Moderating Effects of Three Coping Strategies and Self-Esteem on Perceived Discrimination and Depressive Symptoms: A Minority Stress Model for Asian International Students

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This study examined 3 coping strategies (reflective, suppressive, and reactive), along with self-esteem, as moderators of the relation between perceived discrimination and depressive symptoms. International students ($N = 354$) from China, India, Korea, Taiwan, and Hong Kong provided data via an online survey. The role of perceived general stress was statistically controlled. Hierarchical regression analyses indicated a significant direct effect of perceived discrimination, a significant 2-way interaction of perceived discrimination and suppressive coping, and a significant 3-way interaction of perceived discrimination, reactive coping, and self-esteem in predicting depressive symptoms. An increased tendency to use suppressive coping appeared to strengthen the association between perceived discrimination and depressive symptoms. In contrast, the association between perceived discrimination and depressive symptoms was not significant when reactive coping was infrequently used, but only for students with relatively high self-esteem.

Keywords: perceived discrimination, self-esteem, coping, minority stress model, Asian international students

Asian international students, like other U.S. racial minorities, experience discrimination in the United States (e.g., Constantine, Kindaichi, Okazaki, Gainor, & Baden, 2005; Rahman & Rollock, 2004). For example, a qualitative study of Taiwanese international students' adjustment (Swagler & Ellis, 2003) reported these two typical students' experiences:

> When I first came here, sometimes I feel that there is a racial discrimination. I was aware that I may be different skin color or maybe English is not my first language. Sometimes I feel that I let people intimidate me because I know that I'm not a native speaker and I look different. (p. 432)

> When you don't really understand what clerks mean, especially when they talk very fast. I try to repeat their words. They just show some impatience and treat you like, you an idiot or what? . . .. Then they just talk like that and I feel very bad about it, I will think I will never come here again. (p. 431)

Incidents like these appear to be fairly common for Asian international students. Klineberg and Hull (1979) reported that approximately 70% of international students either experienced or knew someone who experienced discrimination. Sodowsky and Plake (1992) further indicated that Asian international students perceived more discrimination than did European international students. Therefore, this study focused on Asian international students. It is important to note that there is limited discrimination research on Asian international students. Thus, the literature will be reviewed for Asian immigrants and Asian Americans because these two groups may share similar experiences of discrimination with Asian international students.

Perceived Discrimination and Depressive Symptoms

Meyer (2003) defined *minority stress* as "the excess stress to which individuals from stigmatized social categories are exposed, often as a result of their . . .minority position" (p. 675). Meyer focused on the experience of gay, lesbian, bisexual, or transgender persons. In a similar vein, Harrell (2000) argued that experiences of racism are a unique source of chronic stress for ethnic minorities distinct from other general life stressors. The perception that one has been discriminated against may differ in impact from other negative life events or daily hassles for some of the following

reasons: (a) discrimination denies access to resources critical for adapting to other stressors at all levels, as well as opportunities necessary for personal growth and well-being (Clark, Anderson, Clark, & Williams, 1999); (b) discrimination may be perpetrated through individual interactions but also can be a matter of institutional policy (Harrell, 2000); and (c) the perception of both individual animosity and institutional discrimination may be an especially potent combination that leads to the development of learned helplessness, damaged self-esteem, or depression (Alvarez, Sanematsu, Woo, Espinueva, & Kongthong, 2006; Greene, Way, & Pahl, 2006; R. M. Lee, 2003, 2005; Liang, Alvarez, Juang, & Liang, 2007; Liang & Fassinger, 2008; Liang, Li, & Kim, 2004). A fourth reason that discrimination may have a uniquely negative impact for international students is that the experience may shatter their former idealized positive views of the United States (Sandhu & Asrabadi, 1994).

Some studies failed to find convincing support for the hypothesis that perceived discrimination is a unique predictor of negative outcomes, distinct from perceived general stress (Sanders-Thompson, 2002; Taylor & Turner, 2002). In contrast, Dion, Dion, and Pak (1992) found a positive association between experiences of discrimination and distress after statistically controlling for general stress among community members of Chinese heritage. Pieterse and Carter (2007) also found that, after controlling for general stress, racism-related stress accounted for a significant increment in psychological distress for African American men.

Depression is among the most common presenting problems for international students who seek help from university counseling services (Nilsson, Berkel, Flores, & Lucas, 2004; Yi, Lin, & Kishimoto, 2003). Wei et al. (2007) reported that about 30% of Asian international students' score above the cutoff point on indicators of clinical depression. Perceived discrimination may be a risk factor for depressive symptoms. Surprisingly, we could locate only one published study that investigated and found a positive association between perceived discrimination and depression among international students (Jung, Hecht, & Wadsworth, 2007). Therefore, we expected to find a positive relation between perceived discrimination and depressive symptoms for Asian international students.

Coping Strategies and Self-Esteem

According to Meyer's (2003) minority stress model, variables such as coping and social support serve as moderators to buffer the relation between perceived discrimination and mental health outcomes (Meyer, 2003, p. 679). Also, Clark et al.'s (1999) biopsychosocial model describes self-esteem as a moderator for this relation. In contrast, Harrell's (2000) racism-related stress model describes some of these variables, including coping, self-esteem, and social support, as mediators. However, Harrell speculated that "self-esteem. . .may buffer the impact of racism-related stress on well-being" together with other factors that could "exacerbate. . .and increase the risk of maladaptive outcomes" (p. 51). Investigations of exacerbating and buffering effects almost invariably explore moderation models. Thus, Harrell at times used language that is compatible with both mediation and moderation models. Moreover, the influential work by Clark et al. argued for the importance of examining moderators and mediators and stated, "The effects of general coping response. . .may interact with so-

ciodemographic factors to modify risk for negative health outcome" (p. 809). This implies that the effect of general coping may vary as a function of other moderators (e.g., self-esteem) that buffer or exacerbate the relation between perceived discrimination and outcomes (e.g., a three-way interaction of Coping × Self-Esteem × Perceived Discrimination on depression). For the present study, we have adopted a moderator approach, following the example of Meyer and focusing on the portions of other models that emphasize buffering or exacerbating factors (Clark et al., 1999; Harrell, 2000).

Researchers have sought to identify factors that might either buffer or exacerbate the relations between perceived discrimination and depressive symptoms or distress for minorities of an Asian heritage (e.g., Cassidy, O'Connor, Howe, & Warden, 2004; R. M. Lee, 2003, 2005; Liang & Fassinger, 2008; Noh & Kaspar, 2003; Yoo & Lee, 2005, 2008). In the present study, we hoped to build on this line of research and expand it to Asian international students. However, we could locate only two published studies that examined moderator variables for international students. Jung et al. (2007) found social undermining (i.e., a counterconcept of social support—friends display negative affect, evaluation, or behaviors to hinder one's attainment of goals) to be a moderator in exacerbating the association between perceived discrimination and depression for international students in general. Chen, Mallinckrodt, and Mobley (2003) found that perceived support from an international student office was a moderator in lessening the strength between perceived discrimination and psychological distress for Asian international students, specifically. Clearly, more research is needed to identify potential moderators for Asian international students.

Coping strategies have been studied as protective factors against discrimination for Asian Americans or Asian immigrants. Unfortunately, within the coping literature, there is no measure that directly assesses coping with discrimination. Most researchers adapted a situational coping scale and specified the stressful situation as a discrimination event (e.g., Liang et al., 2007; Noh, Beiser, Kaspar, Hou, & Rummens, 1999; Yoo & Lee, 2005). In the current study, we assessed coping from the dispositional coping perspective. Dispositional coping measures are based on the premise that people have general coping responses that can be applied to different problems and stressors (Carver & Scheier, 1994). Some researchers have begun to test this premise, and the results consistently show strong associations between dispositional and corresponding situational coping strategies for stressors other than racial discrimination (e.g., Carver & Scheier, 1994; Rutherford & Endler, 1999; Schoen, Altmaier, & Tallman, 2007). The findings thus provide evidence for the argument that "people develop habitual ways of dealing with stress and that these habits or coping styles can influence their reactions in new situations" (Carver & Scheier, 1994, p. 185).

From the dispositional and problem resolution perspective, Heppner, Cook, Wright, and Johnson (1995) developed a coping measure that assessed three styles of coping (i.e., reflective, suppressive, and reactive coping). This is a new way of conceptualizing coping in terms of the outcome of the coping action. These three coping strategies fit well with Meyer's (2003) minority stress model, which holds that coping is an important resource for dealing with discrimination. Recent empirical studies have affirmed that coping strategies are effective in helping Asian Amer-

icans and Asian immigrants cope with discrimination. For instance, Yoo and Lee (2005) found that problem-solving coping lessened the magnitude of the association between perceived discrimination and negative affect among Asian Americans who have a strong ethnic identity in the low-discrimination condition. Noh and Kaspar (2003) found that frequent use of passive acceptance and emotional distraction strengthened the relation between perceived discrimination and depressive symptoms among Korean immigrants. From these findings, it appears that coping strategies would likely serve as moderators to either buffer (lessen) or enhance the negative impact of perceived discrimination on depressive symptoms for Asian international students. Heppner et al. indicated that indices of psychological distress were negatively related with reflective coping but positively related with suppressive and reactive coping. Therefore, we anticipated that reflective coping might buffer the association between perceived discrimination and depressive symptoms, whereas reactive and suppressive coping might enhance the association between perceived discrimination and depressive symptoms.

Self-esteem has also been studied as a protective factor against perceived discrimination for people with an Asian heritage (Cassidy et al., 2004; Dion et al., 1992; Liang & Fassinger, 2008). Based on the self-esteem theory of depression (Brown & Harris, 1978), a positive view of the self plays a role in buffering the relation between negative events (e.g., perceived discrimination) and depressive symptoms. Specifically, Asian international students with high self-esteem may have more psychological resources (e.g., externalizing discrimination events) than do those with low self-esteem to help ameliorate their depressive symptoms associated with perceived discrimination. Indeed, Asian international students often experience decreases in self-esteem during their adjustment period in the United States (Swagler & Ellis, 2003). Low self-esteem is often associated with depressive symptoms. For example, Dion et al. (1992) found that hardiness (a combination of high personal self-esteem and high personal control) weakened the association between perceived discrimination and distress among people with a Chinese heritage. Thus, we anticipated that high self-esteem would buffer the association between perceived discrimination and depressive symptoms for Asian international students.

Furthermore, for Asian international students faced with discrimination, the level of self-esteem may interact with specific coping strategies to predict depressive symptoms. That is, different coping strategies may be effective depending on the student's level of self-esteem (i.e., three-way interactions). For example, Asian international students who have high self-esteem and frequent use of reflective coping may be likely to think about the short-term and long-term consequences of possible solutions to discrimination. Instead of devoting their cognitive resources to dwelling on how they are negatively affected by discrimination, students with high self-esteem may use their cognitive resources to engage in reflection or to think about a systematic plan in the face of discrimination incidents. Students with high self-esteem may thus utilize their psychological resources constructively to protect themselves from discrimination. Thus, high self-esteem and high use of reflective coping may interact in a positive way to reduce the strength of the association between perceived discrimination and depressive symptoms.

In contrast, low self-esteem and high use of suppressive coping may enhance passivity in response to discrimination. In particular, Asian international students with low self-esteem may take incidents of discrimination personally (e.g., blame themselves) instead of taking actions to do something about these incidents (e.g., complaining about the incident). For these students, suppressive coping may be a temporary solution to avoid hostility and other unpleasant feelings. However, coping literature (Heppner et al., 1995) has indicated negative implications of suppressive coping on psychological outcomes. Thus, the combination of low self-esteem and high use of suppressive coping may enhance the association between perceived discrimination and depressive symptoms relative to the effects of either variable alone.

In the Asian culture, emotional self-control is an important cultural value and is viewed as a sign of maturity (e.g., Kim, Atkinson, & Yang, 1999; Kim, Li, & Ng, 2005). Asian international students with low self-esteem and a tendency to react with strong emotions may experience an internal conflict (e.g., reacting with a strong emotion may be viewed as an inability to control their emotions) in the face of discrimination. Also, the use of reactive coping is incongruent with Asian cultural values. It is thus anticipated that students with low self-esteem and frequent use of reactive coping may be most vulnerable to depressive symptoms, whereas students with high self-esteem and infrequent use of reactive coping may be less vulnerable to depressive symptoms when facing discrimination.

The model tested in this study is shown in Figure 1. Given the mixed findings on whether discrimination-related stress is different from general perceived life stress, the first purpose of this study was to examine the role of perceived discrimination on depressive symptoms in Asian international students after controlling for their general level of perceived stress. It is necessary to measure and control for variance in general perceived stress in order to establish that stress related to discrimination is a qualitatively different experience than perceived general life stress is. The finding that perceived discrimination accounts for a significant increment in the explained variance of a mental health criterion would constitute support for the special status of discrimination-related stress.

The second purpose of this study was to examine how coping strategies and self-esteem serve to moderate the effect of perceived discrimination on depression for Asian international students. Specifically, we hypothesized that coping strategies and self-esteem
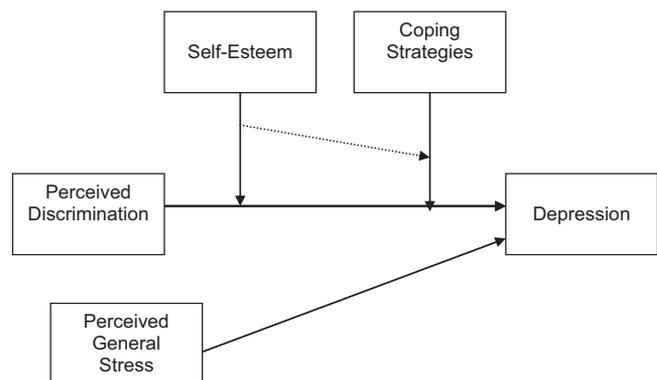

Figure 1. The conceptual model of our study.

would moderate the association between perceived discrimination and depression, symbolized by the downward-pointing arrows in Figure 1 (and revealed statistically as significant two-way interactions). Second, we speculated that perhaps a particular preference for a specific coping strategy would depend on a student's level of self-esteem. This research question is symbolized by the dashed line in Figure 1, in which the proposed moderator relation for coping strategy is itself moderated by level of self-esteem. This relationship would be revealed as a significant three-way interaction among perceived discrimination, coping strategies, and self-esteem in predicting depression.

Method

Participants

Usable surveys were obtained from 354 Asian international students who responded to an online survey at a large, public, Midwestern university. Participants consisted of 207 (58%) men and 147 (42%) women with a mean age of 26.58 years ($SD =$ 4.09). The countries of origin were China/Hong Kong ($n = $ 158; 45%), India ($n = $ 104; 29%), Korea ($n = $ 61; 17%), and Taiwan ($n = $ 29; 8%); 2 participants did not indicate their country of origin. Participants reported living in the United States for an average of 2.61 years ($SD = $ 2.11). The majority of participants (81%) were graduate students. Over half of the participants were married (55%), with the remaining participants either being single (33%) or in a dating relationship (10%).

Instruments

Perceived stress.   The Perceived Stress Scale (S. Cohen, Kamark, & Mermelstein, 1983) is a 10-item self-report measure designed to assess the degree to which situations in one's life are perceived as stressful. The Perceived Stress Scale is a measure of global perceptions of stress (e.g., "In the last month, how often have you felt you were unable to control the important things in your life?"). Participants are asked to reflect on their thoughts and feelings during the previous month and indicate on a 5-point rating scale, ranging from 0 (*never*) to 4 (*very often*), how often they felt the way described in each item. The range of possible scores is 0–40, with higher scores indicating greater perceived stress. The original developers reported a coefficient alpha of .78 for adults. Coefficient alpha was .77 in this study. The construct validity was supported by a positive association with depressive symptoms among Chinese college students (Hong & Jian-Hong, 2004) and physical symptoms among Hong Kong undergraduate students (Lai, 1996).[1]

Perceived discrimination.   Perceived discrimination was measured by the Perceived Discrimination subscale of the Acculturative Stress Scale for International Students (Sandhu & Asrabadi, 1994). A sample item is, "I am treated differently because of my race." Each of the eight items is rated on a 5-point Likert scale that ranges from 1 (*strongly disagree*) to 5 (*strongly agree*). Total scores range from 8 to 40, with higher scores indicating greater perceived discrimination. Coefficient alpha for the Perceived Discrimination subscale was .90 (Jung et al., 2007) for international students and .92 in the present study. Evidence for the construct validity was provided by a negative association with depressive symptoms (Jung et al., 2007) among international students.

Coping strategies.   Coping strategies were measured by the Problem-Focused Style of Coping measure (Heppner et al., 1995). The Problem-Focused Style of Coping measure is an 18-item self-report measure that assesses the extent to which individuals believe they are able to effectively resolve and cope with their problems. Each question asks respondents to indicate how often they engage in the described coping activity on a 5-point Likert scale that ranges from 1 (*almost never*) to 5 (*almost all of the time*). The Problem-Focused Style of Coping measure consists of three subscales: Reflective, Suppressive, and Reactive Style of Coping. Reflective Style of Coping (7 items) taps into activities, such as planning and exploring causal relationships, and systematic steps in coping (e.g., "I think ahead, which enables me to anticipate and prepare for problems before they rise"). Suppressive Style of Coping (6 items) represents a tendency to avoid coping activities and deny problems (e.g., "I spend my time doing unrelated chores and activities instead of acting on my problems"). Reactive Style of Coping (5 items) is defined as a tendency to have strong emotional responses, distortion, impulsivity, and cognitive confusion (e.g., "I act too quickly, which makes my problems worse"). A higher score indicates a greater utilization of reflective (score range: 5–35), suppressive (score range: 5–30), or reactive (score range: 5–25) styles of coping. Coefficient alphas were .77, .76, and .73 among college students (Heppner et al., 1995) and .75, .70, and .81 in the present study for the reflective, suppressive, and reactive styles of coping, respectively. D.-L. Lee (2003) provided evidence of construct validity through a negative association between depressive symptoms and the reflective style of coping and positive associations between depressive symptoms and the reactive and suppressive styles of coping among Korean college students.

Self-esteem.   Self-esteem was assessed by the Rosenberg Self-Esteem Scale (Rosenberg, 1965). The Rosenberg Self-Esteem Scale is a widely used measure of global self-esteem (a sample item is, "I feel that I have a number of good qualities"). The scale consists of 10 items, with a 4-point response format ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Total scores range from 10 to 40, with higher scores indicating greater self-esteem. Coefficient alpha for the total self-esteem score was .92 for Korean Americans (R. M. Lee, 2005), .82 for Taiwanese college students (Wang, Slaney, & Rice, 2007), and .78 in the present sample. Construct validity has been supported by a negative association with depressive symptoms for Korean college students (D.-L. Lee, 2003) and Taiwanese college students (Wang et al., 2007).

Depression.   Depressive symptoms was assessed by the Center for Epidemiological Studies—Depression Scale (CES–D; Radloff, 1977). The CES–D is a 20-item self-report scale developed to assess current levels of depressive symptoms (e.g., "I did not feel like eating," "My appetite was poor," "My sleep was restless"). Each item is rated on a 4-point Likert scale ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*), based on the frequency with which participants have experienced each symptom during the previous week. Total scores can range from 0 to 60,

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[1] We have reported reliability and validity information for a measure when such information was available from published studies of Asian international students. Otherwise, we report psychometric information for populations that share some similarities to the present sample, such as Asian college students or Asian Americans.

with higher scores indicating higher levels of depressive symptoms. Scores of 16 or higher imply a possible risk for clinically significant depression (Mulrow et al., 1995; Zich, Attkisson, & Greenfield, 1990). The mean depression score for this sample was 12.86. A total of 30% of the students in this sample scored 16 or higher on the CES–D in the present study, which is consistent with the percentage reported by Wei et al. (2007) for Chinese international students. The CES–D was selected because of its sound psychometric properties and the fact that it has been used previously to assess depressive symptoms in Asian international students (e.g., Constantine, Okazaki, & Utsey, 2004; Rahman & Rollock, 2004; Wei et al., 2007). Radloff (1977) reported that the CES–D has a coefficient alpha of .85 for the general population and .90 for a psychiatric population. Coefficient alpha was .86 in the present sample. Support for the construct validity has been provided by the positive association with acculturative stress (Constantine et al., 2004; Wei et al., 2007), as well as the negative association with social self-efficacy (Constantine et al., 2004) and intercultural behaviors (Rahman & Rollock, 2004) among Asian international college students.

Procedure

A list of Asian international students from China/Hong Kong ($n = 665$), India ($n = 345$), Korea ($n = 281$), and Taiwan ($n = 81$) was obtained from the registrar's office at a Midwestern university. Students from these nationalities were chosen because these countries either sent the largest number of students to the Unites States or have shown strong increases in sending students to the United States over the past few years (Institute of International Education, 2007). An e-mail message was sent to these students inviting them to participate in an online survey. The online method was selected because participants may feel more comfortable in giving anonymous answers to a sensitive topic such as discrimination. Students were told that the purpose of the research was to examine Asian international students' experiences in coping with stress. After completing the survey, they were told that they could send a separate e-mail with their contact information (i.e., name and phone number) to Meifen Wei in order to be entered into a drawing for a $100 cash prize, a mountain bike, or a bread maker. Two follow-up reminder e-mails were sent to nonrespondents.

In survey research, the response rate for minority students has been found to often be lower than that of European Americans (Wei, Russell, Mallinckrodt, & Zakalik, 2004). In the case of Asian international students, there is often a lower response rate for web-based surveys (e.g., Sills & Song [2002] reported a 22% response rate) than there is for surveys that offer students a course credit for return of the surveys after they are completed. Of the 1,372 students contacted, a total of 480 responded to the online survey (representing a response rate of 35%). However, data from 49 (10%) students were incomplete and so were not included in the analyses. We included a validity item that instructed participants to enter the number "1" in answer to this specific question. A total of 77 (16%) of the participants responded incorrectly to this validity item. We therefore removed these participants' responses from the data. Thus, a total of 354 completed surveys (26% of the students originally solicited) were retained for later analyses.

Results

Preliminary Analyses

We first examined whether the data met regression assumptions of normality, linearity, and homoscedasticity (see J. Cohen, Cohen, West, & Aiken, 2003, pp. 117–141, for a discussion). We conducted three separate regressions for reflective, suppressive, and reactive coping, respectively. Our analyses indicated that there was no violation of the assumption of linearity or residual homoscedasticity. The skewness in the residuals ranged from 0.57 to 0.71 ($Zs = 4.39$ to 5.43, $ps < .001$) and the kurtosis of the residuals ranged from 1.18 to 1.77 ($Zs = 4.56$ to 6.81, $ps < .001$) for the three separate regressions. These results indicated a statistically significant departure from normality. Because multiple regression analyses can be adversely affected by substantial departures from normality, a square-root transformation of the dependent variable (i.e., depressive symptoms) was used (J. Cohen et al., 2003). When the transformed depressive symptom variable was employed in the regression model, it resulted in a decrease in the skewness of the residual scores, ranging from -0.18 ($Z = -1.38$, $p > .05$) to -0.09 ($Z = -0.72$, $p > .05$), and a decrease in the kurtosis of the residual scores, ranging from 0.33 ($Z = 1.25$, $p > .05$) to 0.35 ($Z = 1.37$, $p > .05$). These results indicated that there was no statistically significant departure from normality, meeting the residual normality assumption in the regression analysis. When we used the transformed variable in analyzing the data, the pattern of results for the three regression analyses was identical to that found using the original depressive-symptoms variable. Therefore, the original depressive-symptoms variable was used in the present analyses as it is easier to interpret regression coefficients based on the untransformed dependent variable.

A second analysis was conducted to test whether the sample ($N = 354$) was representative of the population of Asian international students who were invited to participate in this study ($N = 1,372$) in terms of gender and nationality. A chi-square analysis indicated that female students (42% vs. 37%) were overrepresented in the sample relative to the population of students we invited to participate, $\chi^2(1, N = 354) = 759.27$, $p < .001$. Similarly, a chi-square analysis indicated that students from Taiwan (8% vs. 6%) and India (30% vs. 25%) were slightly overrepresented in our sample relative to the proportion of students from these countries we invited to participate, $\chi^2(3, N = 352) = 760.50$, $p < .001$. It is not uncommon that female students are more likely to participate in research studies than are male students. Also, regarding nationality, due to the large sample, relatively small differences in the actual versus expected percentages are statistically significant.

Means, standard deviations, and zero-order correlations among the variables are presented in Table 1. A multivariate analysis of variance was conducted to examine whether these seven variables (i.e., perceived general stress, perceived discrimination, three styles of coping, self-esteem, and depressive symptoms) varied as a function of participants' gender, marital status, and country of origin, and whether there were interactions among gender, marital status, and country of origin. Results indicated that there were no significant main effects, two-way interactions, or three-way interactions (all $ps > .05$). In addition, the length of time in the United States was not significantly related to any of the variables (all $ps > .05$), except for perceived discrimination ($r = .13$, $p < .01$); stu-

Table 1
Means, Standard Deviations, and Zero-Order Correlations of Variables (N = 354)

Variable	M	SD	1	2	3	4	5	6	7
1. Perceived general stress	1.55	.44	—						
2. Perceived discrimination	2.60	.80	.20***	—					
3. Reflective coping	3.20	.70	−.23***	.00	—				
4. Suppressive coping	2.07	.68	.42***	.20***	−.26***	—			
5. Reactive coping	2.46	.70	.39***	.20***	.06	.56***	—		
6. Self-esteem	3.07	.39	−.43***	−.08	.38***	−.48***	−.27***	—	
7. Depressive symptoms	0.64	.41	.64***	.29***	−.17**	.50***	.41***	−.48***	—

** $p < .01$.   *** $p < .001$.

dents who had lived in the United States for a longer period of time reported higher levels of perceived discrimination. Because students' gender, marital status, country of origin, and length of time in the United States were not significantly related to the dependent variable (i.e., depressive symptoms), none of these variables were used as covariates in subsequent analyses.

Analyses of Moderator Variables

Based on procedures recommended by Aiken and West (1991) and Frazier, Tix, and Barron (2004), we standardized the predictor and moderator variables before computing the interaction terms to reduce multicollinearity. Three parallel hierarchical multiple regression analyses were conducted, one for each of the three coping strategies.[2] For a given coping variable, such as reflective coping, two-way interaction terms were created through the multiplication of reflective coping and perceived discrimination, and reflective coping and self-esteem. In addition, in each analysis, the interaction term of perceived discrimination and self-esteem was included. Similarly, a three-way interaction term was created through the multiplication of reflective coping, perceived discrimination, and self-esteem. A similar procedure was used to create interaction terms for the other two coping strategies.

For each hierarchical regression, perceived general stress was entered as a covariate in Step 1. Perceived discrimination was entered in Step 2. Self-esteem and one of the three coping strategies (i.e., reflective, suppressive, or reactive) were entered to test the main effects in Step 3. The 3 two-way interaction terms were then entered as a block in Step 4. Finally, the three-way interaction term was entered in Step 5. Thus, a total of 10 significance tests were conducted (one for the main effect of perceived discrimination, three for the two-way interactions of coping strategies, three for the two-way interactions of self-esteem, and three for the three-way interaction). In order to reduce the impact of Type 1 error on these significance tests, we conducted a Bonferroni correction. The criterion for statistical significance was calculated to be $.05/10 = .005$. However, several experts have indicated that it is difficult to detect interaction effects in general and have stated that the contribution of interaction effects over and above the first order or main effects is typically small (Frazier et al., 2004; McClelland & Judd, 1993; Pedhazur & Schmelkin, 1991; Wampold & Freund, 1987). Therefore, it has been recommended that researchers use a more liberal criterion when evaluating the significance of interaction effects (McClelland & Judd, 1993; Pedhazur & Schmelkin, 1991). Thus, the criterion of a *p* value of .01 was

set to evaluate the significance level of the interaction effects. In each analysis, the increment in R^2 for Step 4 provides the critical test of simple moderator effects, and the increment in R^2 at Step 5 provides the test for complex moderation effects involving three-way interactions.

Reflective coping. In Step 1, results indicated that perceived general stress accounted for 41% of the variance in depressive symptoms (see Table 2). In Step 2, perceived discrimination accounted for an additional 3% of the variance in depressive symptoms (please note that Steps 1 and 2 results are identical for the analyses of each of the three coping strategies). Also, perceived discrimination accounted for variance in depressive symptoms over and above perceived general stress. In Step 3, reflective coping and self-esteem accounted for an additional 6% of the variance in depressive symptoms. Self-esteem (but not reflective coping) uniquely predicted depressive symptoms. In Steps 4 and 5, neither the 3 two-way interactions nor the three-way interaction added significant increments in the explained variance for depressive symptoms beyond the main effects.

Suppressive coping. In Step 3 of this analysis, suppressive coping and self-esteem accounted for an additional 8% of the variance in depressive symptoms. In Step 4, the 3 two-way interactions significantly predicted depressive symptoms ($\Delta R^2 = .02$). According to J. Cohen (1992), an R^2 value of .02 indicates a small effect size. However, Champoux and Peters (1987) and Chaplin (1991) reviewed much of the social science literature and reported that interaction terms typically account for approximately 1% to 3% of the variance. In addition, the regression coefficient for the two-way interaction of Perceived Discrimination × Suppressive Coping was statistically significant (see Table 2). In Step 5, the three-way interaction did not significantly predict depressive symptoms over and above the main effects and the two-way interaction effects.

To further explore the two-way interactions, we followed J. Cohen et al.'s (2003) recommendations for plotting the results as an aid in interpreting the nature of the interaction between the two predictor variables. Specifically, the relation between the first predictor variable and the dependent variable (i.e., depressive symptoms) was plotted when levels of the second predictor vari-

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[2] The patterns of the significant results were identical when perceived general stress (covariate), perceived discrimination (predictor), three coping strategies and self-esteem (moderators), and their interactions were included in one regression analysis instead of three separate regressions.

Table 2

A Hierarchical Multiple Regression Analysis Predicting Depressive Symptoms From Perceived Discrimination, Coping Strategies, Self-Esteem, and Their Interactions (N = 354)

Variable	B	SE B	β	sr^2	R^2	ΔR^2	$\Delta F(df\text{s})$
			Reflective coping				
Step 1					.413	.413	247.19***(1, 352)
Perceived stress	5.24	.33	.64***	.41			
Step 2					.438	.026	18.22***(1, 351)
Perceived discrimination (PD)	1.34	.33	.17***	.03			
Step 3					.493	.055	18.79***(1, 352)
Reflective coping	0.37	.34	.05	.00			
Self-esteem	−2.20	.36	−.27***	.05			
Step 4					.499	.006	1.37(1, 351)
PD × Reflective Coping	0.29	.33	.04	.00			
PD × Self-Esteem	−0.31	.31	−.04	.00			
Reflective Coping × Self-Esteem	0.52	.30	.07	.00			
Step 5					.500	.001	0.44(1, 351)
PD × Reflective Coping × Self-Esteem	−0.18	.28	−.03	.00			
			Suppressive coping				
Step 1					.413	.413	247.19***(1, 352)
Perceived stress	5.24	.33	.64***	.41			
Step 2					.438	.026	18.22***(1, 351)
PD	1.34	.33	.17***	.03			
Step 3					.516	.078	28.00***(1, 352)
Suppressive coping	1.54	.36	.19***	.03			
Self-esteem	−1.52	.36	−.19***	.03			
Step 4	0				.536	.020	4.85**(1, 351)
PD × Suppressive Coping	1.20	.35	.15***	.02			
PD × Self-Esteem	0.42	.33	.06	.00			
Suppressive Coping × Self-Esteem	−0.41	.28	−.06	.00			
Step 5					.536	.001	0.42(1, 351)
PD × Suppressive Coping × Self-Esteem	0.16	.25	.03	.00			
			Reactive coping				
Step 1					.413	.413	247.19***(1, 352)
Perceived stress	5.24	.33	.64***	.41			
Step 2					.438	.026	18.22***(1, 351)
PD	1.34	.33	.17***	.03			
Step 3					.506	.068	24.03***(1, 352)
Reactive coping	1.11	.34	.14**	.02			
Self-esteem	−1.92	.34	−.24***	.05			
Step 4					.515	.008	1.93(1, 351)
PD × Reactive Coping	0.48	.31	.06	.00			
PD × Self-Esteem	−0.00	.30	−.00	.00			
Reactive Coping × Self-Esteem	−0.45	.28	−.06	.00			
Step 5					.524	.010	7.09**(1, 351)
PD × Reactive Coping × Self-Esteem	0.73	.27	.11**	.01			

** $p < .01$.   *** $p < .001$.

able (i.e., the moderator) was one standard deviation below and one standard deviation above the mean for that variable. We also tested the statistical significance of each of these two slopes (Aiken & West, 1991; J. Cohen et al., 2003; Frazier et al., 2004), which represents the simple effect of the predictor variable at two levels of the second (moderator) variable. As can be seen in Figure 2, the result of a simple-effect analysis indicated that the positive relation between perceived discrimination and depressive symptoms was significant at a high level of suppressive coping (B = 2.08, β = .26, p < .001). However, the association between perceived discrimination and depressive symptoms was not statistically significant at a low level of suppressive coping (B = 0.27, β = .03, p > .05). These results indicate that Asian international students who tend to use suppressive coping are vulnerable to

depressive symptoms associated with perceived discrimination, whereas those who tend not to use suppressive coping are less negatively affected by perceived discrimination.

Reactive coping. In Step 3, reactive coping and self-esteem accounted for an additional 7% of the variance in depressive symptoms. The main effects of reactive coping and self-esteem on depressive symptoms were statistically significant. However, in Step 4, the block of 3 two-way interactions did not significantly predict depressive symptoms ($\Delta R^2 = .00$). In Step 5, the three-way interaction of Perceived Discrimination × Reactive Coping × Self-Esteem significantly predicted depressive symptoms ($\Delta R^2 = .01$). An R^2 value of .01 indicates a small effect size (J. Cohen, 1992). Moreover, the regression coefficient for the interaction of perceived discrimination, reactive coping, and self-esteem was

significant in predicting depressive symptoms even though the effect size ($sr^2 = .01$) was small (see Table 2).[3]

We used the same procedure described above to plot the three-way interactions. As illustrated in Figure 3A, among Asian international students who reported low levels of self-esteem, the association between perceived discrimination and depressive symptoms was significantly different from zero among students who tend to use high levels of reactive coping ($B = 1.11$, $\beta = .14$, $p < .05$), as well as those who use low ($B = 1.67$, $\beta = .21$, $p < .05$) levels of reactive coping. By contrast, the patterns of interaction were quite different for high self-esteem students (see Figure 3B). For these students, the association between perceived discrimination and depressive symptoms was significantly different from zero among those who used high levels of reactive coping ($B = 2.57$, $\beta = .32$, $p < .001$) but not among those students who used low levels of reactive coping ($B = 0.22$, $\beta = .03$, $p > .05$). These results indicate that Asian international students who reported high levels of self-esteem and low use of reactive coping were less vulnerable to depressive symptoms associated with perceived discrimination.[4]

Discussion

The general purpose of this study was to examine the interaction between three coping strategies (reflective, suppressive, and reactive) and levels of self-esteem (high vs. low) in predicting the impact of perceived discrimination on depression. The first hypothesis was supported by a positive association between perceived discrimination and depression even when perceived general stress was controlled. Specifically, the magnitude of the association between perceived general stress and perceived discrimination was small ($r = .20$; see Table 1), supporting the notion that perceived discrimination is a unique source of stress that is different from general stress (Harrell, 2000; Meyer, 2003). Moreover, this finding validates the conceptual argument (Harrell, 2000; Meyer, 2003) and empirical studies (Dion et al., 1992; Pieterse & Carter, 2007) for considering the role of discrimination separately from general stress. The positive association between perceived discrimination and depression is also consistent with the results found by Dion et al. (1992) with Chinese community members.
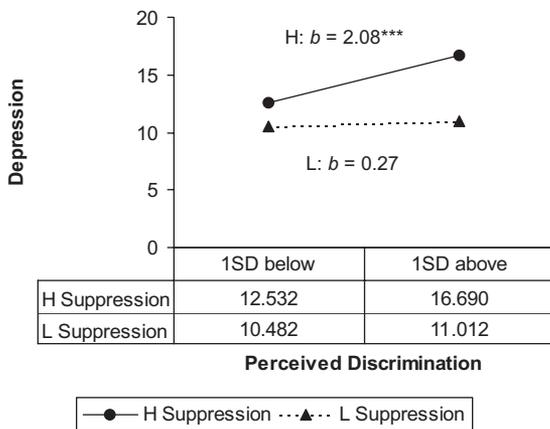

Figure 2. The interaction effect of perceived discrimination and suppressive coping on depressive symptoms. H = high; L = low. *** $p < .001$.
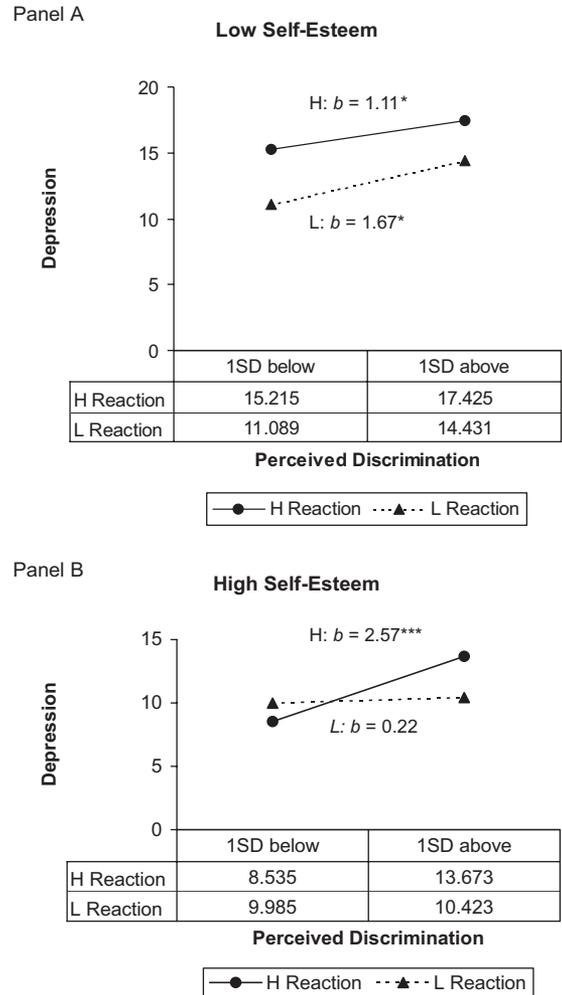

Figure 3. The interaction effects of perceived discrimination and reactive coping on depressive symptoms for (A) students with low (L) self-esteem versus (B) students with high (H) self-esteem. * $p < .05$. *** $p < .001$.

Therefore, this finding adds to the discrimination literature by expanding this line of research in a sample of Asian international students.

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[3] It is important to note that the pattern of the three-way interaction result was the same when we separated participants into two groups (i.e., East Asian [China, Taiwan, Hong Kong, and Korea] and South Asian [India]). However, a significant two-way interaction was found for those from East Asia but not for those from South Asia.

[4] Liang et al. (2007) found that Asian American female and male students used different strategies in coping with perceived racism. Therefore, we attempted to explore whether there were gender differences in the moderation effects of the three coping strategies and self-esteem on depressive symptoms. That is, we examined the 4 three-way interactions for each of the three coping strategies and self-esteem as a moderator in four separate regressions. No gender differences were found. Therefore, Asian international female and male students did not show different patterns of buffering effects of the coping strategies or self-esteem on the association between perceived discrimination and depressive symptoms in the present study.

Another significant finding was that high levels of suppressive coping were associated with a positive association between perceived discrimination and depressive symptoms. This result is consistent with models that emphasize the need to explore protective or risk factors in the relation between perceived discrimination and mental health outcomes (Clark et al., 1999; Meyer, 2003). These results are also consistent with the findings from Noh and Kaspar (2003), who found that the frequent use of forbearance coping (e.g., passive acceptance and avoidance) was linked to a strong association between perceived discrimination and depressive symptoms in Korean Canadian immigrants. Perhaps, due to the limited social resources and abilities to cope with discrimination among Asian international students, suppressive coping may appear to be a good way to avoid interpersonal conflict or hostility and push away depressed feelings. However, with the frequent use of suppressive coping to deal with perceived discrimination, the negative consequences of depressed feelings are likely to accumulate. Perhaps discrimination may be viewed as a form of rejection by others and thus instills feelings of shame in these students. In order to save face, which is an important Asian cultural value (Sheu & Fukuyama, 2007), Asian international students may keep feelings to themselves and not burden others with problems (Constantine et al., 2005; Heppner et al., 2006). Unfortunately, a suppressive coping strategy may accentuate their depressed feelings, particularly when the level of perceived discrimination is high.

In addition, there was a significant three-way interaction of perceived discrimination, reactive coping, and self-esteem in predicting depressive symptoms. This result supports Clark et al.'s (1999) implicit suggestion that the effect of general coping can vary by the level of other moderators (e.g., self-esteem). Specifically, there was a significant positive relation between perceived discrimination and depressive symptoms for low self-esteem students reporting either high or low use of reactive coping (see Figure 3A). When considering the significant effect of reactive coping among low self-esteem students,[5] the students who report *high* use of reactive coping are more vulnerable to depressive symptoms than are those who report *low* use of reactive coping in the face of high levels of discrimination. On the one hand, perhaps reacting impulsively may make the problems worse for Asian international students. With low self-esteem, these students may take the discrimination incidents personally, blame themselves, or feel powerless. Thus, reactive coping and low self-esteem together may interact to increase vulnerability for depressive symptoms. Therefore, it is not surprising that students with a combined high use of reactive coping and low self-esteem are the most vulnerable to depressive symptoms in the face of perceived discrimination. By contrast, perhaps students who engage in low reactive coping have decreased vulnerability to depressive symptoms because instead of having a strong emotional reaction to and thus magnifying the discrimination event, they have low emotional reaction to the event. However, students with low self-esteem among those with low reactive coping may still feel personally responsible for the experience of discrimination and increase their self-doubts (i.e., "I may cause the discrimination incidence to happen"), which is known to be associated with depressive symptoms (Dion et al., 1992).

As illustrated in Figure 3B, for high self-esteem students, there is a significant positive association between perceived discrimination and depressive symptoms for students who report high levels of reactive coping, whereas there is no association between perceived discrimination and depressive symptoms for students who report low levels of reactive coping. These results indicate that high use of reactive coping can put high self-esteem students at risk for depressive symptoms when faced with high levels of discrimination. Despite their high self-esteem, a tendency to have strong emotional reactions or reacting too quickly may make discrimination events more difficult to deal with for these students, which may in turn lead to an internal struggle or an interpersonal conflict. As we know, experiencing an interpersonal conflict is incongruent with the value of interpersonal harmony in Asian culture (Kim et al., 1999, 2005), thus it may add another source of pressure to perceived discrimination. Also, reactive coping has been linked to depressive symptoms in the coping literature (Heppner et al., 1995). Conversely, it seems that low use of reactive coping lessens the strength of the association between perceived discrimination and depressive symptoms for Asian international students, but only for those students with relatively high self-esteem. Perhaps low reactive coping serving as a protective factor is due to its congruency with the Asian cultural value of emotional self-control (Kim et al., 1999, 2005). Also, Asian international students with high self-esteem may have more psychological resources (e.g., they understand the external factors of discrimination and do not engage in self-blame) than do those with low self-esteem to protect them from the harmful impact of perceived discrimination. Lastly, reflective coping did not interact with perceived discrimination to predict depressive symptoms. Perhaps, because discrimination is chronic, unpredictable, and idiosyncratic, it is a specific type of stressor that is distinct from other forms of stress. Therefore, for this specific stressor, it may be hard to think ahead or prepare for it before it actually arises.

Limitations

There are several limitations in the present study that should be acknowledged. First, this study focused specifically on Asian international students. Generalizing the present results to other racial and ethnic minority populations or other international student groups should be done with caution until the current results are replicated in those groups. Second, symptom of depression was the variable chosen to represent negative psychological outcome. Depressive symptoms are important to examine because they are among the most common presenting concerns for international students seeking help from university counseling centers (Nilsson et al., 2004; Yi et al., 2003). Future studies should include other mental health outcomes (e.g., somatic complaints) that may also be relevant to this population. Third, it is possible that this sample may be biased because it represents only those students who are willing to participate or are interested in this topic. Therefore, more research is needed to replicate these results with samples recruited in other ways. Finally, the coping measure used in the present study was developed from an individualistic cultural per-

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[5] It is important to note that the main effect of reactive coping was significant in the low self-esteem condition in the final step after adding the three-way interaction term. These results can be obtained from Meifen Wei upon request.

spective. It is unknown whether a coping measure developed from a collectivistic cultural perspective would operate in the same way to buffer the association between perceived discrimination and depressive symptoms.

Future Research Directions

Despite these limitations, the present study contributes to our understanding of factors that may help reduce depressive symptoms associated with perceived discrimination among Asian international students in the United States. A future longitudinal study would allow researchers to examine this relation in terms of the impact of racial discrimination on subsequent psychological distress. Future studies may also want to include a daily diary method of assessing experiences of racial discrimination in order to reduce the errors associated with retrospective reports. For example, Swim, Hyers, Cohen, and Ferguson (2001) used a daily diary method to study women's experiences of gender discrimination. Moreover, the current results showed that students who had lived in the United States for a longer period of time reported higher levels of perceived discrimination. Wei et al. (2007) found different moderation patterns in buffering the relation between acculturative stress and depression for short versus long length of time in the United States among Chinese international students. Because perceived discrimination is a component of acculturative stress, future studies might examine the role that length of time in the United States plays in dealing with discrimination. Finally, some scholars have recently developed coping measures based on collectivistic cultural perspectives, such as the Collectivistic Coping Styles (Heppner et al., 2006), the Cross Cultural Coping Scale (Kuo, Roysircar, & Newby-Clark, 2006), and the Collectivistic Coping Style Measure (Moore & Constantine, 2005). Researchers may want to include coping strategies that are appropriate for collectivistic cultures in future studies. Such an assessment would make possible the examination of culturally specific coping strategies that may serve as protective factors above and beyond coping strategies developed from an individualistic perspective.

Implications for Counseling

Our results indicate that perceived discrimination is a unique stressor that contributes to depressive symptoms over and above perceived general stress. This suggests that counselors working with students who are members of a stigmatized group should carefully assess the role of perceived discrimination and the distress associated with it. Research findings from studies such as this one can be used to normalize students' experiences. Counselors can serve as a cultural broker or bridge to explain possible external factors (e.g., others' ignorance) related to discrimination. Counselors can serve as an advocate for students at a systemic level to reduce discrimination and thereby reduce its associated depressive symptoms. Counselors also can explore the coping strategies these students use to deal with discrimination and the role of self-esteem in their use of these coping strategies. For example, it might be helpful to explain to students the benefits and costs associated with the use of suppressive coping. Counselors also can pay attention to students' use of reactive coping, which may make the situation worse by creating an internal struggle or interpersonal conflict that is incongruent with the Asian value of emotional self-control or interpersonal harmony. These reactions may in turn get in the way of their daily functioning, even for those students who have high self-esteem. Finally, Asian international students may not be aware of the counseling services available on campus, may not be familiar with the specifics of the counseling process (Olivas & Li, 2006), and may perceive stigma related to help seeking (Flum, 1998). Some scholars have suggested alternative ways in helping international students (Pedersen, 1991). For example, counselors can help them to be aware of counseling services through new student orientation or other outreach programs, and bilingual counselors can be hired to promote Asian international students' utilization of counseling services.

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