves placing unrealistic high standards on one’s own performance followed by critical evaluations. **Personal standards** refers to setting the high standards for one’s performance. **Doubts about actions** is defined as having doubts about the quality of one’s performance. **Organization** refers to one’s desire for neatness and order. Finally, **parental expectations** and **parental criticism** refer to the belief that parents have certain standards and are critical of a child’s failure to meet the parental expectations, respectively.

In Frost, Heimberg, Holt, Mattia, and Newbauer’s (1993) exploratory factor analysis of their six subscales of Multidimensional Perfectionism Scale (FMPS) and the combined subscales of Hewitt et al.’s Multidimensional Perfectionism Scale (HF-MPS), two factors were identified, reflecting maladaptive evaluation and positive striving. Specifically, (a) the FMPS dimensions of concern over mistakes, doubts about actions, and parental criticism and (b) the HF-MPS dimension of socially prescribed perfectionism were significantly related to maladaptive evaluation. On the other hand, the HF-MPS dimension of self-oriented perfectionism and the FMPS dimensions of personal standards and organization were significantly associated with positive striving. The following section reviews various efforts to operationalize different dimensions of perfectionism.

Frost et al.’s (1993) categorization of maladaptive evaluation and positive striving was supported by another study (Stumpf & Parker, 2002). In this study, the higher-order factors of the FMPS were labeled **healthy** and **unhealthy perfectionism**, reflecting the general personality dimensions of conscientiousness and neuroticism, respectively.

Suddarth and Slaney (2001) criticized Hewitt et al. (1991) and Frost et al.’s (1990) fundamental nature of the maladaptive factors (e.g., Socially Prescribed subscale,
Parental Criticism and Parental Expectation subscales) as poorly identified. According to Suddarth and Slaney (2001), the maladaptive factors only included assumed causes or results of perfectionistic behavior, rather than reflecting the nature of perfectionism per se. They argued that for example, Hewitt et al.’s (1991) Socially Prescribed subscale, i.e., people perceive that others set extremely high standards for them and evaluate them strictly, can be seen as a cause of perfectionism rather than as a definition of the essential nature of maladaptive perfectionism.

In response to the call for a more precise definition of perfectionism, especially the negative aspect of the construct, Slaney and Ashby (1996) interviewed individuals who identified themselves as perfectionistic. High standards for performance were a common theme in the narratives of their participants. Further, the participants reportedly experienced distress due to a discrepancy between their expectations and their actual performance. Slaney and Ashby (1996) described the three dimensions of perfectionism. First, Standards refers to setting the high personal standards of one’s performance. Second, Discrepancy is defined as one’s perception that one’s performance often falls short of the standards. Third, Order refers to one’s desire for neatness and organization. Thus, Slaney, Rice, and Ashby (2002) argued that perfectionism is not an inherently maladaptive personality facet; rather, it is multidimensional, with some aspects obviously maladaptive but others noticeably healthy and adaptive. Slaney et al. further argued that because distress is a consequence of maladaptive perfectionism, the discrepancy between setting excessively high standards and being displeased with anything less is a theoretically promising definition of the construct.
In summary, although authors concur that perfectionism consists of two broad dimensions, there is a lack of consistency in terminology. The two dimensions are alternately called (a) positive striving and maladaptive evaluation concerns (Frost et al., 1993), (b) positive and negative perfectionism (Terry-Short et al., 1995), (c) active and passive perfectionism (Adkins & Parker, 1996), (d) adaptive and maladaptive perfectionism (Rice, Ashby, & Slaney, 1998), (e) healthy and unhealthy perfectionism (Stumpf & Parker, 2000), (f) personal standards and evaluative concerns perfectionism (Blankstein & Dunkley, 2002), (g) conscientious and self-evaluative perfectionism (Hill et al., 2004), and (h) healthy and unhealthy, or perfectionistic striving and perfectionistic concerns (Stoeber & Otto, 2006). Despite the varying terminology, however, there is consensus about the two aspects of perfectionism, one that is positive or adaptive, and one that is negative or maladaptive.

While these studies, with the majority of participants being European Americans, ‘successfully’ categorized perfectionism into two broad dimensions, a conceptual distinction between the positive and negative aspects of perfectionism was initially made based upon the Westernized understanding of the characteristics. To illustrate, Frost et al. (1990) indicated that the Parental Expectation and the Parental Criticism subscales of the FMPS clustered together to form a factor reflecting the negative aspect of perfectionism. Arguably, however, this seems to exclusively adhere to an autonomous drive for personal striving encompassed by the Western culture, without taking consideration into the context of personal striving, such as one’s relationships and responsibilities to others.

Recently, a few studies (e.g., Cox et al., 2002; Enns, Cox, & Clara, 2002; Rice, Lopez, & Vergara, 2005) have started to separate relational expectations and criticism
into the facets of developmental antecedents of perfectionism. For example, Cox et al. (2002) corroborated shorted versions of both the FMPS and HF-MPS in samples of first-year university students, clinically depressed adults, and medical students (the information on ethnicity was not reported). Specifically, they eliminated the Parental Expectations subscale from the FMPS and the Other-Oriented scale from the HF-MPS, created composite scales for adaptive and maladaptive perfectionism, and found significant correlations with measures of depression, neuroticism, academic achievement, and conscientiousness.

Consequently, while the controversy surrounding the nature of perfectionism remains, ongoing attempts to elucidate maladaptive perfectionism have resulted in increased attention to a wide range of emotional and behavioral outcomes, such as depression, anxiety, and suicidal ideation, and eating disorder.

**Depression and Maladaptive Perfectionism**

Beck (1967) stated that individuals experience depression when they have negative self evaluations which result from having extremely high personal standards. According to Hewitt et al. (1991), one’s excessive self-striving and the increased magnitude of failure intensify the level of distress and self-blame to produce depression. Similarly, in a theoretical article, Blatt (1995) described narratives about depression and suicides of three ambitious, talented individuals. He proposed that that a harsh self-criticism, plagued by intense needs to achieve and avoid defect appearance, left the individuals feeling vulnerable to any possible signs of failure and disapproval. The following section will address specific empirical studies that investigated the various manifestations of depression associated with perfectionism.
Since Slaney and Ashby (1996) first delineated the features of maladaptive perfectionism, many scholars have empirically explored associations between maladaptive perfectionism and depression. Samples here included White college students (e.g., Rice, Leever, Christopher, & Porter, 2006; Slaney et al., 2001), Japanese (Sumi & Kanda, 2002) and Taiwanese college students (Wang, Slaney, & Rice, 2007), and Asian American college students (Beevers & Miller, 2004; Castro & Rice, 2003).

In an early study of maladaptive perfectionism and depressive symptoms, Hewitt and Flett (1991) reported positive relationships between both self-oriented and socially-prescribed perfectionism and distress symptoms, including depression, as assessed by the Symptom Checklist 90-Revised (SCL-90; Derogatis, Lipman, & Covi, 1973). The association between self-oriented perfectionism and depression was low ($r = .28$), whereas the association between socially-prescribed perfectionism and depression was moderate ($r = .48$). Arthur and Hayward (1997) reported a similar pattern, with a more modest relationship for self-oriented perfectionism ($r = .19$) than for socially-prescribed perfectionism ($r = .44$), where depression was measured using the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961).

In order to further understand relationships between various forms of perfectionism and self-esteem and depression, assessed using the BDI, Rice, Ashby, and Slaney (1998) sampled 464 undergraduates, with 94% of the sample being White European, and conducted a confirmatory factor analysis to approximate the factor structure of the FMPS (Frost et al., 1990) and the APS (Slaney & Johnson, 1992). Findings supported for an a priori, two factors, labeled as maladaptive and adaptive...
Maladaptive perfectionism was consisted of subscales tapping doubts about actions, concerns over mistakes, and struggle in relationships, and it was analogous to evaluative concerns perfectionism. Adaptive perfectionism was comprised of subscales representing order, organization, and personal standards. Results indicated a significant path coefficient from maladaptive perfectionism to self esteem (−.63) and depression (.52), and nonsignificant paths from adaptive perfectionism to self esteem (.12) and to depression (−.07). These findings demonstrated that maladaptive perfectionism, rather than adaptive perfectionism, was significantly associated with participants’ reported depression.

In another study, Rice and Slaney (2002) conducted a cluster analysis using the APS-R (Slaney & Ashby, 1996), the Center for Epidemiologic Studies Depression Scale (CES-D), and State Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970). Two groups of university students, comprised mostly of European American females, were classified as adaptive and maladaptive perfectionists or non-perfectionists. Results indicated that the maladaptive perfectionists reported significantly higher scores than either of the other two groups on the CES-D Depressed Affect subscale, the CES-D Somatic and Vegetative Activity subscale, and both the STAI Trait and State Anxiety subscales.

Further, Wei, Mallinckrodt, Russell, and Abraham (2004) investigated the relationship between maladaptive perfectionism, attachment, and depression among 310 university students. Maladaptive perfectionism was measured using the APS-R
Discrepancy subscale, and the FMPS Concern Over Mistakes and Doubts About Action subscales. Maladaptive perfectionism was found to partially mediate the relationship between attachment anxiety and depression, and fully mediate the relationship of attachment avoidance and depression.

In summary, significant relationships consistently emerge between maladaptive perfectionism and depression. However, most studies on perfectionism have primarily sampled White participants. The following section reviews the limited number of studies that have focused on perfectionism among members of ethnic minority groups, especially Asians and Asian Americans.

**Perfectionism Among Asians**

In Asian countries, especially East Asian countries, education is highly valued for the perfection of the society as well as the self. Education is regarded as a tool to fulfill one’s potential and the belief of “human perfectibility” exists within the society (Hammond & Gao, 2002, p.230). This fundamental belief seems to enable individuals to apply efforts to their tasks and thus to strive for fulfilling positions for the self, the family, and the society.

Indeed, researchers emphasized Asian cultural values such as importance on education and hard work (Yee, 1992) and interdependent relationship (Yoon & Lau, 2008) in understanding perfectionism among Asian populations. In a review of studies about stereotypes toward Asian Americans, Yee (1992) concluded that perfectionistic behaviors were found to be notable characteristics that stem from cultural emphasis on work ethic and a strong drive for education. Similarly, Sue and Okazaki (1990) explained the pursuit of academic achievements among Asian Americans as a socio-cultural construction. It
was noted that familial and cultural expectations requiring excellent academic performance may induce a feeling of guilt and perfectionism (Sue & Okazaki, 1990; Yoon & Lau, 2008).

Thus, it is likely that many Asian-born international students, who have been raised in the social context that underlies interdependence and obligation to family, arrive in the U.S. with their expectation and motivation to excel in academics. The following are a few empirical studies that specifically focused on cultural explanations regarding perfectionism among Asian population.

In an attempt to explicate the influence of Asian culture on perfectionism, Sumi and Kanda (2002) conducted a longitudinal investigation of the relationships among maladaptive perfectionism, depression, anxiety, and psychosomatic symptoms in Japanese college students. In this study, maladaptive perfectionism was defined as self-destructive attitudes that can be found in clinically depressed and anxious people. Results of the six-week interval study indicated that maladaptive perfectionism, as measured by Japanese version of the Burns Perfectionism Scale (Burns, 1980), significantly predicted depression as well as psychosomatic symptoms. These results supported Blatt’s (1995) argument that depression is the result of an accretion of experiences in which the individual fails to achieve extreme goals and his or her perfectionistic appraisal of one’s performance results as “must” statements.

Noting the socio-cultural formation of perfectionistic tendencies among Japanese individuals, Sumi and Kanda (2002) suggested that the Japanese cultural value of avoiding competitive defeat and pursuing unrealistically high goals may place some Japanese college students at high risk of depression. Results showed that this study was
limited, however, in that only male students were sampled, which raises the need to consider gender differences in perfectionistic behaviors and cognitions. Nonetheless, Sumi and Kanda’s (2002) work on the socio-cultural basis of perfectionism as a link to depression suggests the need to investigate factors that may predispose certain Asian international students to overly evaluative tendencies.

In another effort to examine cultural explanations of different types of perfectionists, a cluster analysis, using the Chinese version of Slaney et al.’s (1996) APS scale, was conducted among Taiwanese college students (Wang, Slaney, & Rice, 2007). The results of the analysis indicated that perfectionism is a relevant construct in this population, and located groups that were similar with prior findings with in the U.S. samples: adaptive perfectionists, maladaptive perfectionists, nonperfectionists. Interestingly, the analysis yielded a fourth group: a group with low-High Standards and high-Discrepancy scores. The authors suggested that this group might represent participants whose discrepancies exist between the behaviors others expected of and the actual behaviors in shaming of Asian cultural contexts. This fourth group’s scores on psychological symptoms such as self-esteem, anxiety, and depression were similar to those of nonperfectionists, whereas maladaptive perfectionists indicated higher scores on anxiety and depression and lower scores on self-esteem.

To elucidate the specific characteristics of maladaptive perfectionists among Korean college students, Park (2008) conducted a semi-structured interview along with a scenario-based approach which was intended to generate various responses. The Korean version of the two factor structure of the Perfectionism Questionnaire (PQ; Rheaume, Freeston, & Ladouceur, 1995), i.e., Perfectionistic Tendencies and Negative
Consequences of Perfectionism, was used to identify adaptive and maladaptive perfectionists. Specifically, people who indicated high scores on perfectionistic tendencies (upper 75%) and low scores on negative consequences of perfectionism (lower 50%) were identified as adaptive perfectionists, while high on both perfectionistic tendencies and negative consequence of perfectionism (upper 75%) as maladaptive perfectionism. The results indicated that, compared to adaptive perfectionists, maladaptive perfectionists tended to possess more ambivalence toward their perfectionism and self-critical attitudes such as “What kind of person will I be” and “I can achieve nothing with this attitude.” This is consistent with Rice et al.’s (2002) findings that self-critical cognition may be a central factor in anxiety and depressed affect. Also the results showed that avoidant behaviors (e.g., tending to give up everything if not have a good start) were another characteristics of maladaptive perfectionists, and this finding suggests that the avoidance tendency may increase vulnerability to stress.

Overall, although there is a paucity of literature that has investigated adaptive and maladaptive perfectionism in Asian cultural contexts, the general findings are consistent with Baltt’s (1995) argument that people who have maladaptive perfectionism, i.e., who are excessively concerned about self-esteem and self-discipline, are vulnerable to achievement-related events that can lead to loss of control and failure. In addition, although Asian cultural contexts and values may predispose some Asians to develop perfectionism, caution is required not to regard perfectionistic tendencies among this population as all maladaptive. Beyond the consideration of the association between maladaptive perfectionism and depression, it seems necessary to identify other factors that closely relate to perfectionism and depression. The following sections review the
literature on stress, particularly acculturative stress, and perceived social support as they relate to perfectionism and depression.

**Stress and Perfectionism**

Stress has been indicated as an important factor in understanding the relationship between perfectionism and psychological outcomes (Chang, 2000; Hewitt et al., 1991). Stress is described as “any condition having the potential to arouse the adaptive machinery of the individual” (Pearlin, 1999, p.163). Consistent with this phenomenological meaning, recent stress researchers have focused on conditions or events that exceed an individual’s ability to cope, subsequently causing him or her to have psychological or somatic symptoms (Dohrenwend, 2000). In the perfectionism research, stress has been employed as both a moderating and mediating variable as the two possible ways in influencing psychological outcome. To illustrate, the view of stress as a moderating variable in association with perfectionism was introduced by Flett, Hewitt, Blankstein, & Mosher (1995) who examined the role of potential diathesis-stress mechanisms interacting between dimensions of perfectionism and depressive symptoms. Specifically, self-oriented perfectionism, measured using the HF-MPS, was associated with increases in depressive symptoms 3 months later for participants who had experienced a major life event.

In the following year, Hewitt et al. (1996) proposed two models, diathesis-stress model and stress-generation, which could explain the association between perfectionism and depression. In the diathesis-stress model, maladaptive perfectionism exacerbates or prolongs the experience of stress, in which individuals with maladaptive perfectionism are likely to experience depression because of magnified discrepancy between the real
self and the ideal self. Previous studies have tested the diathesis-stress model, in which perfectionism interacts with stress to produce symptoms of physical and psychological maladjustment, such as depression and anxiety (e.g., Hewitt et al., 1996; Wei et al., 2007).

On the other hand, a few recent studies have explored the stress-generation model by addressing the possibility that negative aspects of perfectionism generates stressful situations, which in turn leads to distress (e.g., Chang, 2000, 2006; Chang et al., 2004; Cox et al., 2009; Dunkley et al., 2000). That is, this mediation model posits that a perfectionist’s proneness to self criticism about his or her performance causes stressful experiences, which in turn generates psychological maladjustment such as depression and anxiety. To illustrate, in a study of college students and older adults who were predominantly White (93.4%), Chang (2000) reported that stress, measured by the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), mediated the relationships between perfectionism, measured by total FMPS scores and (a) negative affect, and (b) worry. However, a limitation of Chang’s study is that only total FMPS scores were used to measure general perfectionism, and thus the results did not explain the extent to which specific dimensions of perfectionism, adaptive and maladaptive perfectionism, could be related to the outcome variables differently.

Thus, in light of the possible pathways related to a perfectionism-distress link, a series of studies using structural equation modeling examined the stress-moderating and mediating effects in relation to specific dimensions of perfectionism and psychological maladjustment (Dunkley & Blankstein, 2000; Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000; Dunkley, Zuroff, & Blankstein, 2003). In these studies, based on the previous findings (Frost et al., 1993; Slaney et al., 1998), perfectionism was conceived of
the two higher-order factors: personal standards and evaluative concerns of perfectionism. Specifically, the personal standards was measured by combined personal standards scores from FMPS and the self-oriented perfectionism from HF-MPS. The evaluative concerns of perfectionism was measured by combined socially prescribed perfectionism from HF-MPS and concerns over mistakes and doubts about actions from FMPS, based on previous research (e.g., Frost et al., 1993; Hewitt & Flett, 1991) showing that these subscales were most strongly associated with depression. Researches (e.g., Dunkley et al., 2000) advocated their approach of selecting the relevant perfectionism subscales to be psychometrically sound given that it would allow the clearest assignment of meaning to the construct.

Similar to Chang’s findings, Dunkley et al. (2000) found that evaluative concerns of perfectionism were related to hassles, defined as minor nuisances of daily life, which in turn were significantly associated with depression. This finding was replicated by Dunkley, Zuroff, and Blankstein (2003), who investigated maladaptive perfectionism, defined as self-critical perfectionism, in relation to stressful events, coping, and perceived social support. Specifically, self-critical perfectionism was found to be associated with stress, which in turn partially mediated the relation between maladaptive perfectionism and negative affect. However, Dunkley et al.’s (2003) finding (i.e., the positive relationship between adaptive perfectionism and negative affect) is contrary to the extant theory of perfectionism (Chang et al., 2004).

Noting that the studies by Chang (2000) and Dunkley et al. (2000, 2003) primarily sampled European Americans, Chang et al. (2004) examined a stress-mediation model using path analyses among Black and White female college students. In this study,
based on the previous factor analysis by Frost et al. (1993), maladaptive perfectionism was measured by combined scores from the Concern Over Mistakes, Doubts About Actions, Parental Expectations, and Parental Criticism subscales of the FMPS (Frost et al., 1990). Results showed that the Black women participants reported significantly more stress and negative affect and experienced significantly less life satisfaction than did the White women. Also, among the Black women, the relation between maladaptive perfectionism and negative affect was completely mediated by stress, accounting for 26.2% of the variance in negative affect. Among the White women however, stress partially mediated the link between maladaptive perfectionism and negative affect.

Thus, Chang et al.’s (2004) study supported Hewitt et al.’s (1996) stress-generation model for Black women. Moreover, support for the partial mediation model among White women was consistent with Chang’s (2000) study, in which the participants were predominantly White. Although in Chang et al.’s (2004) study the use of multiple Sobel tests might have increased Type I error rates, the path-analytic findings raised the possibility that stress may be a critical determinant of psychological functioning for members of some ethnic minority groups. Further, previous studies (e.g., Chang, 2006) used Frost et al.’s Multidimensional Perfectionism Scale (FMPS) and Hewitt et al.’s Multidimensional Perfectionism Scale (HF-MPS) for testing a stress-mediation model. Based on Slaney et al.’s suggestion that their measure of discrepancy is the essential defining negative aspect of representing maladaptive perfectionism, it seems necessary to examine whether or not the stress-mediation model would emerge when Slaney et al.’s (1996) APS scale, which was measured in the present study, is used.
Given the relationship between stress and perfectionism, it seems imperative to investigate a specific type of stress that is the most relevant for Asian international students, the targeting population in the present study. Acculturative stress and the subsequent distress related to acculturation process are reviewed in the following sections.

**Acculturative Stress, Maladaptive Perfectionism, and Depression**

One type of stressor that might be relevant to the current population is stress associated with acculturation. Acculturation reflects the process by which an individual experiences cultural change across multiple life domains, such as language, knowledge, values, identity, and affiliation preferences as a result of repeated exposure to a second culture (Guo, Suarez-Morales, Schwartz, & Szapocznik, 2009; Kang, 2006). According to Berry (2003), acculturation is an important factor in adapting to a new culture for various groups, including refugees, immigrants, and temporary sojourners like international students.

Emphasizing the psychological nature of the acculturation process, several researchers have explored the stressful aspects of acculturation (Ji & Duan, 2006; Kosic, 2004). Although not all change is stressful, there may be times and situations in which changes prompted by the acculturation process encountered by international students can be particularly challenging and distressing.

*Acculturative stress* has been defined as a stress reaction that occurs in response to life events that are rooted in the process of adjusting to a new cultural environment (Berry, 2003). Alternate definitions include psychosocial stressors stemming from unfamiliarity with new customs and social norms (Lin & Yi, 1997) or actual difficulties, such as language, education, work, intercultural interactions, and values (Gil, Vega &
Dimas, 1994). According to some authors, the greater the perceived difference between one’s culture of origin and the second culture, the more distress a person is likely to experience (Benet-Martínez & Haritatos, 2005). With respect to Asians, for example, when it comes to social interaction, Asians who are taught to be humble and emotionally restrained in their home countries (Kim, Atkinson, & Umemoto, 2001) may find it difficult to fit in with the American style of social situations, where direct expression of opinions and open discussion are valued. Thus, the process of psychosocial adjustment may cause considerable stress for many Asian international students. Eventually, acculturative stress can lead to increased anxiety, depression, or feelings of isolation (Rivera, 2008).

In fact, Asian international students commonly report perceptions of prejudice or feelings of isolation (Rahman & Pollock, 2004). According to Kuo, Roysircar, and Newby-Clark (2006), Asian international students, compared to Asian Americans and Asian Canadians, tend to perceive more prejudice and tend to be less acculturated. It has also been noted that less acculturated groups reportedly use more avoidance coping (e.g., “I try to block out or forget about what’s bothering me”) than engagement coping strategies (Kuo et al., 2006). Further, Kuo et al.’s results support the earlier contention of Sue and Sue (1999) that when individuals perceive oppression as uncontrollable, their responses can be one of passivity and internalized powerlessness.

Noting a high incidence of acculturative stress among Asian international students, Wei et al. (2007) investigated the interaction of acculturative stress and maladaptive perfectionism as predictors of depression among international students from China and Taiwan. Based on previous research demonstrating strong association between
maladaptive perfectionism and depression among European American students (Slaney et al., 2001) and Taiwanese college students (Wang, Slaney, & Rice, 2007), Wei et al. speculated a moderation effect of maladaptive perfectionism such that high maladaptive perfectionism would strengthen the association between acculturative stress and depression.

Acculturative stress, maladaptive perfectionism, and depression were measured with Acculturative Stress Scale for International Students (ASSIS; Sandhu & Asrabadi, 1994), the Discrepancy subscale of the Almost Perfect Scale—Revised (APS–R; Slaney et al., 2001), and the Center for Epidemiological Studies—Depression Scale (CES–D; Radloff, 1977), respectively. Results from a hierarchical regression indicated that self-reported acculturative stress and maladaptive perfectionism, along with length of stay in the U.S., accounted for almost half of the variance in depression. Even for participants who had been living in the U.S. for a long period of time, high maladaptive perfectionism was found to be a detrimental factor in the link between acculturative stress and depression. That is, using length of stay as a proxy for acculturation, Wei et al. (2007) indicated that even among individuals who are highly acculturated, maladaptive perfectionism can exacerbate depression when acculturative stress is experienced. The rationale here is that the longer stay in the U.S. comes to be seen as an added pressure to perform well for people with a high level of maladaptive perfectionism.

All in all, it seems reasonable to predict that high levels of maladaptive perfectionism may actually create acculturative stress if individuals perceive challenges due to language, social interaction, and adjustment as personal failures, without much consideration of the external nature about adjustment process. No previous studies were
located that investigated acculturative stress as an outcome of maladaptive perfectionism, however. Also, in the context of perfectionism and distress in this population, it might be important to consider social support, which has been identified as a buffer against depression (e.g., Dunkley et al., 2000). The following section summarizes literature that explicated the function of social support in relating maladaptive perfectionism and depression.

**Social Support, Maladaptive Perfectionism, and Depression**

According to Thoits (1995), social support is “a social fund from which people may draw when handling stressors” (p. 64). Through such support, people can be assured of their own worth in the eyes of others as well as availability of tangible support in times of stress (Uchida, Kitayama, Mesquita, Reyes, & Morling, 2008). Thus, social support is crucial in itself for positive well-being. Considering significant changes experienced by university students, such as family separation and new social relationships, it appears important to understand the role of personality characteristics and perceived social resources in comprehending risk for distress.

Research demonstrates that the belief that significant others are available and can offer caring, love, and understanding are related to perfectionism. Dunkley et al. (2000) conducted a structural equation modeling study with a sample of 443 university students (50% of whom were White Europeans). Perceived social support was measured using three, 4-item Social Provision Scales (SPS; Cutrona & Russell, 1987): Reliable Alliance, Attachment, and Guidance. These subscales were utilized as observed indicators of a perceived social support latent variable. Results indicated that each of hassles, avoidant coping, and perceived social support fully mediated the relation between evaluative
concerns perfectionism and emotional distress. Additionally, moderator analyses demonstrated that high levels of stress lead to negative outcomes among personal standards perfectionists, especially when they perceive low levels of social support.

The findings of social support as mediators indicate that people who report a high level of maladaptive perfectionism tend to be unwilling to seek help from others and perceive that their support is inadequate, possibly because these individuals fear evaluation and criticism and perceive their relationships to be unsatisfactory. This can be linked with Moskowitz and Zuroff’s (1991) finding that individuals high in self-criticism are less content with one’s social support and do not feel integrated within a social network.

Similarly, Zuroff and Duncan (1999) conducted a laboratory study in which 120 couples were asked to resolve a conflict while being videotaped; overt hostility were rated by coding the videotapes of the couples’ interactions. Results illustrated that perfectionistic individuals tend to generate hostile attacks on their partners, which are likely to result in decreased social support and these individuals’ negative representations of themselves and others. These findings are consistent with the result of Mongrain’s (1998) study in which self-critical university students perceived less support and made fewer behavioral requests for social support over a three-week self-monitoring period, whereas peers did not report providing those self-critics with lower levels of support.

Expanding on Dunkley et al.’s model (e.g., see Dunkley & Blankstein, 2000; Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000), Dunkley et al. (2003) designed a more comprehensive multilevel structural model by (1) utilizing a daily diary to obtain situational stress, coping, and perceived social support, (2) tapping self-criticism
(as a dimension of maladaptive perfectionism) measured by the Depressive Experiences Questionnaire (DEQ: Blatt, D’Afflitti, & Quinlan, 1976), and (3) measuring negative and positive effects separately instead of psychological distress as a latent dependent construct. The majority of participants were of European descent in Canada. Results are consistent with Dunkley et al.’s studies, which indicate that hassles (as a type of stress) and avoidant coping mediated the relation between self-critical perfectionism and negative affect. Contrastingly, low level of perceived social support mediated the negative relation between self-critical perfectionism and positive affect. Collectively, these findings indicate that individuals who report high levels of maladaptive perfectionism do not think others view them positively, are not likely to be a part of a social network; subsequently they are unlikely to approach others for help and support.

Further, Dunkley, Sanislow, Grilo, and McGlashan (2006) examined the predictive importance of perfectionism in clinical populations over three years. Self-critical perfectionism at time 1, measured by the Dysfunctional Attitude Scale (Weissman & Beck, 1798; as cited in Dunkley et al., 2006), was predictive of negative social interactions, which in turn was associated with depression at time 2, directly and indirectly through negative perceived social support at time 2. These results illustrated how strongly and consistently individuals who report high levels of maladaptive perfectionism are preoccupied with dysfunction in the social domain. Given the nature of the participants in this study, however, it may require a caution to generalize the results to other populations in different settings.

Noting the negative social interactions that highly perfectionistic individuals are likely to experience, Hewitt, Flett, Sherry, and Caelian (2006) proposed the social
disconnection model, which asserts that socially prescribed perfectionism, one dimension of maladaptive perfectionism, generates disconnection from people, which, in turn, leads to depression. Testing the social disconnection model with a sample of 222 undergraduates (62% of whom were Asians), Sherry et al. (2008) found that perceived social support partially mediated the link between maladaptive perfectionism and depression. This finding suggests that maladaptive perfectionism influences the degree to which college students feel supported and satisfied with their social networks.

Chang, Sanna, Chang, and Bodem (2008) also attempted to study perfectionism in a social context among university students, with the majority of participants being European Americans. This study demonstrated that the presence of loneliness moderated the association between socially prescribed perfectionism and depression among college students. That is, people who had high scores on the loneliness and the socially prescribed perfectionism measures reported interpersonal isolation and a lack feedback from people, which, in turn, may have caused their depressive feelings, including helplessness and frustration.

However, although this finding points to the potential role of loneliness in the relation between the different dimensions of perfectionism and depression, a caution may be required to interpret the results in that given the nature of a cross-sectional study, cause and effect cannot be ascertained as well as potential multicollinearity between depression and loneness. Moreover, as the authors indicated, ethnic or racial differences should be considered in the social context, which also may raise a question regarding the adaptiveness or maladaptiveness of socially prescribed perfectionism.
In summary, despite the fact that many Asian international students experience homesickness, estrangement, and loneliness in the process of acculturation, no previous studies were located that investigated the social disconnection model. Moreover, a series of structuring equation modeling studies (e.g., Dunkley et al., 2000, 2003), in which an inability to appraise personal resources were found to play an important role in the maladaptive perfectionism-distress link, support the argument that the model needs to be expanded and tested with Asian international students given their context of acculturation process. In the present study, high levels of maladaptive perfectionism in this population may diminish social support, which may subsequently heighten levels of depressive symptoms.

The Relationship between Acculturative Stress and Perceived Social Support

Previous researchers noted the complexities of the social support construct as both a moderator and a mediator of stress and psychological well-being (e.g., Dunkley et al., 2000; Misra, Crist, & Burant, 2003; Tartakovsky, 2007). These authors proposed an inverse relationship between perceived social support and stress. That is, when people are experiencing a stressful event, supportive social interactions can reduce their perceptions of uncertainty and help them develop a sense of control over stressful situations (Apker & Ray, 2003).

In fact, social support is very important for the acculturation of international students who are experiencing major transitions in life. Misra et al. (2007), for example, examined relationships among life stress, academic stressors, perceived social support, and reactions to stressors among international students, the majority of whom (81.7%) were from Africa, Asia, and Middle East. Results indicated that greater social support
predicted less reaction to stressors. The finding is consistent with prior research (Mallinckrodt & Leong, 1992), in which social support had a buffering effect on stress symptoms among international graduate students, whereas family support did not have the same buffering effects. As Mallinckrodt and Leong (1992) claimed, “not only is social support crucial in itself for positive well-being, but social support also provides a powerful coping resource for persons experiencing stressful life changes, including the stress of adjusting to an unfamiliar culture” (p. 71). Similarly, Dunkley et al. (2000) demonstrated interaction between social support and stress as it relates to maladaptive perfectionism and negative outcomes, such that the experience of high levels of stress causes negative outcomes among people with maladaptive perfectionism, particularly when these people perceive low levels of social support.

Further, Ye (2006) specified different types of acculturative stress and social support among Chinese international students. Results indicated that students with higher satisfaction of their social support networks tended to report less acculturative stress, specifically perceived discrimination, perceived hatred, and negative feelings. Interestingly, support network size did not predict any type of acculturative stress. In a longitudinal study of adolescent immigrants, Tartakovsky (2007) found that perceived social support from peers and teachers was negatively related to acculturative stress and homesickness, whereas perceived social support from the adolescents’ parents was not related with these factors. To summarize, prior research demonstrated that an individual’s satisfaction about social support is more important than the size or existence of it in dealing with psychological disturbances during acculturation.
Summary and Hypotheses

As mentioned above, Asian international students often experience pressure to strive for high standards due to the emphasis within Asian cultures on academic performance. For this reason, Asian international students are an appropriate population for extending and deepening our knowledge of the effects of perfectionism.

Given the recent emphasis on assessing situation-specific stress (Dunkley et al., 2003) and examining the generalizability of the stress-mediation hypothesis (Hewitt & Flett, 2002; Hewitt et al., 1996) and the social disconnection model (Hewitt et al., 2006), both direct and indirect relationships were hypothesized among the four constructs of interest, i.e., maladaptive perfectionism, acculturative stress, perceived social support, and depression (See Figure 1).

Three research questions were proposed for the study. First, does maladaptive perfectionism relate to depression? Second, does acculturative stress mediate the relationship between maladaptive perfectionism and depression? Third, does perceived social support mediate the relationship between maladaptive perfectionism and depression? Based on these research questions, the following hypotheses were tested:

Hypothesis 1. Asian international students who reported high levels of maladaptive perfectionism would also report high levels of depression due to their extreme striving for perfection and discontent with any achievement that was not perfect.

Hypothesis 2. Asian international students who reported high levels of maladaptive perfectionism would also report high levels of acculturative stress. That is, maladaptive perfectionists would experience acculturative stress.
**Hypothesis 3.** Asian international students who reported high levels of acculturative stress would also report high levels of depression.

**Hypothesis 4.** Asian international students who reported high levels of maladaptive perfectionism would be more prone to generating acculturative stressful events, which would in turn elevate their levels of depression.

**Hypothesis 5.** Asian international students who reported high levels of maladaptive perfectionism would report low levels of social support. That is, maladaptive perfectionists would perceive little social support.

**Hypothesis 6.** Asian international students who reported low levels of social support would report high levels of depression.

**Hypothesis 7.** Asian international students who reported high levels of maladaptive perfectionism would perceive little social support, which would also lead to more depressive symptoms.
Chapter III

Method

This chapter provides an overview of participant demographics, recruitment of participants, and the procedures for the study. All the measures involved in this study are also described.

Participants

A total of 296 people participated in this study. Exclusion criteria for the study included the presence of severe psychopathologies (e.g., clinically diagnosed as severe or profound schizophrenia) or an inability to read or write English. An inclusion criterion in the study was to be an Asian international student (either undergraduate or graduate) not from an English speaking country (including English speaking Canada), who had been in the U.S. for less than 10 years. 23 participants were deleted because of failure to complete all instruments. 17 participants were excluded because they have been clinically diagnosed with or are currently being treated for a psychiatric illness. Additional 26 people who hold immigrant visas were not included in the final sample. Six individuals were outliers and were also removed from the sample. Thus, the total sample consisted of 96 men (42.9%) and 128 women (57.1%) participants (see Table1). Not all demographic variables reflected total 224 participants because some individuals left certain demographic questions blank. Participants’ average age was 26.5 ($SD = 5.56$) and ranged from 18 to 56. Participants consisted of 70 undergraduate (31.3%) and 152 graduate (67.9%) students; 2 did not respond to this question. Specifically, 14 were first year undergraduates (6.3%), 21 sophomore (9.4%), 18 junior (8.8%), 17 senior (7.6%), 45 Masters (20.1%), 99 Doctoral (44.2%), and 8 Post-Doctoral (3.6%) students.
Table 1. *Demographic Variables*

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<td><strong>Age</strong></td>
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<td>SD</td>
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<tr>
<td></td>
<td>26.5</td>
<td>5.56</td>
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<td><strong>Years in the U.S.</strong></td>
<td>3.24</td>
<td>2.75</td>
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</table>
The ethnicity of the participants was 96 Korean (42.9%), 82 Chinese (36.6%), 12 Taiwanese (5.4%), 10 Asian Indian (4.5%), 5 Thai (2.2%), 4 Japanese (1.8%), 2 Indonesian (.9%), 2 Singaporean (.9%), 2 Vietnamese (.9%), 1 Malaysian (.4%), and 8 other Asian (3.6%). In terms of major or professional field, the participants consisted of 41 Engineering (18.3%), 38 Business (17%), 29 Science (12.9%), 19 Psychology (8.5%), 14 Computer (6.3%), 9 Education (4%), 9 Physics (9%), 9 Policy (4%), 7 Art (3.1%), 6 Communications (2.7%), 6 Math (2.7%), 4 Social Welfare (1.8%), 3 Medicine/pre-med (1.3%), and 29 other (12.9%) students. Most of the participants were single (79%) followed by 19.6% of participants who were married and 0.9% who were separated or widowed. Average years of stay in the U.S.A. was 3.24 ($SD = 2.75$).

**Design**

An ex post facto design was used to examine relationships among self-reported maladaptive perfectionism, acculturative stress, social support, and depression in Asian international students. Maladaptive perfectionism was served as the predictor variable, with depression being the criterion variable. Acculturative stress and perceived social support were included as mediator variables.

Based on previous factor analytic work and empirical studies on maladaptive perfectionism (e.g., Blankstein & Dunkley, 2002; Wu & Wei, 2008), the latent variable of maladaptive perfectionism was created through three measures: (a) the Discrepancy subscale from the Almost Perfect Scale—Revised (APS-R; Slaney et al., 2001), (b) the Doubts About Actions subscale and (c) the Concern Over Mistakes subscale from the Frost Multidimensional Perfectionism Scale (FMPS; Frost et al., 1990). Wu and Wei (2008) used these three subscales to represent the latent variable of evaluative concerns.
(maladaptive) perfectionism, and provided evidence for construct validity through a positive correlation with anxiety \((r = .51)\) and depression \((r = .53)\).

Social support and depression were measured by the Social Provisions Scales (SPS; Cutrona & Russell, 1987) and the Center for Epidemiological Studies- Depression Scale (CES-D; Radloff, 1977), respectively. Acculturative stress was measured by the Acculturative Stress Scale for International Students (ASSIS; Sandhu & Asrabadi, 1994).

**Instruments**

**Almost Perfect Scale.** The Almost Perfect Scale —Revised (APS-R; Slaney et al., 2001; See Appendix A) is comprised of 23 items that are responded to on a 7 point Likert-type scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Sample items include, “I rarely live up to my high standards” and “I expect the best from myself.” The APS-R includes three subscales: High Standards (7 items), Order (4 items), and Discrepancy (12 items). The High Standards subscale assesses the degree to which individuals possess high standards or expectations for their achievements and performance. The Order subscale captures the degree to which individuals prefer orderliness and neatness.

Although the entire APS was administered to participants, only the Discrepancy subscale was analyzed. This subscale estimates the degree to which individuals perceive themselves as failing to meet their expectations/standards for performance. Sample items are, “I often feel frustrated because I can’t meet my goals,” and “My best just never seems to be good enough for me.” Items are summed within subscales. The Discrepancy subscale has a potential range of 12 to 84, with higher scores reflecting a higher level of maladaptive perfectionism.
Internal consistency Cronbach’s coefficients ranged from $\alpha = .85$ for the Discrepancy scale to $\alpha = .92$ for the High Standards scale in a college student sample (Slaney et al., 2001). The coefficient alpha was .94 for Discrepancy in the present sample. The construct validity of the APS-R has been demonstrated through significant positive correlations between High Standards and academic adjustment (Rice, Vergara, & Aldea, 2006) in college samples and through a significant negative association between Discrepancy and (1) self-esteem, as measured by Rosenberg Self-Esteem Inventory (Rosenberg, 1965), for Taiwanese college students (Wang et al., 2007) and (2) depression for Chinese international students (Wei et al., 2007) Also, Slaney et al. reported significant correlations between the Discrepancy subscales and other perfectionism subscales such as Doubts About Actions ($r = .62$) and Concern Over Mistakes ($r = .55$).

**Frost Multidimensional Perfectionism Scale.** The Frost Multidimensional Perfectionism Scale (FMPS; Frost, Marten, Lahart, & Rosenblate, 1990; see Appendix B) consists of 35 items that are rated on a 5 point Likert-type scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) This measure was designed to capture six dimensions of perfectionism: Concern over Mistakes (9 items), Doubts about Actions (4 items), Personal Standards (7 items), Parental Expectations (5 items), Parental Criticism (4 items), and Organization (6 items). Only the Concern over Mistakes and Doubts about Actions were analyzed in the present study, although the entire scale was administered. Sample items for these subscales include, “I usually have doubts about the simple everyday things I do (Doubts about Actions)” and “If I fail at work/school, I am a failure as a person (Concern over Mistakes).” A total perfectionism score is obtained by adding all of the subscale scores except Organization, which is the least interrelated with the
other subscales and is not considered to be a core element of perfectionism (Frost et al., 1990).

Consistency coefficients of the FMPS ranged from .77 for the scores on Doubts about Actions scale to .93 for the scores on Organization scale (Frost et al., 1990). In the present study, coefficient alphas were .88 and .79 for Concern Over Mistakes and Doubts About Actions, respectively. Supporting the concurrent validity of the FMPS, Cronbach’s coefficient alpha between subscales of the FMPS and the Burns Perfectionism Scales (Burns, 1980) ranged from .18 (Organization scale) to .87 (Concern over Mistakes) (Frost et al., 1990).

In a factor analysis with a sample of 553 undergraduates, Frost et al. (1993) compared the subscales of the FMPS with Flett et al.’s (1991) scale of the same name. Results indicated that Doubts about Actions, Concern over Mistakes, Parental Expectations, and Parental Criticism loaded onto one factor that represented the maladaptive perfectionism, with factor loadings of .52, .70, .72, .83 respectively, whereas the factor that reflected adaptive perfectionism included Organization and Personal Standards, with factor loadings of .61 and .85, respectively.

Similarly, Slaney et al.’s (1995) factor analysis of the FMPS showed the clearest interpretation for a two-factor solution reflecting adaptive and maladaptive aspects of perfectionism, with factors loadings on the maladaptive factor of .58 for Parental Expectations, .60 for Parental Criticism, .68 for Concern over Mistakes, and .69 for Doubts about Actions. These authors also reported that the Personal Standards and Organization subscales loaded highly on the adaptive perfectionism dimension, i.e., .76 and .77, respectively.
However, Shafran and Mansell (2001) have argued that Parental Expectations and Parental Criticism subscales may be different from maladaptive perfectionism. Also, in the context of Asian values such as *filial piety*, meaning a respect for parents, it may not appropriate to use these subscales as assessing *maladaptiveness* of perfectionism. The FMPS has been used in previous research investigating relationships between perfectionism and (a) emotional distress (Chang, 1998), and (b) depression (Yoon & Lau, 2008) among Asian American college students. Specifically, the Concern over Mistakes subscale and Doubts about Actions subscale were highly correlated with depression (Bieling, Israeli, & Antony, 2004; Cox et al., 2002).

By following the suggestions of Wei et al. (2004) and Wu and Wei (2008) in choosing measures for maladaptive perfectionism, the 9 items from the Concern over Mistakes subscale, the 4 items from the Doubts about Actions subscale, and the 12 items from the Discrepancy subscale of the APS-R were used as the indicators for the construct of maladaptive perfectionism in the present study.

**Acculturative Stress Scale for International Students.** The Acculturative Stress Scale for International Students (ASSIS; Sandhu & Asrabad, 1994; see Appendix C) was used to assess participants’ acculturative stress. This measure, which was selected because it was specifically designed for Asian international students, consists of 36 items in 7 subscales: Perceived Discrimination (8 items), Homesickness (4 items), Perceived Hate (5 items), Fear (4 items), Stress Due to Change/Culture Shock (3 items), Guilt (2 items), and Nonspecific Concerns (10 items). Each item is rated on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items are, “I feel uncomfortable to adjust to new cultural values (Culture Shock),” and “I am treated
differently in social situations (Perceived Discrimination).” The total score is the sum of the subscales and can range from 36 to 180, with higher scores indicating greater perceived acculturative stress.

Coefficient alphas for the total score ranged from .92 to .94 (Constantine, Okazaki, & Utsey, 2004; Sandhu & Asrabadi, 1994). In the present study, the alpha coefficient for the total score was .95. Evidence for the construct validity of the ASSIS was provided by negative associations with adjustment and positive associations with depressive symptoms among international students (Constantine et al., 2004; Wei et al., 2007). In this study, a factor analysis with principle axis factoring was conducted for the 36 items of the ASSIS. Four parcels were created based on isolated parceling strategies (Holt, 2004) and rational judgment about the item contents. These four parcels were used to represent the latent variable of acculturative stress in the analyses.

**Social Provisions Scale.** Perceived social support was measured using the Social Provisions Scales (SPS; Cutrona & Russell, 1987; see Appendix D), which consists of 24 items that are responded to on a 4-point Likert-type scale, ranging from 1 (strongly disagree) to 4 (strongly agree). This instrument assesses the extent to which people feel that others are available for various kinds of assistance during stressful situations. The SPS includes six subscales, each with four items: Attachment (safety, emotional bond), Social Integration (having one’s interests and concerns shared by others), Reassurance of Worth (having one’s skills and abilities acknowledged), Reliable Alliance (tangible assistance), Guidance (advice, information), and Opportunity for Nurturance (sense of contributing to the well-being of others). After reversal of negatively worded items, a
total score is computed by summing all items. This score can range from 24 to 96, with higher scores reflecting a greater degree of perceived social support.

Cutrona et al. (1987) conducted factor analyses and demonstrated a second-order structure that underlies responses to the SPS. Among the second-order factor loadings for the six first-order factors, Opportunity for Nurturance was found to reflect the global support factor the least, whereas guidance (.997) and reliable alliance (.967) were strongly related to the second-order factor. It was indicated that the SPS taps both specific dimensions of social support as well as the global level of social support (Cutrona et al., 1987).

Consistent with Dunkley et al. (2006), the present study also used the Reliable Alliance, Guidance, and Attachment scales as observed indicators of a perceived social support latent variable, although the entre scale was administered to the participants. The Reliable Alliance and Guidance scales have been found to represent assistance-related support, and Attachment has been indicated central of the emotional provisions (Cutrona, 1989). Together, the selected SPS scales analyze the respondents’ sense of safety and perception that social relationships are currently available for various kinds of help during times of stress (Cutrona, 1989). Sample items for these subscales include, “There are people I can depend on to help me if I really need it (Reliable Alliance),” “I feel a strong emotional bond with at least one other person (Attachment),” and “There is no one I can turn to for guidance in times of stress (Guidance).”

Reliability coefficients for the SPS scales ranged from .65 to .76 (Cutrona & Russell, 1987). In the present study, the coefficients were .76 for reliable alliance, .81 for attachment, .82 for guidance, and .94 for the total perceived social support score.
Construct validity has been supported through significant negative correlations (1) between the three scales of the SPS (i.e., Reliable Alliance, Guidance, and Attachment scales) and cognitive physiological depressive symptoms among undergraduates (including 62% Asians) (Sherry et al., 2008) and (2) between total scores of the SPS and depression among international students, with 68% of the participants being Asians (Sumer, Poyrazli, & Grahame, 2008).

**Center for Epidemiological Studies- Depression Scale.** The Center for Epidemiological Studies- Depression Scale (CES-D; Radloff, 1977; see Appendix E) consists of 20 items that are responded to on a 4 point Likert-type scale, ranging from 0 (rarely or none of the time) to 3 (most or all of the time). The CES-D has four subscales: Depressive Affect, Somatic Symptoms, Positive Affect, and Interpersonal Relations. This widely-used instrument measures levels of depressive symptoms that are experienced during the previous week (e.g., “I had trouble keeping my mind on what I was doing”). This measure was chosen because of its brevity and reliability.

Total scores can range from 0 to 60, and scores ≥16 are considered to be high levels of depression (Mulrow, Williams, Gerety, Ramirez, Montiel, & Kerber, 1995). In the current study, the mean score of this sample was 16.98 (SD = 9.80). In previous studies, coefficient alphas ranged from .87 to .89 among Asian international college students (Wei et al., 2007). In the present sample, the coefficient alpha for the total score was .89. Evidence for the construct validity of the CES-D has been established by positive correlations with scores on Discrepancy subscale of the APS-R for Chinese (Wei et al., 2007) and Taiwanese students (Wang et al., 2007).
**Demographic questionnaire.** The demographic questionnaire (Appendix F) requested information regarding the participants’ gender, age, ethnicity, nationality, academic major, education level, marital status, length of stay in the U.S., previous experience in the U.S., and visa type.

**Procedure**

Various attempts were made to invite Asian international students to the current study. First, flyers (Appendix G) were posted on bulletin boards in many key buildings at a large state university in the Northeast. Second, International Student Scholastic Services (ISSS) at the university was contacted via email, which included information about the purpose of the study and highlighted international students’ needs and the significant roles of campus international student offices. ISSS staff forwarded a recruitment email (Appendix H) to 847 Asian international students who registered for the Spring 2011 semester. A follow-up email was sent to 806 Asian international students who registered for the Spring 2012 semester. The recruitment email contained an embedded link to the survey’s URL, which led participants to the survey packet. Third, because Asian international students tend to seek out the help of religious leaders, student organizations, and church groups (Solberg, Ritsman, Davis, Tata, & Jolly, 1994), leaders of these organizations across the U.S. were contacted, with the request that they distribute information on the current study through their listservs or Facebook pages.

All participants were invited to complete the study online. The study was hosted online by PsychData, an internet survey software company. Five measures and a demographic questionnaire were uploaded onto the website for potential participants to complete. Prior to completing the surveys, participants were asked to answer two
questions concerning the inclusion and exclusion criteria, i.e., Do you identify as an Asian international student, not from an English speaking country? Have you been diagnosed with or are you currently being treated for a psychiatric illness? Next, participants were asked to read a consent form (see Appendix I), which stated the purpose of this study, i.e., investigation of performance attitude and mental health among Asian international students’ experiences. Confidentiality and the voluntary nature of the study were also assured, with no identifiable information included in the survey. They agreed to participate in this study by clicking on the “continue” button which took them to the demographic questionnaire and five measures. Following completion of the study, participants were provided with a debriefing statement which described the purpose of the study and listed the contact information of the researchers (see Appendix J). Also, participants interested in being included for a raffle to win an iPad were directed to a website where they could provide their email addresses. Participants were assured that their email addresses would not be linked to their responses on the survey.

**Hypotheses**

The following hypotheses were tested:

1. Maladaptive perfectionism would be positively associated with depression.
2. Maladaptive perfectionism would be positively associated with acculturative stress.
3. Acculturative stress would be positively associated with depression.
4. The relationship between maladaptive perfectionism and depression would be partially mediated by acculturative stress.
5. Maladaptive perfectionism would be negatively associated with perceived social support.

6. Perceived social support would be negatively associated with depression.

7. The relationship between maladaptive perfectionism and depression would be partially mediated by perceived social support.

Analyses

Data Preparation. Preliminary analyses were conducted to examine the distribution of scales (means, standard deviation, skewness, kurtosis, and multicollinearity) on the major variables and their intercorrelations.

Parceling. An item parceling strategy was employed to create appropriate indicators for each latent factor. MacCallum, Widaman, Zhang, and Hong (1999) noted that parceled solutions can be expected to provide better models of fit because a) these solutions have fewer parameters to estimate, and b) they have fewer chances for residuals to be correlated. It is also noted that as the number of indicators increases there is greater potential for shared secondary influences and cross-loadings among the indicators. These sources of contamination might of course contribute to overall lack of fit of the model. (Hall, Snell, & Foust, 1999; Little, Cunningham, Shahar, & Widaman, 2002) Thus, it is preferable to use three or four indicators per latent construct to ensure precise identification (Hall et al., 1999).

Specifically, a factor analysis was conducted for the 36 items of the ASSIS to examine factor structure and find an adequate number of indicators. This measure originally had seven subscales. Given the multidimensional factor structure of the ASSIS, the suggestions of Holt (2004) were followed and isolated parceling strategies were
implemented, such that different facets were separated into different parcels. For the remaining three latent variables (i.e., maladaptive perfectionism, perceived social support, and depression), the subscales of the aforementioned measures were used as indicators.

As Little et al. (2002) note, parceling method is strongly warranted when the focus is on the relations between the latent variables, not on the relations between items. Considering that the relations among perfectionism, acculturative stress, social support, and depression are of focal interest in this study, parceling is justified.

**Measurement and Structural Models.** To test a model with acculturative stress and perceived social support as mediators of the relation between maladaptive perfectionism and depression, structural equation modeling was conducted using AMOS with maximum likelihood estimation. The hypothesized model had one latent causal variable, two latent mediating variables, and one latent outcome variable.

Structural equation modeling typically consists of two parts, namely, the measurement model and the structural model. The measurement model specifies the posited relations of the observed variables to their latent constructs with the constructs allowed to intercorrelate freely (Kline, 2005). Confirmatory factor analysis was used to test the measurement model (Anderson & Gerbing, 1998). The structural model defines relationships, both direct and indirect, among the latent variables (Kline, 2005). As Anderson and Gerbing (1998) recommend, the measurement model in the present study was tested first, followed an examination of the latent factors for the structural model.

**Fit Indices.** A number of fit indices were used to determine the appropriateness of a model, applying both statistical tests and descriptive indices. These fit indices fall into three categories: Absolute indices, comparative or incremental fit indices, and Browne
and Cudeck’s (1992) error estimation approach. First, as an absolute index, the chi-
square statistic was used as an indication of fit between the predicted model and the
observed relationships, where a non-significant value was desired. The chi-square
statistic is known to be sensitive to sample size, a drawback. That is, at larger sample
sizes, power is so high that even models with only small misspecifications are likely to be
rejected. Therefore, relative chi-square, the ratio of the chi-square value to the degree of
freedom, was used in an attempt to make the chi-square value less dependent on sample
size. The ratios in the range of 2:1 was considered indicative of an acceptable fit
(Carmines & McIver, 1981). Similarly, Kline (2005) suggested that a chi-square to
degree of freedom ratio of less than 3 indicates a good fit of the model.

Second, several fit indices, as well as the overall chi-square statistic, were used to
evaluate the fit between the model and the data, as suggested by Hu and Bentler (1999).
Specifically, incremental fit indices, such as comparative fit index (CFI) and non-normed
fit index (NNFI), compare a model to a baseline model and assess proportional
improvement in fit. Values for both indexes should exceed a recommended cutoff value
of .90 (Byrne, 2010). However, when two different models are fairly adequate in
explaining a set of data, the incremental fit indices cannot then reliably indicate which
model provides the best fit.

Third, noting this limitation of incremental fit indices, Brown and Cudek (1992)
developed the root-mean-square error of approximation (RMSEA), which includes
parsimony as a criterion for adequacy by estimating the error when fitting models. As the
value of RMSEA approaches zero, model fit better represents the fit of the population.
RMSEA values of .06 or less indicate that the model adequately fits the data, whereas
values > .08 indicate a poor fit (Browne & Cudeck, 1992; Hu & Bentler, 1999). As advised by Byrne (2010), 90% confidence interval (CI) was also reported.

**Testing Mediation Effects.** A number of methods have been suggested for testing the magnitude and statistical significance of mediation effects for Type I error and statistical power (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). The commonly used method suggested by Baron and Kenny (1986) is the lowest in statistical power. Thus, the bootstrap procedure, suggested by Shrout and Bolger (2002), was used to conduct mediational analysis. In general, bootstrapping, where a distribution is computed by sampling with replacements repeatedly obtained from the sample data, offers an empirical method of determining the significance of statistical estimates (Kline, 2005). This method is particularly useful when establishing confidence intervals for estimated parameters that have unknown distributions (e.g., mediation effects) or have violated normality assumptions (Cheng et al., 2008). Thus, using the bootstrapping method, the standard error for unstandardized/standardized total effects and total indirect effects was estimated (Kline, 2005). Given that an AMOS procedure only estimates bootstrap confidence intervals for total mediation effects, *Mplus* was additionally used to examine the specific medication effects.
Chapter IV

Results

This chapter presents the results of the study, beginning with preliminary analyses to describe sample statistics. Second, the results of structural equation modeling (SEM) analyses are summarized. Specifically, parceling, measurement and structural models, and mediation analyses through bootstrapping are described. The chapter concludes with the primary hypotheses testing. All data analyses were conducted using SPSS 19.0, AMOS 19.0, and Mplus 6.

Preliminary Analyses

First, data screening was conducted by examining the accuracy of data entry, any missing values, outliers, and normality. As a result, 23 participants were deleted because of failure to complete all instruments, while 43 participants met the criteria for exclusion (e.g., immigrant visa, clinical diagnosis) and thus also deleted from the data set. Reverse scored items of scales/subscales were then transformed as necessary, summed to calculate the total score, and divided by the number of items to obtain mean scores on the variables. Univariate and multivariate outliers were examined using box plots of each scale and Mahalanobis distance with $p < .001$. Six cases that exceeded the critical value were deleted from the sample. The reported sample size ($N = 224$) indicates the actual number of cases used in analyses.

Second, skewness and kurtosis statistics were examined, where the values were less than 2 and 7, respectively. Thus the data were normal at the univariate level. Multivariate normality was also assessed, using Mardia’s coefficient of multivariate kurtosis ($kurtosis = 27.54$, critical ratio = 9.74). According to Bentler (2005), critical ratio
values >5.00 are indicative of multivariate nonnormality. To the contrary, according to Lei and Lomanx (2005)’s findings, parameter estimates and model fit indices are seen as robust to nonnormality, given maximum-likelihood estimation and a sample size of 100 or more participants. In general, for nonnormal samples of at least 200 cases, bootstrapping, combined with maximum likelihood estimation (ML), is viewed as giving better results than ML alone (Byrne, 2010). Therefore, estimates from ML were compared with bootstrapped parameter estimates generated from 2000 bootstrap replication samples to assess the stability of parameter estimates more accurately (Byrne, 2010; Kline, 2005).

Third, the means, standard deviations, and zero-order correlations for the 14 observed variables are shown in Table 2. Most of the observed variables were significantly correlated with other variables, except for the relationships between ASSIS2 and 1) the Discrepancy subscale of the APS-R, 2) the three Social Support variables, and 3) the Positive Affect from the CES-D. That is, ASSIS2 was not significantly associated with discrepancy, attachment, reliable alliance, guidance, and positive affect. Because the significant correlations were all below .85, there likely was no multicollinearity problem (Kline 2005).

Fourth, one-way MANOVAs were conducted to examine the presence of significant mean differences for the variables and the potential need to account for these differences in main analyses. The demographic variables (i.e., gender, undergraduate vs. graduate students, and prior experience abroad vs. no prior experience abroad) and all the scales (maladaptive perfectionism, acculturative stress, perceived social support, and depression) were chosen as independent variables and dependent variables, respectively.
Table 2. Means, Standard Deviations, and Bivariate Correlations Among 14 Observed Variables

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<td>.31**</td>
<td>.23**</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS</td>
<td>—</td>
<td>.58**</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INT</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|M| 46.17 | 23.80 | 10.92 | 51.18 | 10.93 | 11.82 | 14.74 | 12.30 | 12.76 | 12.48 | 5.17  | 4.72  | 6.12  | 1.14  |
|SD| 14.73 | 7.12  | 3.45  | 14.60 | 3.51  | 4.55  | 4.64  | 2.40  | 2.15  | 2.37  | 4.46  | 2.86  | 3.58  | 1.30  |

Range

<table>
<thead>
<tr>
<th>Possible</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-7</td>
<td>1.33-</td>
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</tr>
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<td>4.00</td>
</tr>
<tr>
<td>3.00</td>
<td>3.00</td>
</tr>
<tr>
<td>2.92</td>
<td>3.00</td>
</tr>
</tbody>
</table>

Note. N = 224. **p < .01

Possible = the range of participants’ possible mean scores; Actual = the range of actual item rating scales. The range of actual score has decimals because the total scores were divided by the number of items. DIS = the Discrepancy subscale of the Almost Perfect Scale- Revised; CM = the Concern over Mistakes subscale of the Frost Multidimensional Perfectionism Scale; DA = the Doubts About Actions subscale of the Frost Multidimensional Perfectionism Scale; ASSIS 1, 2, 3, and 4 = four parcels from the Acculturative Stress Scale for International Students; ATT = the Attachment subscale of the Social Provisions Scale; RA = the Reliable Alliance subscale of the Social Provisions Scale; GDN = the Guidance subscale of the Social Provisions Scale; DEA = Depressed Affect from the CES-D; INT = Interpersonal from the CES-D; SS = Somatic Symptoms from the CES-D; PA = Positive Affect from the CES-D
Box’s Test was not significant ($p = .41$) and there were no significant mean MANOVA $F$ values on the three demographic variables. Thus, it was determined that there was no need to account for the differences in the demographic variables when analyzing the hypotheses. Details and tables related to these preliminary analyses are presented in Appendix K.

**Parceling**

The APS-R Discrepancy subscale and the FMPS Concern Over Mistakes and Doubts About Actions subscales were used as the three observed indicators of the maladaptive perfectionism variable. For the indicators of the perceived social support variable, the Reliable Alliance, Attachment, and Guidance subscales of the SPS were used. The Depressive Affect, Somatic Symptoms, Positive Affect, and Interpersonal Relations subscales were used for the depression latent variable.

For the indicators of the acculturative stress variable, four factors extracted from factor analysis were used. Specifically, given the conceptual and empirical evidence regarding the interrelatedness of factors (e.g., between Perceived Discrimination and Perceived Hate), exploratory factor analysis was conducted using principal axis factoring extraction and oblique rotation in SPSS 19.0. A Kaiser–Meyer–Olkin value of .935 suggested that the data were factorable. Items with small loadings ($\lambda < .30$) were set to eliminate so as to increase the overall variance accounted for in ASSIS items by latent factors.

The original seven-factor solution accounted for approximately 55% of the variance in ASSIS items. However, a two-item factor emerged that would not meet the criteria of the minimum three factor loadings per factor (Tabachnick & Fidell, 2007). The
four extracted factors together explained approximately 50% of the variance. After carefully reviewing item content with the intent of optimizing the number of factors, it was logical to have many items from the Perceived Discrimination and Perceived Hate subscales loaded on the same factor, both of which could reflect perceived unequal treatment. Specifically, the first factor (ASSIS1) of the four factors comprised three of the five original Perceived Hate items and all of the original Perceived Discrimination items. The other three factors appeared to reflect homesickness (ASSIS2), fear (ASSIS3), and unfamiliarity (ASSIS4), respectively. Accordingly, these four factors were used as the four indicators of the acculturative stress variable (see Appendix L).

**Measurement Model**

Prior to analysis, it was noted that the total sample size of 224 fit a criterion of “typical” sample size. There is as yet little consensus on the recommended sample size for SEM (Sivo, Fan, Witta, & Willse, 2006). However, as a rule of thumb, any number above 200 is considered as providing sufficient statistical power (Garver & Mentzer, 1999). Similarly, Hatcher (1994) suggested that sample size be such that there are at least 5 observations per estimated parameter in a factor analysis and other covariance structure analyses. The number of parameters estimated in the present measurement and structural model are 34 and 33, respectively. Also, based on guidelines for the power calculation (MacCallum, Browne, & Sugawara, 1996; Preacher & Coffman, 2006), the power for rejecting the null hypotheses is .92 in the current sample.

Before testing the aforementioned hypotheses, a confirmatory factor analysis was conducted to test whether the measurement model fit the data. First, to assess whether the measurement model was an acceptable fit to the data, all latent variables were correlated
<table>
<thead>
<tr>
<th>Measure and variable</th>
<th>Unstandardized factor loading</th>
<th>SE</th>
<th>CR</th>
<th>Standardized factor loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maladaptive perfectionism</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIS</td>
<td>1.27</td>
<td>.10</td>
<td>12.19</td>
<td>.76</td>
</tr>
<tr>
<td>CM</td>
<td>.88</td>
<td>.07</td>
<td>13.16</td>
<td>.81</td>
</tr>
<tr>
<td>DA</td>
<td>1.00</td>
<td></td>
<td></td>
<td>.85&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Acculturative stress</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASSIS1</td>
<td>1.08</td>
<td>.09</td>
<td>11.92</td>
<td>.85</td>
</tr>
<tr>
<td>ASSIS2</td>
<td>.69</td>
<td>.11</td>
<td>6.31</td>
<td>.45</td>
</tr>
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<td>ASSIS3</td>
<td>1.13</td>
<td>.10</td>
<td>11.98</td>
<td>.85</td>
</tr>
<tr>
<td>ASSIS4</td>
<td>1.00</td>
<td></td>
<td></td>
<td>.74&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Perceived social support</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATT</td>
<td>.91</td>
<td>.05</td>
<td>19.11</td>
<td>.85</td>
</tr>
<tr>
<td>RA</td>
<td>.86</td>
<td>.04</td>
<td>21.68</td>
<td>.90</td>
</tr>
<tr>
<td>GDN</td>
<td>1.00</td>
<td></td>
<td></td>
<td>.94&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEA</td>
<td>1.90</td>
<td>.30</td>
<td>6.45</td>
<td>.91</td>
</tr>
<tr>
<td>SS</td>
<td>1.39</td>
<td>.22</td>
<td>6.33</td>
<td>.83</td>
</tr>
<tr>
<td>INT</td>
<td>1.51</td>
<td>.25</td>
<td>6.03</td>
<td>.71</td>
</tr>
<tr>
<td>PA</td>
<td>1.00</td>
<td></td>
<td></td>
<td>.43&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Note. N = 224. CR is the z score that results from dividing the unstandardized estimate by the estimate of its standard error. <sup>a</sup> All standardized pattern coefficients were statistically significant at p < .001, except for those coefficients fixed at 1.0 to achieve identifiability and not tested. 95% confidence interval excludes zero and is statistically significant.
to all other latent variables. The results of the confirmatory factor analysis for the measurement model were indicative of a well-fitting model, $\chi^2 (71, N = 224) = 119.18, p < .01; \chi^2/df = 1.68; CFI = .97; NNFI = .97; RMSEA = .06$ (90% confidence interval (CI) = .04, .07). Additionally, all observed variables loaded on their respective latent variables ($p < .001$), and standard errors were appropriate (see Table 3). This finding indicated that the latent variables were appropriately measured by the 14 observed variables. Further, all of the latent variables were significantly correlated at $p < .01$ (see Table 4).

Table 4. Correlations Among Latent Variables for the Measurement Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maladaptive Perfectionism</td>
<td>–</td>
<td>.59**</td>
<td>-.46**</td>
<td>.70**</td>
</tr>
<tr>
<td>2. Acculturative Stress</td>
<td>–</td>
<td>–</td>
<td>-.51**</td>
<td>.54**</td>
</tr>
<tr>
<td>3. Perceived Social Support</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>-.44**</td>
</tr>
<tr>
<td>4. Depression</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Note. $N = 224$. ** $p < .01$.

Structural Model

Model testing. The structural model specified the hypothesized causal relations among the latent variables. Fit indices suggested that the initial structural model (Model1) fit the data well, $\chi^2 (72, N = 224) = 137.11, p < .01; \chi^2/df = 1.90; CFI = .964; NNFI = .954; RMSEA = .064$ (90% CI = .05, .08). All parameter estimates and standard errors were also calculated using 2,000 ($N = 224$) bootstrap samples. Table 5 presents parameter estimates of the paths tested in the initial structural model. As hypothesized, maladaptive perfectionism positively predicted depression and acculturative stress, and served as a negative predictor of perceived social support ($p < .001$). While the path from
Table 5. Parameter Estimates of the Initial Structural Model Relating Maladaptive Perfectionism, Acculturative stress, Social support, and Depression

<table>
<thead>
<tr>
<th></th>
<th>ML B</th>
<th>ML β</th>
<th>ML P</th>
<th>Bootstrap Mean</th>
<th>Bootstrap Mean</th>
<th>Bootstrap SE</th>
<th>Bootstrap BC 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS ← MP</td>
<td>-.380</td>
<td>-.489</td>
<td>***</td>
<td>-.381</td>
<td>-.490</td>
<td>.057</td>
<td>-.495, -.268*</td>
</tr>
<tr>
<td>ACS ← MP</td>
<td>.483</td>
<td>.612</td>
<td>***</td>
<td>.484</td>
<td>.611</td>
<td>.073</td>
<td>.348, .629*</td>
</tr>
<tr>
<td>DEP ← SS</td>
<td>-.045</td>
<td>-.082</td>
<td>.224</td>
<td>-.042</td>
<td>-.077</td>
<td>.050</td>
<td>-.156, .040</td>
</tr>
<tr>
<td>DEP ← ACS</td>
<td>.083</td>
<td>.155</td>
<td>.065</td>
<td>.084</td>
<td>.156</td>
<td>.051</td>
<td>.002, .196*</td>
</tr>
<tr>
<td>DEP ← MP</td>
<td>.242</td>
<td>.575</td>
<td>***</td>
<td>.242</td>
<td>.579</td>
<td>.059</td>
<td>.142, .374*</td>
</tr>
</tbody>
</table>

Note. MP = Maladaptive Perfectionism; SS = Perceived Social Support; ACS = Acculturative Stress; DEP = Depression; a = standardized parameter estimates; B = Unstandardized coefficients; β = Standardized coefficients; *** = p-value is less than .001; * This bias-corrected confidence interval excludes zero and is statistically significant (p < .05).

Acculturative stress to depression was not significant based on the ML estimates (p > .05), the path was positively significant based on the bootstrapping estimates (standardized estimate mean = .156, BC95% CI = .002, .196). One nonsignificant path was also found, namely, that perceived social support was unrelated to depression.

Examination of the modification indices suggested the inclusion of a direct path between perceived social support and acculturative stress. Although researchers have demonstrated the buffering effect of social support on acculturative stress (e.g., Mallinckrodt & Leong, 1992; Misra et al., 2003; Ye, 2006), the direct path from social support to acculturative stress was not added to the model. It is logical that people who have more social support may better withstand acculturative stress. But it is also plausible that acculturative stress could affect perceived social support, such that highly stressed people in acculturative process may not perceive existing social support networks.

Therefore, instead of a direct path from social support to acculturative stress, a
correlation between the two mediators’ residuals was added as indicated by the 
modification indices. It was noted that the linkage between the mediators’ residuals was 
solely made on the basis of modification indices, without a confirmed meaning 
underlying the application of constraints.

Fit indices suggested an improved model fit, $\chi^2(71, N = 224) = 119.18, p < .01$; 
$\chi^2/df = 1.68; CFI = .973; NNFI = .966; RMSEA = .055$ (90% CI = .04, .07). Table 6 
presents parameter estimates of the paths tested in the model 2. Consistent with the 
results from the Model 1, it was noted that the path from acculturative stress to 
depression was nonsignificant based on ML estimates ($p = .052$) but positively significant 
based on the bootstrapping estimates (standardized estimated mean = .170, BC95% CI 
= .006, .205). In addition, Akaike information criterion (AIC) and Bayesian information 
criterion (BIC) were used to compare the two models. Both AIC and BIC address the 
issue of parsimony and smaller values represent a better fit of the hypothesized model 
(Byrne, 2010).

Table 6. Parameter Estimates of the Structural Model2 Relating Maladaptive 
Perfectionism, Acculturative stress, Social support, and Depression

<table>
<thead>
<tr>
<th></th>
<th>ML</th>
<th>Bootstrap</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>β</td>
</tr>
<tr>
<td>SC ↔ MP</td>
<td>-.351</td>
<td>-.458</td>
</tr>
<tr>
<td>ACS ↔ MP</td>
<td>.458</td>
<td>.587</td>
</tr>
<tr>
<td>DEP ↔ SS</td>
<td>-.050</td>
<td>-.093</td>
</tr>
<tr>
<td>DEP ↔ ACS</td>
<td>.090</td>
<td>.168</td>
</tr>
<tr>
<td>DEP ↔ MP</td>
<td>.234</td>
<td>.559</td>
</tr>
</tbody>
</table>

Note. MP = Maladaptive Perfectionism; SS = Perceived Social Support; ACS = 
Acculturative Stress; DEP = Depression; a = standardized parameter estimates; B = 
Unstandardized coefficients; β = Standardized coefficients; *** = p-value is less 
than .001; * This bias-corrected confidence interval excludes zero and is statistically 
significant ($p < .05$).
Both AIC and BIC favored Model 2 over Model 1 (see Table 7). Overall, all the significant paths were substantial and congruent with the hypotheses. Thus, Model 2 was selected as a final research model. 52.4% of the variance in depression was explained by the combination of maladaptive perfectionism, acculturative stress, and perceived social support.

Table 7. Comparison of Structural Models

<table>
<thead>
<tr>
<th></th>
<th>$\chi^2$</th>
<th>df</th>
<th>CFI</th>
<th>NNFI</th>
<th>RMSEA</th>
<th>AIC</th>
<th>BIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>137.11</td>
<td>72</td>
<td>.964</td>
<td>.954</td>
<td>.064</td>
<td>203.11</td>
<td>315.70</td>
</tr>
<tr>
<td>Model 2</td>
<td>119.18</td>
<td>71</td>
<td>.973</td>
<td>.966</td>
<td>.055</td>
<td>187.18</td>
<td>303.17</td>
</tr>
</tbody>
</table>

*Note.* CFI = Comparative fit index; NNFI = Non-normed fit index; RMSEA = Root mean square error of approximation; AIC = Akaike information Criterion; BIC = Bayesian information criterion.

**Mediational Analysis**

A significant indirect effect suggests mediation has occurred (Cheung & Lau, 2008). Specifically, the indirect effect of maladaptive perfectionism to depression mediated by acculturative stress and perceived social support, and the standard estimate of the indirect effect and the statistical significance of the indirect effect were estimated using 2,000 random samples generated from the data set. Namely, this indirect effect was based on all possible indirect paths and then computed by multiplying (a) path coefficients from the independent variable to mediators and (b) path coefficients from the mediators to the dependent variable. If the bias-corrected 95% confidence interval did not contain zero, the indirect effect was considered statistically significant.
Figure 2. The Mediated Structural Model of the Relationship between Maladaptive Perfectionism and Depression.

Note. a = Path fixed at 1.0 and not tested. Indicators errors are not included in the model for the purpose of making the presentation less complex. **p < .01. * p < .05.
Bootstrap estimates showed the total indirect effect was significant ($\beta = .14, B = .06$ [BC 95% CI: .01, .13], and $SE = .03$). That is, the total indirect effect of maladaptive perfectionism on depressive symptoms through acculturative stress and perceived social support was significant. Specifically, the mediation effect from maladaptive perfectionism to depression through acculturative stress was significantly different from zero. However, the mediation effect did not occur through perceived social support. Table 8 presents the estimated total and specific indirect effects, together with their BC bootstrap confidence intervals.

Table 8. Bootstrap Analysis of Indirect Effect between Maladaptive Perfectionism and Depression

<table>
<thead>
<tr>
<th>Effects from MP to DEP</th>
<th>$\beta$ (standardized path coefficient and product)</th>
<th>Indirect effect (B)$^a$</th>
<th>$SE^a$</th>
<th>Bias-Corrected 95% CI for indirect effect$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum of indirect</td>
<td>$(.59 \times .17) + (-.46 \times -.09)$ = .14</td>
<td>.059</td>
<td>.029</td>
<td>.013 to .134$^*$</td>
</tr>
<tr>
<td>Specific indirect</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACS</td>
<td>$.59 \times .17 = .10$</td>
<td>.041</td>
<td>.026</td>
<td>.001 to .102$^*$</td>
</tr>
<tr>
<td>MP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS</td>
<td>$-.46 \times -.09 = .04$</td>
<td>.018</td>
<td>.019</td>
<td>-.016 to .060</td>
</tr>
</tbody>
</table>

$^a$These values are based on the unstandardized path coefficients.

$^*$This 95% confidence interval does not include zero and is statistically significant ($p < .05$).
Analysis of the Hypotheses

The first hypothesis stated that maladaptive perfectionism would be associated with depression. The results from the structural model supported this first hypothesis, such that Asian international students with more maladaptive perfectionistic characteristics experience depression more ($p < .001$). The second hypothesis was supported as well, such that Asian international students having more maladaptive perfectionistic characteristics experience more acculturative stress ($p < .001$). The third hypothesis was confirmed, such that Asian international students who experience more acculturative stress have more depressed symptoms. (BC 95% CI: .006, .205). In support of the hypothesized mediated effect, a significant indirect effect of acculturative stress was observed between maladaptive perfectionism and depression. Therefore, the fourth hypothesis was confirmed, such that Asian international students with higher maladaptive perfectionism experienced more acculturative stress, which in turn increased depressive symptoms (BC 95% CI = .001, .102). Fifth hypothesis was also confirmed, such that individuals who have more maladaptive perfectionistic characteristics perceive less social support ($p < .001$).

In terms of non-significant findings, the sixth hypothesis indicated that perceived social support would serve a negative predictor of depression. The results did not support this hypothesis ($p > .05$); Asian international students who perceived social support did not significantly experience less depression. Likewise, the seventh hypothesis was not supported. The results showed that the relationship between maladaptive perfectionism and depression is not significantly mediated by perceived social support.
Overall, only acculturative stress was found to partially mediate the relationship between maladaptive perfectionism and depression. The results also indicated that although perceived social support is significantly affected by maladaptive perfectionism, perceived social support does not mediate the maladaptive perfectionism-depression relationship.
Chapter V

Discussion

The results of the current study documented the relations among maladaptive perfectionism, acculturative stress, perceived social support, and depression found in international students from Asia. The primary purpose of this study was to examine the possible mediating roles of acculturative stress and perceived social support in the relationship between maladaptive perfectionism and depression; a related rationale was to determine which mediating factor could have the greater effect on the maladaptive perfectionism-depression relationship. This chapter reviews the supportive and disconfirming results of the study and its theoretical and practical implications. The chapter concludes with limitations and ideas for future research.

Summary of Results

Prior to conducting SEM analyses, the descriptive analyses yielded statistically significant intercorrelations among measures of (a) maladaptive perfectionism and depression, (b) maladaptive perfectionism and acculturative stress, (c) acculturative stress and depression, (d) maladaptive perfectionism and perceived social support, (e) perceived social support and depression, and (f) perceived social support and acculturative stress. Certain characteristics of the participants in the present study were also noted, for example, approximately 87% were students from East Asia and 68% were graduate students.

Evaluation of SEM analyses resulted in a final model that identified significant positive paths between (a) maladaptive perfectionism and depression, (b) maladaptive perfectionism and acculturative stress, and (c) acculturative stress and depression.
significant negative path was also found between maladaptive perfectionism and perceived social support.

Additionally, a meditational analysis confirmed the significant mediating effect of acculturative stress on the relationship between maladaptive perfectionism and depression. This result indicated that individuals with excessive, negative self-evaluative characteristics tend to play an “active” role in generating high levels of acculturative stress, which in turn predicts depression. There was also a significant, positive direct relationship between maladaptive perfectionism and depression, even when the mediator, i.e., acculturative stress, was included in the mediation model; this result supported a partial mediator model. Namely, Not only do maladaptive perfectionistic individuals tend to experience significantly high depression, these individuals also tend to experience more acculturative stress which directly increases depressive symptoms.

An unexpected result also appeared. Individuals who perceive they are receiving adequate social support do not experience significantly less depression. Accordingly, the mediation role of perceived social support was not tested and thus not supported. Namely, maladaptive perfectionistic individuals tend to experience depression, but not necessarily via their perception of support availability. Overall, these results provided support for some of the abovementioned hypotheses.

**Implications for Theory**

The present study replicated and extended previous research on the role of maladaptive perfectionism in depression by examining two potentially mediating factors, (a) stressful life events (Chang, 2000; Chang, Watkins, & Banks, 2004; Hewitt & Flett, 2002) and (b) perceived social support (Calvete & Connor-Smith, 2006; Dunkley et al.,
2000; Hewitt et al., 2006; Sherry et al., 2008). Although previous investigations indicate that coping, stress, and perceived social support play important roles in the relationship between maladaptive perfectionism and psychological distress, all of these, with the exception of Chang et al. (2004), were limited to European American populations. Results from the present study extended this knowledge to the most rapidly growing group of international students in the U.S., i.e., students from Asia.

Moreover, this study contributed to the literature on one specific form of stress, i.e., acculturative stress. Following the recommendation by Ben-Sira (1997) and Berry et al. (1987), this study was the first attempt to examine the associations of acculturative stress and perceived social support with maladaptive perfectionism and depression. The following section reviews the implications of the study outcomes in specific theoretical areas.

The finding that maladaptive perfectionism, as assessed using the Discrepancy subscale, the Concern over Mistakes subscale, and the Doubts about Actions subscale, strongly relates to depression corroborates several previous research endeavors that have indicated the negative psychological effects of maladaptive perfectionism with other Asian student groups (e.g., Rice, Choi, Zhang, Morero, & Anderson, 2012; Wang et al, 2007; Wei et al., 2007). This finding is also consistent with the theoretical characteristics of maladaptive perfectionists, whose tendency to interpret normal failures as unacceptable major issues is depressogenic (Beck, Rush, Shaw, & Emery, 1979; Graham et al., 2010). As discussed in the introduction, Asian international students with elevated maladaptive perfectionism may devote themselves to attaining unrealistic goals and also harshly evaluate their performance, which may result in their paying less attention to their
positive internal resources. This lack of the positive self-reinforcement is likely to contribute to depression.

Notwithstanding “problematic” perfectionism, it is imperative to acknowledge that there does exist culturally sanctioned motivation to be self-critical and accept its substantially adaptive role (e.g., maintenance of interpersonal harmony) in Asian cultures (Hammon & Gao, 2002; Zane & Song, 2007). If this is the case, the results of the present study hold promise for understanding the why, i.e., the mechanisms through which, certain Asian international students are at particular risk of depression during their stay in the U.S. Specifically, the results suggest that acculturative stress is central to explaining why Asian international students who are high in maladaptive perfectionism become depressed. In that sense, the findings are in keeping with suggestions by Chang et al. (2004) and Hwang and Ting (2008) that identifying the source of stress experiences that are unique to specific ethnic groups is clearly necessary.

Possessing an automatic inference, wherein minor events are magnified into serious problems (Graham et al., 2010), Asian international students with maladaptive perfectionism may interpret their acculturation experiences negatively, and their obsessive concerns about socio-cultural adaptation then appear to lead to excessive stress. Indeed, less capacity to create meaning from hard times and more obsessions about self-control were found to be prominent features for those individuals who are high in maladaptive perfectionism (Graham et al., 2010). Perhaps Asian international students with maladaptive perfectionism struggle more to combine their life experiences into fostering a meaningful story (e.g., persevering through hard times), and thus, they easily will react to acculturative stressors, which in turn increase a risk of depression. This
plausible explanation could be added to Hewitt and Flett’s (1993) contention that all-or-none thinking of maladaptive perfectionists may create any stress in certain given situations.

However, it is important to note that the tendencies of maladaptive perfectionists to experience high acculturative stress do not overshadow the general difficulties related to cross-country transitions (e.g., language and prejudice) that many Asian international students do encounter. Such difficulties related to acculturation are likely to be experienced as unpleasant and adverstive. As Wei et al. (2007) indicate, some acculturative stressors are related to external events, such as discrimination and hate, and they may not always be resolved by internal regulation alone. It is perhaps true that Asian students with elevated maladaptive perfectionism may focus on emotional suppression and easily feel stressed with any single acculturative event, which then in turn is likely to increase vulnerability to depression.

Specifically, the present study highlights various factors of acculturative stress such as perceived unequal treatment, homesickness, fear, and unfamiliarity. Such stress can be generated by inflexibility, doubts about actions, and concerns over mistakes many maladaptive perfectionists exhibit. These results are in line with a variety of theoretical positions relating to stress generated by perfectionism (e.g., Hamachek, 1978; Hewitt & Flett, 2002). Hamachek (1978) posits that polarized thinking and overgeneralization lead to psychological distress. Maladaptive perfectionists may “feel anxious, confused, and emotionally drained before a new task even begins” (Hamachek, 1978, p.28). Therefore, they may have little tolerance for ambiguity inherent in cross-cultural transition and stingly evaluate their own personal capacity to handle acculturative events or sentiments.
(e.g., learning a language, perceived hate). This increased stress due to cognitive-behavioral inflexibility is likely to produce depression. For example, Asian international students with maladaptive perfectionism may create stressful situations for themselves in various ways. These include interpreting neutral feedback as an endless stream of hate, experiencing exposure to unfamiliar customs as a threat to self-worth, or associating only with “difficult” people and feeling rejected and isolated, which in turn is likely to produce greater depressive symptomatology. These tendencies can be viewed as taking a less threatening situation and turning it into a more stressful one (Hewitt & Flett, 2002).

In contrast to prediction, perceived social support in this study did not significantly associate with depression. So perceived social support was not found to mediate the relationship between maladaptive perfectionism and depression, and therefore, the social disconnection model (Sherry et al., 2008) was not supported. In addition, this finding contradicted previous research that demonstrated a negative association between social support and psychological distress (e.g., see Dunkley & Blankstein, 2000; Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000). One could simply assume that if an Asian international student with high maladaptive perfectionism perceives there is less social support, then that reduction makes the individual feel more depressed. The following are three plausible explanations for why perceived social support did not significantly associate with depression in this study.

First, one possible explanation was found in the strong negative association between perceived social support and acculturative stress in this sample ($r = -.51, p < .01$). That is, this result raises the possibility that acculturative stress, relative to perceived social support, may be a proximal and sufficient determinant of depression in Asian
international students. Thus, it might be useful for counselors to focus more on the assessment of acculturative stress than on perceived social support when working with Asian international students whose perfectionistic tendencies are dysfunctional rather than functional.

Second, another clue that could help explain this non-significant result is the possibility of a significant path of maladaptive perfectionism $\rightarrow$ perceived social support $\rightarrow$ acculturative stress $\rightarrow$ depression. Given that social support is an important buffer of acculturative stress (e.g., Smith & Khawaja, 2011; Yeh & Inose, 2003), this path might imply that Asian international students with maladaptive perfectionism are prone to negatively appraise the availability of social resources, which may increase acculturative stress and in turn result in high levels of depression. In other words, perceived social support may be a mediator between maladaptive perfectionism and acculturative stress rather than a mediator between maladaptive perfectionism and depression; however, this point is clearly an area that needs further exploration.

Third, the type of social support and the way it can be measured are apparent qualifying factors that might have influenced the findings in the present study. In other words, although the social support variable, measured by the Attachment, Guidance, and Reliable Alliance subscales of the SPS, were able to assess a general sense of security and perception of support availability, they might not have captured the variety of social support sources that Asian international students think important. Indeed, in another study of international graduate students, Mallinckrodt and Leong (1992) found that only graduate program support (e.g., quality of instruction, facilities, and the curriculum) was a significant buffer of stress. Considering that approximately 68% of the participants in
the present study were graduate students, there may be differences that exist between the types of preferred social support perceived by Asian undergraduate and those perceived by Asian graduate students. Future research can explore this possibility in more depth.

**Implications for Practice**

Results of the present study are expected to help practitioners develop treatment strategies for students who report maladaptive perfectionism and who are experiencing poor psychological functioning. The following section describes 1) a general long-term intensive treatment for maladaptive perfectionism and 2) several suggestions for culturally-sensitive interventions (e.g., outreach, group). Specifically, noting that informing counselors about the functions of acculturative stress and social support when working with Asian international students with maladaptive perfectionism was one of the key objectives of this study, the different ways to utilize mediator variables in practice are emphasized. Such mediational models are important, as they elucidate the process of linking perfectionism to depression and signify viable treatment targets (Graham et al., 2010).

First, maladaptive perfectionism is viewed as a difficult problem to treat (e.g., Blatt et al., 1998) and thus makes a strong case for long-term, intensive treatment. Similarly, Young (1999) acknowledged that maladaptive schema is difficult to change because it is the result of interaction between having negative experiences with significant others and a child’s innate temperament. People with maladaptive perfectionism are not typically satisfied with the effects of treatment because they tend to hold onto their implicit beliefs and perfectionistic goals during the treatment process (Flett & Hewitt, 2002). Similarly, Blatt (1995) found that maladaptive perfectionists have
difficulty in developing a solid working alliance in the therapeutic relationship as they bring transference dynamics to therapy. In the present study, the result of a strong association between maladaptive perfectionism and depression suggests that counselors should make continuous efforts to help clients change their maladaptive cognitive patterns and maintain those changes.

For example, applying the suggestions of Flett and Hewitt (2002) and Young (1999), clients can be encouraged to challenge their maladaptive cognitive schemas consistently through hypothesis testing, evidence examination, and toleration for ambiguity. The cognitive components of intervention may also help maladaptive perfectionists set attainable goals and develop alternative beliefs. Additionally, a here-and-now technique in the therapeutic relationship may help to challenge the discrepancy clients have between the real self and the “must” self.

Second, the mediating effect of acculturative stress found in the current study implies that maladaptive perfectionistic clients with depression can be helped to reduce their acculturative stress. In other words, counselors might help maladaptive perfectionists who experience depression to understand the relationship between perfectionism, acculturative stress, and depression, and thus reduce acculturative stress. Hence, the finding offers a positive rationale for counselors to specifically assess acculturative stress, as well as the maladaptive dimension of perfectionism among distressed or unhappy Asian international students who are seeking help.

In particular, counselors can assess how these students appraise life changes in general, and the degree to which they experience life changes as an acculturative stress. That is, counselors may need to explore the degree to which these students seek
perfection in the spheres of cross-cultural navigation (e.g., languages, academic challenge) and their reactance to relatively minor setbacks (e.g., feedback). The interventions targeted toward assessing and alleviating acculturative stress are likely to be favored instead of interventions that target the changing of stable vulnerability factors, such as maladaptive perfectionism. Further, orientation programs and pamphlets designed especially for Asian international students could include a mention of performance expectations as being both motivating and depression-prone risk factors.

In general, Asian international students are often considered to be unwilling to seek help due to cultural stigmas associated with mental health services, and the low utilization rate of counseling services has been consistently reported (e.g., Yakushko, Davidson, & Sanford-Martens, 2008). Another reason for such phenomena might be that perceived support in the Asian culture is likely to confirm the sense of the interdependent self as being fully cared for and connected to others, especially when support is not solicited (Uchida et al., 2008). This factor is probably why Asian international students are reluctant to request help explicitly even when they need it. Receiving unrequested support might affirm the sense of self as being connected for many Asian international students. Accordingly, university counseling centers are strongly advised to design and promote culturally-sensitive outreach programs, which can help Asian international students feel both cared for and connected.

It is wise to recall that students with elevated maladaptive perfectionism tend to be excessively concerned about mistakes and doubtful of their own behaviors, predisposing their negative transitional experiences. It may be important for effective outreach programs to embrace both positive and stressful aspects of cross-cultural
transition (e.g., a panel of Asian international students; sharing their meaning-making process regarding acculturation) to promote more balanced thinking. Indeed, in a study that interviewed seven international students, with four being Chinese international students, Moores and Popadiuk (2011) analyzed 134 critical incidents and discussed these students’ discovery of growth and personal resources and the facilitative factors associated with cross-cultural transition. Moores and Popadiuk (2011) suggested that counselors launch outreach programs that will emphasize developmental and holistic perspectives on acculturation, instead of focusing solely on the negative experiences of cultural transition.

Relatedly, based on research that has identified the significant roles of coping and attributional styles linking acculturative stress and maladaptive perfectionism (e.g., Wei, Ku, Russell, Mallinckrodt, & Liao, 2008; Zhang & Cai, 2012), counselors can help students examine their attributional styles, e.g., how maladaptive perfectionism plays a role to generate negative, internal interpretations of acculturative stress, which in turn is likely to lead to the generation of greater depressive symptomatology. For example, counselors can redirect students’ attention to possible external actors (e.g., others’ ignorance) in terms of discrimination and thereby decrease the levels of depressive symptoms.

Further, to facilitate the process of bicultural competence and provide skills-building training, university counseling centers are encouraged to provide Asian international students with focused workshops, groups, or classes. These programs are likely to be well received because their formats would not presume the presence of mental health problems. In a study of group interventions to reduce acculturative stress,
Tavakoli, Lumley, Hijazi, Slavin-Spenny, and Parris (2009) provided an example of such a program where students were given CBT-based assertiveness training that included making and decline requests, sharing personal information, and expressing feelings. Perhaps Asian international students with maladaptive perfectionism can benefit from such training in that this training can explicitly address specific behavioral strategies and thus help these students attribute their difficulties less often to internal deficiencies, which in turn can help prevent depressive symptoms. Furthermore, counselors are encouraged to help Asian international students be aware of depression risk by tailoring outreach programs and materials in a culturally-sensitive manner (e.g., “beat the blues” week, international student wellness day).

Finally, in terms of social support, although the present study did not find a mediating role for perceived social support, there was a strong negative association between maladaptive perfectionism and perceived social support. This finding could be interpreted as meaning that Asian international students with high levels of maladaptive perfectionism may feel it is extremely difficult to maintain a sense that both support and acceptance of others are consistently available, thus requiring clinicians’ attention to the therapeutic relationship as offering unconditional positive regard. Also, consistent endeavors to build more effective preventive bridges at the institutional level, such as international clubs and mentoring systems, must be sustained. For instance, Carr, Koyama, and Thiagarajan (2003) created a support group for Asian international students for social networking that targeted reducing loneliness and isolation. Participants expressed their appreciativeness of having enough space to share their emotions without worrying about being judged.
Limitations

The present study has several limitations and specific areas that warrant attention of inquiry in future research. First, participants were solicited through various sources: a) an advertisement was posted on campus bulletins and the ISSS listserv at a large state university in the Northeast, b) individuals were referred to the survey by the Chairs of student organizations across the U.S., and c) individual contacts were made at a workshop on international students. These sources of participants may have introduced a certain variance into the study because the data only represented students who were interested in this topic or who were willing to participate. In addition, several Asian international student associations were asked to send their members reminders in accordance with the researcher’s request. Asian international students who were not affiliated with any international student organization may thus have had a lower motivation to participate in the study. These factors could have impacted the representation of several subgroups in the final sample. Also, given the convenient, nonclinical samples in this study, it remains to be seen if the present results will generalize to a clinical sample, such as individuals who they have been diagnosed with depression.

Relatedly, it is notable that approximately 51.34% of the students in the present study had CES-D scores that met or exceeded typically used cutoffs, i.e., scores of 16, for clinically significant psychological distress (Mulrow et al., 1995), indicating higher depression rates than found in other studies of Asian international students (e.g., see Rice et al., 2012; Wei et al., 2007). Specifically, approximately 32.59% and 19.75% of the
participants in the present study fell within the probable mild and major depression categories, respectively. This may limit the generalizability of the results.

Second, this study relied solely on self-report measures, a process that can threaten internal validity through mere method bias and social desirability bias. For example, students could both underreport or exaggerate their characteristics, stress, or depressive symptoms because of their subjective importance or values regarding specific questionnaire items or the data accuracy for research. Relatedly, it is not clear if the same relations would reemerge with different methods of data collection. Interviews and observation would have allowed for a more in-depth investigation into if and how acculturative stress, perceived social support, and depression are actually generated by maladaptive perfectionism.

Third, it is important to acknowledge that Asian international students, to some extent, share similar cultural values and acculturation experiences, but generalization of these findings to different Asian ethnic groups requires caution, given the unique historical backgrounds of the Asian countries. For example, in a recent study of maladaptive perfectionism with international students, Chinese students reported higher levels of acculturative stress than did Asian Indian students (Rice et al., 2012). Asian Indian students are likely to have more familiarity with Western cultures and societies than Chinese student because of the earlier Western sociopolitical influences on India through colonization (Rice et al., 2012). Considering that almost 87% of the participants in this study were East Asian students, future research on larger and more representative samples will help establish the generality of these findings for Asian international students and also extend the findings to other groups of international students.
Specifically, an investigation into the equivalence of the measurement and structural models through use of different Asian subgroups would be informative.

Fourth, the cross-sectional nature of this study must be taken into account when considering the theoretical and practical implications of the results. Although the directionality of pathways for the above-mentioned hypotheses was based on previous theory and research, no causal relations among the variables can be inferred. For example, it is possible that depression generates maladaptive perfectionism. A longitudinal or controlled experimental design would have allowed for the causal relationships among maladaptive perfectionism, acculturative stress, perceived social support, and depression.

Fifth, some limitations about measurements must also be acknowledged. While the SPS assessed the global aspects of perceived social support, it did not include items specific to the potentially different support networks (e.g., online support groups) for Asian international students and the unique environments where students go to seek out support.

**Recommendations for Future Research**

There are several future research directions to examine for this line of research. First, acculturative stress and perceived social support explain only part of the relationship between maladaptive perfectionism and depression. In any related future research, it would be valuable to examine other potential mediators that may explain the link between maladaptive perfectionism and depression. For example, coping styles (Zhang & Cai, 2012), self-esteem (Rice, Ashby, & Slaney, 1998), self-concealment (Kawamura & Frost, 2004), and validation from others and self (Wu & Wei, 2008) are indicated as mediating the maladaptive perfectionism-depression relationship. Future
researchers might consider adding these variables to the mediation or/and moderation model to improve treatment effectiveness and expand the knowledge of perfectionism.

Second, it would be interesting to explore dispositional versus situational maladaptive perfectionism that might emerge in cross-cultural transition. So far, perfectionism research has focused mainly on perfectionism as a dispositional characteristic, and the emphasis has been on the correlates and consequences of trait perfectionism. One of the few approaches to state perfectionism has been Saboonch and Lundh’s (1999) experimental study in which temporary elevation in Concern over Mistakes and Doubts about Actions were produced through manipulation of specific conditions such as observation by others and verbal priming. Asian international students who tend to possess generally high expectations of successful academic performance in the U.S. (Wei et al., 2007) may be frequently exposed to various performance-oriented contexts (e.g., presentation). Thus, their adaptive or maladaptive perfectionistic thinking may be subjected to temporary changes in certain situational conditions. The question of whether or not perfectionistic thinking is also a state that can change as a function of acculturation process or other priming factors (e.g., vicarious experiences of discrimination) and its relation to dispositional perfectionism is yet to be explored.

Third, it would be of value for future researchers to develop culturally-sensitive queries as tools to screen adaptive and maladaptive perfectionists. In addition, to confirm the causal relationship between the latent variables included in the present study, future researchers need to conduct psychotherapy outcome studies by examining whether interventions of acculturative stress can decrease depressive symptoms of maladaptive perfectionists.
Finally, the current study failed to reveal the association between perceived social support and depression. International students may utilize a variety of social support networks (e.g., fellow international students, family, groups, host nationals, and graduate program support). Future studies might consider specifying these sources of social support to obtain a better understanding of Asian international students’ support systems and their potential differences in terms of their contribution to psychological symptoms.

Conclusions

In conclusion, the present study examines the mediating effects of acculturative stress and perceived social support in the relation between maladaptive perfectionism and depression by using structural equation modeling. The results support acculturative stress as a distinct mediator in the model, as a significant partial indirect effect was observed between maladaptive perfectionism and depression with acculturative stress as the mediator. However, perceived social support was not found to mediate maladaptive perfectionism and depression.

With the increasing number of Asian international students in the U.S., the current study makes a substantial contribution to the literature by offering an understanding of why these students with elevated maladaptive perfectionism are at particular risk of depression. This study demonstrates that a specific type of stress, i.e., acculturative stress, serves as an important factor through which maladaptive perfectionism affects depression. These findings imply that counselors need to intervene into the dimensions of acculturative stress, such as perceived discrimination and hate, feelings of isolation, and homesickness, when helping maladaptive perfectionists who suffer from depression. Culturally-sensitive outreach, group, and prevention programs may help these students
lower acculturative stress, consequently making it possible to achieve relative success
without resorting to long-term therapy. Future studies can be designed to improve upon
the limitations of the current study to examine relationships among maladaptive
perfectionism, acculturative stress, perceived social support, and depression.
References


Beever, C. G., & Miller, I. W. (2004). Perfectionism, cognitive bias, and hopelessness as prospective predictors of suicidal ideation. Suicide and Life-Threatening Behavior, 34, 126-137. doi: 10.1521/suli.34.2.126.32791


international students. *Journal of American College Health, 52*, 131-134. doi: 10.1080/07448480309595735


Mulrow, C. D., Williams, J. W., Gerety, M. B., Ramirez, G., Montiel, O. M., & Kerber,

*Annals of Internal Medicine, 122,* 913-921.


experimental studies: A latent variable structural equation modeling approach.  
*Journal of Counseling Psychology, 45*, 18-29. doi: 10.1037/0022-0167.45.1.18


doi:10.1177/106907279500300403


Tartakovsky, E. (2007). A longitudinal study of acculturative stress and homesickness:
High-school adolescents immigrating from Russia and Ukraine to Israel without parents. *Social Psychiatry and Psychiatric Epidemiology, 42*, 485-494. doi: 10.1007/s00127-007-0184-1


Appendix A. Almost Perfect Scale-Revised

(APS-R; Slaney, Rice, Mobley, Trippi, & Ashby, 2001)

Directions: The following items are designed to measure attitudes people have toward themselves and their parents. There are no right or wrong answers. Please respond to all of the items. Use your first impression and do not spend too much time on individual items in responding.

Respond to each of the items using the scale below to describe your degree of agreement with each item.

1 = Strongly Disagree
2 = Disagree
3 = Slightly Disagree
4 = Neutral
5 = Slightly Agree
6 = Agree
7 = Strongly Agree

1. I have high standards for my performance at work or at school.
2. I am an orderly person.
3. I often feel frustrated because I can’t meet my goals.
4. Neatness is important to me.
5. If you don’t expect much out of yourself, you will never succeed.
6. My best just never seems to be good enough for me.
7. I think things should be put away in their place.
8. I have high expectations for myself.
9. I rarely live up to my high standards.
10. I like to always be organized and disciplined.
11. Doing my best never seems to be enough.
12. I set very high standards for myself.
13. I am never satisfied with my accomplishments.
15. I often worry about not measuring up to my own expectations.
16. My performance rarely measures up to my standards.
17. I am not satisfied even when I know I have done my best.
18. I try to do my best at everything I do.
19. I am seldom able to meet my own high standards of performance.
20. I am hardly ever satisfied with my performance.
21. I hardly ever feel that what I’ve done is good enough.
22. I have a strong need to strive for excellence.
23. I often feel disappointment after completing a task because I know I could have done better.
Appendix B. The Frost Multidimensional Perfectionism Scale

(FMPS; Frost, Marten, Lahart, & Rosenblate, 1990)

Directions: The following items describe attitudes you have toward yourself, your work, and toward others in daily life. There are no right or wrong answers. Respond to each of the items using the scale below to describe your degree of agreement with each item.

1= Strongly Disagree
2= Disagree
3= Unsure
4= Agree
5= Strongly Agree

1. My parents set very high standards for me.
2. Organization is very important to me.
3. As a child, I was punished for doing things less than perfect.
4. If I do not set the highest standards for myself, I am likely to end up a second-rate person.
5. My parents never tried to understand my mistakes.
6. It is important to me that I am thoroughly competent in everything I do.
7. I am a neat person.
8. I try to be an organized person.
9. If I fail at work/school, I am a failure as a person
10. I should be upset if I make a mistake
11. My parents wanted me to do the best at everything.
12. I set higher goals than most people.
13. If someone does a task at work/school better than I, then I feel like I failed the whole task.
14. If I fail partly, it is as bad as being a complete failure
15. Only outstanding performance is good enough in my family.
16. I am very good at focusing my efforts on attaining a goal.
17. Even when I do something very carefully, I often feel that it is not quite right.
18. I hate being less than the best at things.
19. I have extremely high goals.
20. My parents have expected excellence from me.
21. People will probably think less of me if I make a mistake.
22. I never felt like I could meet my parents’ expectations.
23. If I do not do as well as other people, it means I am an inferior human being.
24. Other people seem to accept lower standards than I do.
25. If I do not do well all the time, people will not respect me.
26. My parents have always had higher expectations for my future than I have.
27. I try to be a neat person.
28. I usually have doubts about the simple everyday things I do.
29. Neatness is very important to me.
30. I expect higher performance in my daily tasks than most people.
31. I am an organized person.
32. I tend to get behind in my work because I repeat things over and over.
33. It take me a long time to do something “right”.
34. The fewer mistakes I make, the more people will like me.
35. I never felt like I could meet my parents’ standards.
Appendix C. Acculturative Stress Scale for International Students

(ASSIS; Sandhu & Asrabadi, 1994)

Below are 36 statements, with which you may agree or disagree. Using a scale of 1 - 5 (as below) indicate your agreement with each statement by placing the number on the line preceding that item. Please be open and honest in your responding.

1. Strongly Disagree
2. Not Sure
3. Agree

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

(SPS; Cutrona & Russell, 1987)

Directions: The following items ask you about your relationship with others. Please indicate how much each statement describes your situation according to the scale below.

1= Strongly Disagree
2= Disagree
3= Agree
4= Strongly Agree

1. There are people I know will help me if I really need it.
2. I do not have close relationships with other people.
3. There is no one I can turn to in times of stress.
4. There are people who call on me to help them.
5. There are people who like the same social activities I do.
6. Other people do not think I am good at what I do.
7. I feel responsible for taking care of someone else.
8. I am with a group of people who think the same way I do about things.
9. I do not think that other people respect what I do.
10. If something went wrong, no one would help me.
11. I have close relationships that make me feel good.
12. I have someone to talk to about decisions in my life.
13. There are people who value my skills and abilities.
14. There is no one who has the same interests and concerns as me.
15. There is no one who needs me to take care of them.
16. I have a trustworthy person to turn to if I have problems.
17. I feel a strong emotional tie with at least one other person.
18. There is no one I can count on for help if I really need it.
19. There is no one I feel comfortable talking about problems with.
20. There are people who admire my talents and abilities.
21. I do not have a feeling of closeness with anyone.
22. There is no one who likes to do the things I do.
23. There are people I can count on in an emergency.
24. No one needs me to take care of them.
Appendix E. The Center for Epidemiological Studies-Depression Scale

(CES-D; Radloff, 1977)

Directions: Below is a list of some of the ways you may have felt or behaved. Please indicate how often you have felt this way during the past week.

0 = Rarely or none of the time (less than 1 day)
1 = Some or a little of the time (1-2 days)
2 = Occasionally or a moderate amount of time (3-4 days)
3 = Most or all of the time (5-7 days)

1. I was bothered by things that usually don’t bother me
2. I did not feel like eating; my appetite was poor
3. I felt that I could not shake off the blues even with help from my family or friends
4. I felt that I was just as good as other people
5. I had trouble keeping my mind on what I was doing
6. I felt depressed
7. I felt that everything I did was an effort
8. I felt hopeful about the future
9. I thought my life had been a failure
10. I felt fearful
11. My sleep was restless
12. I was happy
13. I talked less than usual
14. I felt lonely
15. People were unfriendly
16. I enjoyed life
17. I had crying spells
18. I felt sad
19. I felt that people disliked me
20. I could not get “going”
Appendix F. Demographics

1. Gender: ____Male ____Female

2. Age: ______________

3. Marital Status
   1) Single  2) Married  3) Separated  4) Widowed  5) Other

4. What is your nationality?
   1) Asian Indian  2) Cambodian  3) Chinese  4) Filipino/a  5) Hmong  6) Indonesian

5. What is your classification?
   1) Freshman  2) Sophomore  3) Junior  4) Senior  5) Graduate (Master’s)
   6) Graduate (Doctoral)  7) Graduate (Postdoctoral)

6. What is your academic major or professional field?
   1) Art  2) Science  3) Engineering  4) Business  5) Education
   14) Law  15) Other (please specify _____________________

7. How long have you stayed in the United States ________ years

8. Did you have any experience living in the U.S. or any other English-speaking country before you came to the U.S. to pursue your studies? _____ Yes _____ No

   If Yes, how long had you been living in the U.S. or other country before?
   _______years and _______ months

9. How would you rate your overall English proficiency?
   ____ Low _____Average ____Good ____Excellent ____Native speaker

17. Which visa are you holding?  1) F-1  2) F-2  3) J-1  4) Other (please specify _____)
Appendix G. Flyer

Asian International Students, win an iPad3!

Are you from any of these countries? If yes, you can participate in this study!

****conducts a study that explores Asian international students' adjustment process and mental health. This project has been approved by the **** Institutional Review Board. The only requirements for participation are that you are an Asian international student not from an English speaking country, and you are at least 18 years old.

By sharing your experiences, you will be contributing valuable information that will lead to a better understanding of Asian international students' experiences in the United States!!

Participation in this study is voluntary and completely anonymous, and should take between 25 and 30 minutes to complete. At the end of the study, you will be given a chance to enter a drawing to win an iPad3! You will find more information in the survey. Contact Jungeun Kim (jk179943@albany.edu) should you have any questions. Thank you!

How to? It’s easy! 1. Go to www.psychdata.com 2. Find the survey #142410
Appendix H. Recruitment Email

Dear Asian International Student!

- Have you ever wondered how much your stress, social support, and attitude about performance affect your daily mood during your course of study in the United States?
- How have your personality played out in your adjustment in the United States?
- Would you be willing to tell me your thoughts about these questions?

I would like to invite you to participate in a confidential survey, which is exploring Asian international students' adjustment process and mental health. This project has been approved by the University at Albany Institutional Review Board (IRB# 11-117). The only requirements for participation are that you are an Asian international student not from an English speaking country and you are at least 18 years old.

*By sharing your experiences, you will be contributing valuable information that will lead to a better understanding of Asian international students' experiences in the United States!!*

Participation in this study is voluntary and completely anonymous, and should take between 25 and 30 minutes to complete. At the end of the study, you will be given a chance to enter a drawing to **win an iPad3**!

If you would like to participate in the study, please click on the link https://www.psychdata.com/s.asp?SID=142410 and start the survey.

If you would like more information, please contact me at jk179943@albany.edu or/and Dr. Alex Pieterse at apieterse@albany.edu. If you know other Asian international students who may be interested in participating, please feel free to forward this email and share this information.

Thank you for your time and attention.
Appendix I. Informed Consent

**Investigator Identification**: This research study is being conducted by Jungeun Kim, M.A., a graduate student in the Division of Counseling Psychology, University at Albany, State University of New York under the supervision of Dr. Alex L. Pieterse, an assistant professor in the Division of Counseling Psychology, University at Albany.

**Study Description**: The purpose of this study is to learn more about how personality, stress, and social support influence the mental health of Asian international students staying the United States. Participation is strictly voluntary and will involve completing a 25-minute survey. The survey will consist of questionnaires that ask your demographic information, thoughts, attitudes, and behaviors. To thank you for your time and effort, after completing the survey you will have an opportunity to be entered in a raffle to win an iPad3. You will be asked to provide your e-mail address but it will not be linked to your responses on the survey and I will delete all e-mail address at the end of the study.

**Possible Risks and Benefits**: If you decide to participate in this study, there may be no direct benefit to you. However, it is hoped that the information gained in this study will help researchers and clinicians enhance their knowledge about issues that would affect the mental health of Asian international students. There are no foreseeable risks at this time from participating in the study. However, because the questionnaires are personal in nature, it is possible that minor distress may be developed during the course of the study.

**Participant Information**: Your participation is completely voluntary. There is no penalty should you decide not to participate in this study; you may withdraw at any time that you wish. The information that you provide will be anonymous. Your name will not appear anywhere on the questionnaires.

**On-Line Data Collection**: This project has been approved by the University at Albany Institutional Review Board. Approval of this project only signifies that the procedures adequately protect the rights and welfare of the participants. Please note that absolute confidentiality cannot be guaranteed due to the limited protections of internet access. All information obtained in this study is strictly confidential unless disclosure is required by law. In addition, the institutional Review Board and University or government officials responsible for monitoring this study may inspect these records.

**Right to Ask Questions**: For future information about study, please contact Jungeun Kim, MA at jk179943@albany.edu. You may also contact my dissertation chair, Dr. Alex L. Pieterse, at apieterse@albany.edu. If you have questions regarding your rights as a research participant, complaints, concerns, or questions about the research, you may contact the Office of Regulatory Research Compliance at (518) 442-9050 or orrc@uamail.albany.edu.
**Electronic Consent:** Clicking on the “continue” button below indicates that you have read and understood the terms of this study and thus voluntarily agree to participate. If you do NOT wish to participate in this study, please decline participation by closing the window.

I have read the information about this study. I hereby consent to participate in the study.

Continue ONLY when finished. You will be unable to return or change your answers.
Appendix J. Debriefing Statement

Thank you!

The primary purpose of this study is to expand and enhance the existing research findings regarding Asian international students’ experiences in the United States. The results of this research will hopefully lead to a better understanding of how Asian international students’ expectations and standards about their performance relate stress, perceived social support, and mental health.

Because the questionnaires are personal in nature, it is possible that you may have developed some concerns during the course of this study. If this is the case, please feel free to contact the researchers (jk179943@albany.edu; apieterse@albany.edu) or a local counseling center. For SUNY Albany students, Counseling Center (Suite 104, 400 Patroon Creek Blvd; 442-5800) provides psychological services to students at the university. For non-SUNY Albany students, you may also contact your university’s counseling center, office of international affairs, or the researchers with questions/concerns.

If you wish to participate in the raffle at this time, please click HERE.

Please note that your contact information will be stored separately from your survey responses and cannot be linked together in order to ensure confidentiality.
Appendix K. Preliminary Analyses

Assessment of normality

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<th>Variable</th>
<th>Min</th>
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<th>skew</th>
<th>c.r.</th>
<th>kurtosis</th>
<th>c.r.</th>
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<td>Concerns Over Mistakes</td>
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<td>Doubts About Actions</td>
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<td>Depressed Affect</td>
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<td>Somatic Symptoms</td>
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<td>-.711</td>
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<td>Interpersonal</td>
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### MANOVA Results

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<th>Variable(s)</th>
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<th>Sig.</th>
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### Appendix L. Extracted four factors of the ASSIS

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<th>Factor2</th>
<th>Factor3</th>
<th>Factor4</th>
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<tr>
<td>14. I feel angry that I receive unequal treatment.</td>
<td>15. People show hatred toward me non-verbally.</td>
<td>19. I feel low because of my cultural background.</td>
<td>5. I feel nervous to communicate in English.</td>
</tr>
<tr>
<td>29. I am treated differently because of my colour.</td>
<td>11. Many opportunities are denied to me.</td>
<td>10. I feel guilty to leave my family and friends behind.</td>
<td>22. I feel uncomfortable to adjust to new cultural values.</td>
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<tr>
<td>9. Others are biased toward me.</td>
<td>27. I feel insecure here.</td>
<td>13. Multiple pressures are placed upon me after migration.</td>
<td>2. I feel uncomfortable to adjust to new foods.</td>
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<tr>
<td>26. I am treated differently because of my race.</td>
<td>30. I feel sad to consider my people's problems.</td>
<td>21. I miss the people and country of my origin.</td>
<td>6. I feel sad living in unfamiliar surroundings.</td>
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<tr>
<td>23. I feel that my people are discriminated against.</td>
<td>3. I am treated differently in social situations.</td>
<td>16. It hurts when people don't understand my cultural values.</td>
<td>8. I feel intimidated to participate in social activities.</td>
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<tr>
<td>12. I feel angry that my people are considered inferior here.</td>
<td>20. Others don't appreciate my cultural values.</td>
<td>31. I generally keep a low profile due to fear.</td>
<td>7. I fear for my personal safety because of my different cultural background.</td>
</tr>
<tr>
<td>17. I am denied what I deserve.</td>
<td>28. I don't feel a sense of belonging here (community)</td>
<td></td>
<td></td>
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</tbody>
</table>

1-2. I feel...