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Minority Stress, Perceived Bicultural Competence, and Depressive Symptoms Among Ethnic Minority College Students

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Based on biculturalism theory (LaFromboise, Coleman, & Gerton, 1993), the present study examined the direct effect of perceived bicultural competence (PBC) on depressive symptoms, and PBC as a potential coping resource to moderate the association between minority stress and depressive symptoms. Participants were 167 Asian American, African American, and Latino/a American students at a predominantly White Midwest university. Results from a hierarchical regression analysis suggested that (a) minority stress was positively associated with depressive symptoms after controlling for perceived general stress, (b) PBC was negatively associated with depressive symptoms after controlling for perceived general stress and minority stress, and (c) the interaction between minority stress and PBC was significant in predicting depressive symptoms. Results from a simple effect analysis supported the hypothesis that a higher level of PBC buffers the association between minority stress and depressive symptoms. Furthermore, post hoc exploratory analyses of the components of PBC suggested that 2 components, Social Groundedness and Cultural Knowledge, may be especially important coping resources.

Keywords: perceived bicultural competence, minority stress, depressive symptoms, coping, ethnic minority college students

In a predominantly White university, yearly increases in ethnic minority student enrollment can give the impression that the institution welcomes these students. However, ethnic minority students on these campuses do not always feel welcomed and, in fact, often experience stress due to discrimination. Additionally, many may come from ethnic communities and high schools in which they were a majority. However, they become a distinct ethnic minority when they enter a predominantly White university (Pewewardy & Frey, 2002). Compared with the White students on a predominantly White campus, ethnic minority students are likely to experience stress related to being an ethnic minority because, for example, they are often the only ethnic minority student in a classroom, or they have no ethnic minority faculty mentors as role models (Hastings & Boone, 2009).

The term *stress* is used colloquially to refer to both causes of symptoms and the symptoms themselves. However, in social science research it is important to draw clear distinctions between (a) *stressors*, which are "events and conditions (e.g., losing a job, death of an intimate) that cause change and that require that the individual adapt to the new situation or life circumstance" (Meyer, 2003, p. 675); (b) *perceived stress*, the subjective experience of appraising the demands of a stressor as likely to exceed one's capacity to effectively respond (S. Cohen, Kamarck, & Mermelstein, 1983); and (c) *stress symptoms*, which are the negative physiological and mental health outcomes that result from the prolonged experience of stress. Whereas the level of stressors can be assessed with checklists of negative life events or daily hassles, the intensity of perceived stress must be assessed with a subjective measure of experience. *Perceived general stress* refers to the challenging experiences in daily life that people likely perceive as exceeding their coping capacity (S. Cohen et al., 1983).

All college students are likely to perceive a certain degree of general stress from time to time as they encounter stressors that seem to exceed their capacities to cope. However, *minority stress* refers to specific stress that is experienced as a result of one's identification with a group that is stigmatized and is the target of discrimination and prejudice (Meyer, 2003). For ethnic minority college students, perceptions of minority stress can be associated with, but are not limited to, interethnic difficulties (e.g., difficulty

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in making White friends), within-group conflicts (e.g., being viewed as "acting White"), achievement stress (e.g., feeling less intelligent or less capable than others, or the pressure of high expectations for college success from one's family), and the direct experience of racism and discrimination (Carter, 2007; Diemer, 2007; Smedley, Myers, & Harrell, 1993). Research has suggested that ethnic minority students in predominantly White universities experience not only the general stress that is common to all college students but also stress that is uniquely related to their minority status (Prillerman, Myers, & Smedley, 1989; Smedley et al., 1993). One empirical comparison reported that African American students at a predominantly White university campus experienced higher levels of minority stress than African American students at a historically Black university (Greer & Chwalisz, 2007).

In the theoretical models of minority stress described by Meyer (2003) and Carter (2007), stressors—depending on whether they are part of everyday life or particular to the experience of a minority group—lead to perceptions of general stress or minority stress, respectively. In the remainder of this article we drop "perceptions of" and use the less cumbersome terms *general stress* and *minority stress*, but it is important to remember that stress of either type is fundamentally a perception that results from appraisal of the stressor event. In the models proposed by Meyer and Carter, the complex process of appraising stressors is influenced by an array of personal factors such as internalized heterosexism or stage of racial identity development, which are beyond the scope of the present study. However, because (perceived) stress is the result of exposure to stressors and the subsequent appraisal process, when an individual reports high levels of stress, exposure to one or more stressors and a negative appraisal of the events can both be inferred. Therefore, the starting point for the present study is the constructs of general stress and minority stress as defined by Meyer and Carter.

Both theory (Harrell, 2000) and research (Pieterse & Carter, 2007) point to the importance of examining minority stress, which is distinct from perceptions of general stress because each has its own unique impact on ethnic minority individuals' mental health. Although general stress has been studied in the context of psychological functioning among ethnic minority groups, researchers have pointed out that assessments of general stress do not include the additional specific stress experienced by ethnic minority persons (Slavin, Rainer, McCreary, & Gowda, 1991). Thus, on a predominantly White college campus, stress symptoms evident in ethnic minority students may be caused by the same stress experienced by all students, but they may be compounded by specific stress related to one's minority status (Carter, 2007).

A growing body of research indicates that minority stress has a direct negative impact on ethnic minority students' psychological well-being and college retention. For example, minority stress was negatively related to self-esteem and positively related to psychological distress among Asian Americans (Liang, Li, & Kim, 2004). Among Hispanic Americans, minority stress was also negatively related to self-esteem and positively related to depressive symptoms (Abber, 2002). Moreover, minority stress in the form of perceived racism was related to low academic retention among African American (Neblett, Philip, Cogburn, & Sellers, 2006) and Latino/a students (Fry, 2004). However, empirical results are mixed on the question of whether minority stress is a unique contributor to negative mental health outcomes. On one hand, minority stress explained significant variance in psychological distress beyond general life stresses among ethnic minority students (Smedley et al., 1993) and beyond that accounted for by college role stresses, social class, and gender among Latino/a college students (Saldana, 1994). Racial discrimination stress predicted depression after controlling for general stress and perceived discrimination among Asian Americans (Wei, Heppner, Ku, & Liao, 2010). On the other hand, in Taylor and Turner's (2002) study, perceived discrimination (a part of minority stress) failed to predict depression after controlling for general life stress among African Americans.

When there are inconsistent findings in the associations between a predictor and an outcome variable across studies, one possible explanation may be the influence of a moderator (Frazier, Tix, & Barron, 2004). An example of such a moderator is a coping resource that acts as a buffering variable. Perhaps available coping resources allow some students to maintain relatively positive mental health despite the negative experience of minority stress. The participants in some other studies may have lacked these coping resources. Thus, in the current study, we proposed that one possible coping resource, perceived bicultural competence (more detail below), may serve as an explanation for inconsistent findings concerning the association between minority stress and mental health. Equally important, if this study provides empirical evidence to support perceived bicultural competence as a buffering variable, perhaps future interventions can increase perceived bicultural competence as a coping resource for ethnic minority students.

The Direct and Buffering Effects of Perceived Bicultural Competence

LaFromboise, Coleman, and Gerton's (1993) biculturalism theory proposes the concept of *bicultural competence*, which refers to the capacity to "live effectively, and in a satisfying manner, within two groups without compromising one's sense of cultural identity" (p. 404). On the basis of their review of the literature, they concluded that bicultural competence consists of the following six distinct components: (a) knowledge of cultural beliefs and values, (b) positive attitudes toward both majority and minority groups, (c) bicultural beliefs (e.g., the belief that a person can function effectively within two cultural groups without compromising one's cultural identity), (d) communication ability, (e) role repertoire (e.g., having culturally appropriate behaviors), and (f) a sense of being grounded (e.g., having established social networks within both cultural groups). Moreover, LaFromboise et al. argued that perceived bicultural competence is a critical component in the psychological well-being of individuals who attempt to function in two or more cultural environments. For example, on college campuses, ethnic minority students often need to engage in activities and interactions with people from the majority culture as well as the culture of their family and community. A sense of perceived competence in their abilities to function well in two or more cultures may be positively related to their psychological well-being. David, Okazaki, and Saw (2009) empirically tested this link

and found that perceived bicultural competence[1] was positively associated with facets of psychological well-being, such as life satisfaction and decreased depressive symptoms among ethnic minority students.

In addition to the direct beneficial effect, perceived bicultural competence may also serve to buffer the association between minority stress and mental health outcomes. Individuals with a higher level of perceived bicultural competence may be less likely to perceive majority and ethnic minority cultures as being mutually exclusive or conflicting (Benet-Martinez, Leu, Lee, & Morris, 2002). They may integrate both cultures in their daily lives, show behavioral competence in both cultures, and switch their behaviors depending on the cultural demands of the situation (Birman, 1994). Hence, when they perceive minority stress, their knowledge of both cultures may help them interpret the values of the majority culture without compromising their own ethnic values. This flexibility in switching their behaviors or perspectives can assist them in generating effective solutions for reducing their stress, and in turn may decrease the likelihood of feeling depressed. Furthermore, they may feel at ease and develop strong, supportive ties with people from both cultures that further reduce vulnerability to depressive symptoms.

A *buffering effect* is shown by a particular pattern of statistical moderation. The level of the buffering variable is associated with the strength of the relation between two other variables, typically a source of stress and symptoms of negative mental health outcomes. That is, at increasingly high levels of the buffering variable, the correlation between minority stress and outcomes becomes progressively weaker. Buffering effects are most often observed when the buffering variable confers specific coping resources that are well-matched to the demands of a particular stressful situation (S. Cohen & Wills, 1985; Cutrona & Russell, 1987). In the present study, we expected that perceived bicultural competence would be a coping resource in buffering the association between minority stress and depressive symptoms.

Until very recently, studies like the current investigation were not possible due to the lack of a valid measure of perceived bicultural competence. Fortunately, David et al. (2009) developed a scale to measure this concept derived from the six dimensions of bicultural competence proposed by LaFromboise et al. (1993). On the basis of an exploratory factor analysis of the item pool they developed, David et al. found six factors that correspond to the same six dimensions in LaFromboise et al.'s theory. Additionally, results from a confirmatory factory analysis generally supported the six-factor structure. More detailed psychometric information is provided in the Method section below.

Using this new scale, we examined three hypotheses in this study. First, in keeping with previous research (e.g., Pieterse & Carter, 2007; Slavin et al., 1991), we expected that minority stress would be positively associated with depressive symptoms after controlling for general stress. Second, we expected that perceived bicultural competence would be negatively associated with depressive symptoms after controlling for general stress and minority stress. These first two hypotheses involve direct effects, whereas our third hypothesis involves an interaction effect. Consistent with a buffering model, we expected a statistically significant interaction, such that the strength of the positive association between minority stress and depressive symptoms would be much weaker at higher values of perceived bicultural competence. Conversely, at lower levels of perceived bicultural competence, the association between minority stress and depressive symptoms was expected to be much stronger.

Method

Participants

At a predominantly White public, medium-sized university in the Midwest United States, self-identified ethnic minority students were recruited from introductory psychology and introduction to communication studies courses. These courses meet general education requirements in the social science domain for all students. Therefore, recruiting participants from these courses was likely to result in a sample representing a broad range of majors and colleges. Of the 167 students from this sample, 37% majored in liberal arts and sciences, 17% in business, 16% in human sciences, 10% in design, 9% in engineering, 2% in agricultural and life sciences, and the rest had either not declared a major or did not respond to this question.[2] Of these students, 92 (55%) reported being enrolled as freshmen, 46 (28%) as sophomores, 19 (11%) as juniors, and 10 (6%) as seniors. They included 79 (47%) men and 88 (53%) women. Regarding ethnicity, 57 (34%) labeled themselves Asian American, 54 (32%) as African American, and 56 (34%) as Latino/a American. For self-reported socioeconomic status (SES), 81 (49%) reported they were middle class, followed by 38 (23%) lower middle class, 36 (22%) upper middle class, 6 (4%) lower class, and 4 (2%) upper class. Two students did not report their SES. Their mean age was 19.20 years ($SD = 1.95$, range = 18–39). Finally, concerning generational status, among the 113 students who did not label themselves as African American, 8% identified themselves as 1st generation ("you were born outside of the U.S. and moved to the U.S when you were an adult"), 20% as 1.5 generation ("you were born outside of the U.S. but moved here when you were a child or adolescent"), 48% as 2nd generation ("you were born in the U.S.; one or both parents born outside of the U.S."), and 24% as 3rd generation ("you and both of your parents were born in the U.S."). Among the 54 African American students, 4% identified themselves as 1.5 generation, 11% as 2nd generation, and 85% as 3rd generation or above. See the Procedure section below for steps taken to ensure that none of

[1] David et al. (2009) used the term *bicultural self-efficacy* to describe this construct and the scale they developed to assess it. However, we believe *competence*, the original term used by LaFromboise et al. (1993) is a broader term that includes perceptions of one's social context and expectations about favorable outcomes that are also tapped by this scale.

[2] A comparison of the proportion of majors in our sample and the general university population suggested there were significant overall differences, $\chi^2(5, N = 167) = 38.85$, $p < .001$. Specifically, examination of the adjusted standardized residuals suggested that majors in liberal arts and sciences were overrepresented in our sample (37% vs. 27%, $p < .001$) and majors in engineering (9% vs. 22%, $p < .001$) and agricultural and life sciences (2% vs. 14%, $p < .001$) were underrepresented. No other differences in proportion of majors were found. Moreover, the same examination for sex also found an overall significant difference between men and women, $\chi^2(1, N = 167) = 6.40$, $p = .02$. Specifically, examination of the adjusted standardized residuals suggested that female students were overrepresented in our sample (53% vs. 43%, $p = .01$).

the participants were international students residing temporarily in the United States.

Aiken and West (1991) provided a table indicating the sample size needed to achieve a power of .80 in a multiple regression interaction analysis for various combinations of parameters. Previous research (S. Cohen et al., 1983; David et al., 2009; Liang et al., 2004) reporting bivariate correlations of the same measures used in this study suggested that we should expect a substantial R^2 for our main effects, a large correlation between the two variables in the interaction, and a reliability of .90 for the measures we selected. Thus, of the parameters shown by Aiken and West (1991, p. 164, Table 8.5), we chose an $R^2 = .20$ for main effects, $r = .50$ for correlation between the interaction variables, and measurement reliability of .80 as most similar to our expected values. With a two-tailed alpha of .05 at these parameters, a sample of $N = 108$ is needed to achieve power of .80 for a medium interaction effect (i.e., $\Delta R^2 = .13$), whereas a sample of $N = 752$ is needed for a small interaction effect (i.e., $\Delta R^2 = .02$). Unfortunately, no intermediate effect sizes are presented in Aiken and West's table, and there are no entries for a reliability of .90, which our estimates exceeded. Interpolating the available values, we concluded that our sample of $N = 167$ afforded a power of .80 to detect an interaction effect smaller than $\Delta R^2 = .10$, but not as small as $\Delta R^2 = .02$.

Institutional Setting

Institutional data show that enrollment includes 2.6% Asian Americans, 2.8% African Americans, 2.8% Latino/a Americans, and 91% White non-Hispanic students. These data certainly qualify the institution as "predominantly White." Moreover, the nonsignificant result from a chi-square analysis, $\chi^2(2, N = 167) = 0.04$, $p = .98$, indicated that the proportion of each of the three ethnic minority groups in our sample is comparable to the proportion of these groups in the university.

Instruments

Perceived general stress. The Perceived Stress Scale (S. Cohen et al., 1983) was used to measure participants' general perception of stress. The Perceived Stress Scale is a 10-item self-report measure that assesses the degree to which situations in one's life are perceived as stressful during the past month. A sample item is "How often have you felt difficulties were piling up so high that you could not overcome them?" In items like these, "difficulties" implies exposure to stressors, and "you could not overcome them" implies a negative appraisal process. Items are rated on a 5-point scale ranging from 0 (*never*) to 4 (*very often*). The total scores range from 0 to 40, with a higher score indicating a greater level of perceived general stress. In this study, the coefficient alpha was .87. Pieterse and Carter (2007) reported a coefficient alpha of .76 and evidence of construct validity through a positive association with psychological distress among African American students and community residents.

Minority stress. Minority stress was measured by the Minority Status Stress Scale (Smedley et al., 1993). The Minority Status Stress Scale is a 37-item measure that assesses participants' perceived stress concerning experiences associated with minority status. The Minority Status Stress scale includes five subscales, but only the total scale score was used in this study. Sample items are "Being treated rudely or unfairly because of my race" and "Having to always be aware of what White people might do." The intensity of stress perception for each item is rated on a 6-point partially anchored scale ranging from 0 (*does not apply*) to 5 (*extremely stressful*). The total scores range from 0 to 185, with a higher score indicating a higher level of perceived minority stress. The internal reliability (coefficient alpha) for the total scale was .93 among Asian American undergraduates (Liang et al., 2004) and .92 for African American undergraduates (Greer & Chwalisz, 2007). The coefficient alpha was .92 in the present study. Construct validity was supported by positive associations with racism-related stress and psychological distress among Asian American students (Liang et al., 2004) and with perceived general stress among African American college students (Greer & Chwalisz, 2007).

Perceived bicultural competence. Perceived bicultural competence was measured with the Bicultural Self-Efficacy Scale (David et al., 2009). The Bicultural Self-Efficacy Scale is a 26-item measure used to assess individuals' perceived bicultural competence in their heritage culture and mainstream culture. It includes six subscales: Social Groundedness (seven items; a sample item is "I have strong ties with mainstream Americans as well as people from the same heritage culture as myself"), Communication Ability (four items; e.g., "I can communicate my ideas effectively to both mainstream Americans and people from the same heritage culture as myself"), Positive Attitudes Toward Both Groups (four items; e.g., "I have generally positive feelings about both my heritage culture and mainstream American culture"), Knowledge of Cultural Beliefs and Values (four items; e.g., "I am knowledgeable about the values important to mainstream Americans as well as to my cultural group"), Role Repertoire (three items; e.g., "I can choose the degree and manner by which I affiliate with each culture"), and Bicultural Beliefs (four items; e.g., "It is possible for an individual to have a sense of belonging in two cultures without compromising his or her sense of cultural identity"). Participants were asked to rate items on a 9-point partially anchored Likert-type scale, from 1 (*strongly disagree*), 3 (*disagree*), 5 (*neutral*), 7 (*agree*), to 9 (*strongly agree*). The total scores range from 26 to 234, with a higher score indicating a higher level of perceived bicultural competence. The coefficient alphas reported by David et al. (2009) compared with those in this study were .94 versus .92 for the total score, .91 versus .89 for Social Groundedness, .79 versus .68 for Communication Ability, .89 versus .80 for Positive Attitudes Toward Both Groups, .80 versus .80 for Knowledge of Cultural Beliefs and Values, .69 versus .46 for Role Repertoire, and .77 versus .66 for Bicultural Beliefs, respectively. Only the total scale score was used for the main hypothesis in this study. Subscales with coefficient alphas greater than .80 were used for the post hoc analyses for exploratory purposes (see more detail below). Confirmatory factor analyses conducted by the scale's developers based on a sample of $N = 164$ suggested a moderate fit of the six-subscale structure to the data (comparative fit index [*CFI*] = .90, parsimony normed fit index [*PNFI*] = .63, root-mean-square error of approximation [*RMSEA*] = .07, and standardized root-mean residual [*SRMR*] = .06). Evidence of construct validity was provided by positive associations with collective self-esteem, ethnic identity, and enculturation among ethnic minority college students (David et al., 2009).

Depressive symptoms. Depressive symptoms were measured with the Center for Epidemiological Studies—Depression Scale

(CES–D; 20 items; Radloff, 1977). A sample item is "I felt that everything I did was an effort." Participants were asked how often they experienced depressive symptoms during the past week using a 4-point scale ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*). The total scores range from 0 to 60, with a higher score indicating a greater amount of depressive symptoms. Scores equal to or greater than 16 represent a significant risk for depression (Mulrow et al., 1995), and this standard cutoff score of 16 and above yields a sensitivity of .95 (i.e., probability of a positive test among patients with major depression) and specificity of .70 (i.e., probability of a negative test among patients without major depression) in predicting major depression (Thomas, Jones, Scarinci, Mehan, & Brantley, 2001). The CES–D has been used with ethnic minority groups (e.g., David et al., 2009; Torres & Rollock, 2007; Ying, 1988). The coefficient alpha was .91 in the present study and .89 in David et al.'s (2009) study of ethnic/racial minority college students. Evidence of construct validity was provided by a negative association with active coping among Hispanic Americans (Torres & Rollock, 2007) and by positive associations with college challenges among Chinese Americans (Ying, Lee, & Tsai, 2004), anxiety and avoidant coping among Mexican American college students (Crockett et al., 2007), anxiety and perceived racial discrimination among Vietnamese American college students (Lam, 2007), and depression as assessed by the Depression subscale from the Symptom Checklist–90 (Derogatis, Lipman, & Covi, 1973) among Korean Americans (Noh, Avison, & Kaspar, 1992).

Procedure

A list of Asian American, Latino/a American, and African American students who took introductory psychology and introduction to communication studies courses was obtained from the university registrar's office. International students were excluded in this solicitation. We contacted potential participants via e-mail to invite them to participate in this study. Similar to students at other universities that use an undergraduate pool for research, these students can make choices about what study they would like to participate in from a list of studies that are posted online. These students signed up to participate in this study with a specific password that was provided in the invitation e-mail. Participants were told in the informed consent form that this study was related to adjustment among ethnic minority students and that it would take approximately 20 to 40 min to complete. The anonymity of each participant's response was assured. Data were collected in small groups of two to 10 students during one of several prearranged data collection times. Students received extra credit toward their course grade as an incentive for their participation.

Results

Preliminary Analyses and Descriptive Statistics

According to J. Cohen, Cohen, West, and Aiken (2003, pp. 117–141) and Tabachnick and Fidell (2007, pp. 125–127), data need to meet regression assumptions of linearity, homoscedasticity, and normality before a regression analysis may be conducted. Results indicated that there were no violations of the assumptions of linearity or residual homoscedasticity. The skew of residuals was 0.35 ($Z = 1.87$, $p = .06$), and the kurtosis of residuals was –0.49 ($Z = 1.32$, $p = .19$). These nonsignificant results indicated that there was no statistically significant departure from normality.

Next, we checked whether the dependent variable (i.e., depressive symptoms) significantly covaried with any of the measured demographic variables. Five analyses of variance (ANOVAs) were conducted to test whether depressive symptoms varied as a function of participants' sex, ethnic identification, generation, SES, and year in school. The results indicated that there were no significant main effects of sex, $F(1, 165) = 0.05$, $p = .83$; ethnic identification, $F(2, 164) = 0.06$, $p = .94$; generation, $F(7, 159) = 1.23$, $p = .29$; SES, $F(4, 160) = 0.73$, $p = .57$; or year in school, $F(3, 163) = 1.75$, $p = .16$. Also, age was not significantly correlated with depressive symptoms ($r = –.03$, $p = .67$). Because the score for depressive symptoms did not vary as a function of these demographic variables, none were used as covariates in the subsequent regression analysis.[3] Means, standard deviations, and zero-order bivariate correlations are presented in Table 1. The results indicated that minority stress was positively associated with depressive symptoms and that perceived bicultural competence was negatively associated with depressive symptoms.

Tests of Hypotheses

Before performing a hierarchical regression, we standardized the predictor and moderator in order to reduce multicollinearity (Aiken & West, 1991; Frazier et al., 2004). In Step 1 of the hierarchical regression, general stress was entered as a covariate. In Step 2, minority stress was entered to examine its main effect on depressive symptoms after controlling for general stress. In Step 3, perceived bicultural competence was entered to examine its main effect on depressive symptoms after controlling for general stress and minority stress. Finally, the product of minority stress and perceived bicultural competence was entered in Step 4 to examine the effect of their interaction on depressive symptoms. Significance of the interaction effect is tested by examining the increment in R^2 at this final step of the hierarchical regression.

Table 2 shows that in Step 1 of this analysis, general stress accounted for 52% of the variance in depressive symptoms. In Step 2, minority stress added a significant increment in predicting depressive symptoms ($\Delta R^2 = .03$, $p = .001$), after controlling for general stress. Thus, the results of Step 2 supported our first hypothesis. In Step 3, perceived bicultural competence added a significant increment in predicting depressive symptoms ($\Delta R^2 = .02$, $p = .01$), after controlling for perceived general stress and minority stress. The regression coefficient was negative; thus, our second hypothesis was also supported. Finally, in Step 4, the term representing the two-way interaction accounted for an additional 2% of variance in depressive symptoms ($\Delta R^2 = .02$, $p = .01$).

[3] Five multivariate analyses of variance (MANOVAs) were conducted to test whether the other three main variables (i.e., general stress, minority stress, and bicultural competence) varied as a function of the five demographic variables (i.e., sex, ethnic identification, generation, SES, and year in school). A p value of .01 (i.e., .05/5 = .01) was used for multiple analyses. No significant results were found for sex, $F(3, 145) = 1.46$, $p = .23$; ethnic identification, $F(6, 292) = 2.58$, $p = .02$; generation, $F(21, 441) = 1.19$, $p = .28$; SES, $F(12, 441) = 1.45$, $p = .14$; or year in school, $F(9, 441) = 1.66$, $p = .10$.

Table 1
Means, Standard Deviations, and Correlations Among Variables

Variable	*M*	*SD*	1	2	3	4
1. General stress (PSS)	17.41	6.48	—			
2. Minority stress (MSS)	80.07	25.95	.31***	—		
3. Perceived bicultural competence (BSE)	172.51	26.47	−.15	−.13	—	
4. Depressive symptoms (CES–D)	16.66	10.63	.72***	.39***	−.25**	—

Note. $N = 167$. Higher scores indicated a higher level of general stress, minority stress, perceived bicultural competence, and depressive symptoms. PSS = Perceived Stress Scale; MSS = Minority Stress Scale; BSE = Bicultural Self-Efficacy Scale; CES–D = Center for Epidemiological Studies—Depression Scale.
** $p < .01$. *** $p < .001$.

To investigate the precise nature of this interaction, we followed the recommendation of J. Cohen et al. (2003) for plotting the interaction at points 1 *SD* below and above the mean of the predictor variable (i.e., minority stress) and the moderator variable (i.e., perceived bicultural competence). We also conducted a simple effect analysis to examine each of the simple slopes (Aiken & West, 1991; J. Cohen et al., 2003). Results of the simple effect analysis shown in Figure 1 indicate that the association between minority stress and depressive symptoms was not statistically significant at a high level of perceived bicultural competence ($b = 0.29$, $\beta = .03$, $p = .74$). However, the positive relation between minority stress and depressive symptoms was significant at a low level of perceived bicultural competence ($b = 3.05$, $\beta = .27$, $p < .001$). These results provide strong support for our third hypothesis that perceived bicultural competence buffers the association between minority stress and depressive symptoms. It is important to note that in our sample, 16% of the students scored 1 *SD* above the mean for bicultural competency. Thus, a substantial portion of our sample actually possessed a high level of perceived bicultural competence, depicted by the dashed line in Figure 1.

Post Hoc Exploratory Analyses

Finally, although our main interest was in the overall concept of bicultural competence, we decided to conduct exploratory analyses to investigate the relative strength of buffering effects of its individual components. We reasoned that for the purpose of eventually developing an intervention, it would be very important to know whether only some of the components of bicultural competence and not others exhibit a buffering effect. Table 3 shows correlations among the six components and depressive symptoms. Aiken and West (1991, p. 164) demonstrated that statistical power to detect a significant interaction drops off sharply as the reliability of the component variables in the interaction decrease. Consequently, to avoid Type II error and due to the relatively modest sample size in this study, we decided not to test Bicultural Self-Efficacy subscales with a coefficient alpha < .80. As reported in the Method section, coefficient alphas were .80 or greater for the subscales Social Groundedness, Positive Attitudes Toward Both Groups, and Knowledge of Cultural Beliefs and Values. Therefore, only these three subscales were used for the exploratory analyses. Table 3 also shows that only one of the correlations between pairs of subscales was > .70, and only two others were equal to .60, suggesting that the six subscales do assess different constructs.

In Table 4, we omitted the results for Steps 1 and 2 because they are identical to the results reported in Table 2. In the top panel of Table 4, Step 3 shows that social groundedness added a significant increment in predicting depressive symptoms ($\Delta R^2 = .01$, $p = .026$), and Step 4 shows that its buffering effect (i.e., interaction

Table 2
Hierarchical Multiple Regression Analysis Predicting Depressive Symptoms From Minority Stress and Perceived Bicultural Competence

Variable	*B*	*SE B*	β	ΔR^2	ΔF	*df*
Step 1				.52	180.27***	1, 165
General stress	7.62	0.57	.72***			
Step 2				.03	10.54**	1, 164
General stress	7.03	0.58	.67***			
Minority stress	2.00	0.62	.18**			
Step 3				.02	6.60*	1, 163
General stress	6.86	0.58	.65***			
Minority stress	1.86	0.61	.17**			
Perceived bicultural competence	−1.51	0.59	−.13*			
Step 4				.02	6.14*	1, 162
General stress	6.90	0.57	.65***			
Minority stress	1.67	0.60	.15**			
Perceived bicultural competence	−1.52	0.58	−.14**			
Minority Stress × Perceived Bicultural Competence	−1.38	0.56	−.13*			

Note. $N = 167$. R^2 for final model = .58, $F(4, 162) = 56.91$, $p < .001$.
* $p < .05$. ** $p < .01$. *** $p < .001$.

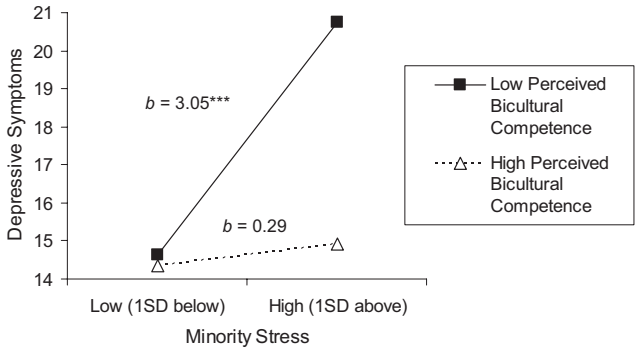


Figure 1. The interaction effect of minority stress and perceived bicultural competence on depressive symptoms. *** $p < .001$.

with minority stress) also added an incremental 1% of variance in predicting depressive symptoms ($\Delta R^2 = .01$, $p = .027$). This significant interaction was followed with the same procedure to examine simple effects described previously. Results are shown in Figure 2. Consistent with a strong buffering effect, at a high level of social groundedness, minority stress was not significantly associated with depressive symptoms. However, at low levels of social groundedness, this association was significant.

The middle panel of Table 4 shows a somewhat different pattern for positive attitudes toward both groups. This aspect of perceived bicultural competence added a significant increment in predicting depressive symptoms as a direct effect ($\Delta R^2 = .01$, $p = .045$). However, at Step 4 the interaction term failed to predict a significant additional increment in variance. Finally, Step 3 in the bottom panel of Table 4 shows that knowledge of cultural beliefs and values did not exhibit a significant direct effect, but Step 4 shows a significant moderation effect ($\Delta R^2 = .02$, $p = .009$). Moreover, the analysis of simple slopes shown in Figure 3 indicates that the association between minority stress and depressive symptoms was not statistically significant at a high level but was significant at a low level of knowledge of cultural beliefs and values. Thus, of the three components tested, two—social groundedness and knowledge of cultural beliefs and values—demonstrated strong buffering effects.

The mean score of 16.66 for the CES–D in our sample was higher than the cutoff point of 16 for serious depressive symptoms, and 44% of our sample reported scores above this cutoff. Therefore, we compared our data with all other reports of CES–D scores for nonclinical college student samples that we could locate. Our mean was higher (Cohen's $d = 0.49$) than what Torres (2009) reported for Latino/a Americans in a Midwestern university ($M = 11.98$) but was similar to the mean David et al. (2009) reported for African Americans in a Midwestern university ($M = 18.30$, Cohen's $d = -0.18$) and similar to the mean Ying, Lee, and Tsai (2007) reported for Chinese Americans in a Western university ($M = 17.47$, Cohen's $d = -0.01$). Our mean is considerably lower than those reported by David et al. (2009) for Asian Americans ($M = 22.65$, Cohen's $d = -0.58$) and Latino/a Americans in a Midwestern university ($M = 21.75$, Cohen's $d = -0.50$), as well as the mean Lam (2007) reported for Vietnamese Americans in a Western university ($M = 22.48$, Cohen's $d = -0.61$). This range of effect sizes indicates that our sample is approximately in the middle of the range of CES–D scores reported for other samples of ethnic minority college students.

We noted that bicultural competency was not significantly related to minority stress in this sample. It is likely that students of color experience minority stress during their initial arrival to a predominantly White campus, but bicultural competence takes much longer to develop and, when it develops, it will still take some time before these competencies translate into skills that help reduce the experience of minority stress. To explore this possibility, we calculated the correlation between bicultural competency and minority stress scores separately for freshmen ($n = 92$), sophomores ($n = 47$), and juniors and seniors combined ($n = 28$). The correlations were –.05, –.07, and –.35, respectively. These findings fit a model in which the ability of ethnic minority students to use bicultural competency as a coping resource grows year by year. A less benign interpretation, given that these are cross-sectional data, is that students who were unable to use bicultural competency to cope with minority stress dropped out of this university year by year.

Discussion

Each of the three hypotheses in the present study was supported by our data. Consistent with our first hypothesis, after controlling for the variance due to general stress, minority stress added an incremental 3% of variance in predicting depressive symptoms (see Table 2, Step 2). This result is consistent with previous research regarding the negative impact of minority stress (Saldana, 1994; Smedley et al., 1993). The magnitude of this effect is very similar to the 4% reported by Pieterse and Carter (2007) among

Table 3
Means, Standard Deviations, and Correlations Among Six Subscales of Perceived Bicultural Competence and Depressive Symptoms

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. Social Groundedness	46.20	9.42	—						
2. Communication Ability	23.90	6.67	.56***	—					
3. Positive Attitudes Toward Both Groups	28.10	5.00	.73***	.38***	—				
4. Knowledge of Cultural Beliefs and Values	26.40	5.44	.60***	.58***	.53***	—			
5. Role Repertoire	27.56	4.22	.58***	.42***	.56***	.47***	—		
6. Bicultural Beliefs	26.88	4.87	.58***	.36***	.60***	.34***	.50***	—	
7. Depressive symptoms (CES–D)	16.66	10.63	−.32***	−.16*	−.26**	−.09	−.18*	−.17*	—

Note. $N = 167$. CES–D = Center for Epidemiological Studies—Depression Scale.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4
Hierarchical Multiple Regression Analyses Predicting Depressive Symptoms From Minority Stress and Three Components of Perceived Bicultural Competence

Variable	*B*	*SE B*	β	ΔR^2	ΔF	*df*
Social Groundedness[a]						
Step 3				.01	5.02*	1, 163
General stress	6.78	0.58	.64***			
Minority stress	1.76	0.62	.16**			
Social groundedness	−1.29	0.58	−.12*			
Step 4				.01	4.97*	1, 162
General stress	6.72	0.58	.64***			
Minority stress	1.66	0.61	.15**			
Social groundedness	−1.34	0.57	−.13*			
Minority Stress × Social Groundedness	−1.15	0.52	−.12*			
Positive Attitudes Toward Both Groups[b]						
Step 3				.01	4.07*	1, 163
General stress	6.89	0.58	.65***			
Minority stress	1.75	0.62	.18**			
Positive attitudes toward both groups	−1.15	0.57	−.11*			
Step 4				.01	2.59	1, 162
General stress	6.90	0.58	.66***			
Minority stress	1.71	0.62	.15***			
Positive attitudes toward both groups	−1.09	0.57	−.10			
Minority Stress × Positive Attitudes Toward Both Groups	−0.93	0.58	−.08			
Knowledge of Cultural Beliefs and Values[c]						
Step 3				.01	1.97	1, 163
General stress	7.00	0.58	.66***			
Minority stress	2.02	0.61	.18**			
Knowledge of cultural beliefs and values	−0.78	0.56	−.07			
Step 4				.02	6.90*	1, 162
General stress	7.09	0.57	.67***			
Minority stress	1.87	0.61	.17**			
Knowledge of cultural beliefs and values	−0.82	0.55	−.08			
Minority Stress × Knowledge of Cultural Beliefs and Values	−1.39	0.53	−.14**			

Note. $N = 167$. Steps 1 and 2 are omitted because the analyses and results are the same as Steps 1 and 2 in Table 2. Social Groundedness, Positive Attitudes Toward Both Groups, and Knowledge of Cultural Beliefs and Values are three subscales of the Bicultural Self-Efficacy Scale.
[a] R^2 for final model = .58, $F(4, 162) = 55.33$, $p < .001$. [b] R^2 for final model = .57, $F(4, 162) = 53.43$, $p < .001$. [c] R^2 for final model = .57, $F(4, 162) = 54.68$, $p < .001$.
* $p < .05$. ** $p < .01$. *** $p < .001$.

African American men and Wei et al. (2010) among Asian Americans. This shared variance must be considered in the context of the high levels of depressive symptoms evident in our sample, with 44% scoring above the proposed cutoff score of 16 on the CES–D suggested by Mulrow et al. (1995). A higher cutoff score of 34 for the CES–D has been suggested as an even more stringent criterion for screening moderately to severely depressed college students (Santor, Zuroff, Ramsay, Cervanted, & Palacios, 1995). In our

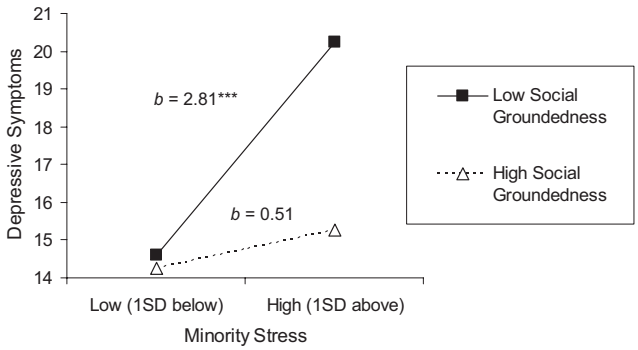


Figure 2. The interaction effect of minority stress and social groundedness on depressive symptoms. *** $p < .001$.

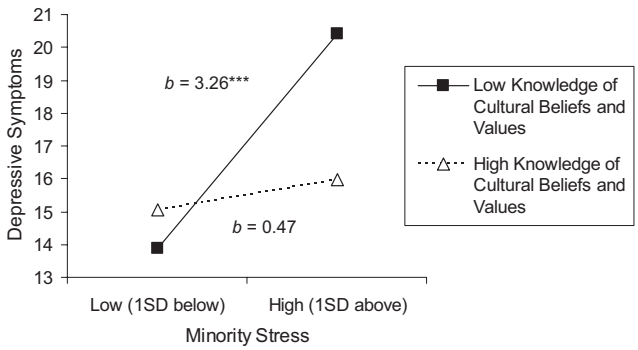


Figure 3. The interaction effect of minority stress and knowledge of cultural beliefs and values on depressive symptoms. *** $p < .001$.

sample, 10.2% of the students exceeded a score of 34. That proportion is double the 5.1% reported above this cutoff in a study of Caucasian students in a predominantly White, public, medium-sized, Midwestern university (Mellin, 2008). Thus, our findings support a theoretical model that ethnic minority students may indeed experience a distinct stress, namely, minority stress, which is uniquely different from the general stress experienced by all students (Carter, 2007; Harrell, 2000; Meyer, 2003). Our result points to the challenges faced by ethnic minority students on a predominantly White campus. The unique minority stress can include a broad range of stressful experiences, such as difficulties making White friends, feeling pressured to show loyalty to one's own ethnic group, institutional racism, coping with others' low academic expectations, and feeling a need to prove oneself to others.

Our second hypothesis predicted that perceived bicultural competence would be negatively associated with depressive symptoms after controlling for general stress and minority stress. Table 1 shows that perceived bicultural competence was significantly negatively correlated with depressive symptoms, and Table 2 shows that it added an additional 2% of the variance in predicting depressive symptoms beyond general stress and minority stress (see Step 3). This finding is consistent with previous research that found perceived bicultural competence to be significantly related to mental health outcomes such as life satisfaction and decreased depression (David et al., 2009). The current result makes an additional contribution to David et al.'s (2009) findings by demonstrating that perceived bicultural competence accounts for significant variance in depressive symptoms even after controlling for general stress and minority stress. Our results, along with David et al.'s findings, provide empirical support for the theoretical framework developed by LaFromboise et al. (1993): namely, that perceived bicultural competence is a critical coping resource for many ethnic minority individuals. Higher levels of perceived bicultural competence are associated with lower levels of depressive symptoms.

Our final hypothesis held that perceived bicultural competence serves to buffer the relation between minority stress and depressive symptoms. Buffering effects involve a specific form of statistical interaction. Step 4 of Table 2 shows that the two-way interaction of minority stress and perceived bicultural competence accounted for an additional 2% of the variance in depressive symptoms beyond all the main effects.[4] Thus, our third hypothesis was supported. Figure 1 shows that the form of this interaction is what would be expected from a pattern of significant buffering effects; namely, there is a strong association between minority stress and depressive symptoms for students with low levels of bicultural competence, but this association is close to zero for those with high levels of bicultural competence. These findings suggest that for ethnic minority students with high levels of perceived bicultural competence, minority stress is essentially unrelated to depressive symptoms. However, for those who lack perceived bicultural competence, depressive symptoms and minority stress are strongly associated.

There are several potential interpretations for this result. First, perhaps those who have a higher level of perceived bicultural competence have knowledge and skills derived from both cultures that equip them to generate creative strategies to deal effectively with minority stress. In addition, perhaps bicultural competence enables ethnic minority students to establish supportive social networks within both cultures. Thus, when they perceive minority stress, they may have more interpersonal or social resources to help them manage these challenges without developing depressive symptoms. Perhaps the confidence with which they feel they can function effectively within two cultures becomes a part of ethnic minority students' psychological resources to allow them to actively cope with minority stress, instead of feeling helpless, overwhelmed, or defenseless about their circumstances. Conversely, students who demonstrate low perceived bicultural competence may lack these critical coping resources and may feel isolated from the dominant culture and to some extent alienated from the culture of their heritage. Therefore, they may believe that it is impossible to navigate both majority and minority cultures.

Consistent with LaFromboise et al.'s (1993) theory, our exploratory analyses suggest that perceived bicultural competence consists of a cluster of beliefs within a unitary construct. Table 3 shows that the subscales for perceived bicultural competence are moderately correlated, with only three of the 15 coefficients equal to or greater than .60. Some of the six components appear to be more beneficial as buffers than others. For example, our results indicated that social groundedness (e.g., having established social networks from both cultural groups) and knowledge of cultural beliefs and values are particularly important components of perceived bicultural competence in buffering the negative impact of minority stress on depressive symptoms. Figures 2 and 3 show that the highest levels of social groundedness and knowledge of cultural beliefs buffer the association between minority stress and depressive symptoms.

Limitations, Future Research Directions, and Implications

A number of important limitations in this study should be noted. First, the sample is drawn exclusively from undergraduate students and this limits generalizability to other populations, such as kindergarten through 12th grade students, international students, immigrants, and adults who did not attend college. Second, although David et al. (2009) demonstrated that perceived bicultural competence was not significantly associated with social desirability, this study did not examine that possibility. Third, because all data were collected through self-report, the possibility of mono-method bias, including halo effects and the impact of transitory mood states, cannot be ruled out as possible confounds. Moreover, the present study is cross-sectional, and thus no causal interpretation can be

[4] It may seem that 2% of the variance in depressive symptoms explained by the two-way interaction term may not be very consequential. However, in social science research significant interaction effects typically range from 1% to 2% (J. Cohen et al., 2003, p. 297). Also, consider that a recent meta-analysis (Horvath & Bedi, 2002) reported that working alliance, on average, accounts for 4% to 5% of the variance in psychotherapy outcome. Wampold (2001), in summarizing the conclusions of the available meta-analyses, estimated that all therapist effects together account for about 6% to 9% of the variance in psychotherapy outcomes. Given that variables as important as the working alliance or all therapist effects account for no more than 4% to 9% of the variance in therapy outcome, a single variable that accounts for 2% of the variance in depressive symptoms in a nonclinical sample can be considered clinically meaningful.

inferred from the study's results. A longitudinal study with a data collection interval of at least a few months is needed in future studies. Fourth, the unexpected low coefficient alpha of .46 for Role Repertoire may be due to idiosyncrasies in our sample or a psychometric limitation of the subscale. More studies are needed to fully address this concern. Fifth, a limitation is introduced by combining all three ethnic groups in the data analyses. It would be best to have a sufficiently large sample to analyze each ethnic minority group separately. Future studies could focus on each specific ethnic group.

Finally, caution is needed in interpreting the results of hierarchical regression analyses. After controlling for general stress, minority stress accounted for only 3% of the unique variance in predicting depressive symptoms (see Table 2, Step 2). This may at first seem like a rather unimportant potential influence, despite the statistical significance of the increment in R^2. However, it is important to note that general stress accounted for more than 50% of the variance in depressive symptoms, and that because general stress and minority stress share considerable variance, the overall importance of the latter may be masked by the large increment in variance accounted for by the former. The bivariate correlation of $r = .39$ between minority stress and depressive symptoms should also be considered as an important indication of its importance.

Despite these limitations, this study is one of very few to explore the potential buffering role of perceived bicultural competence for ethnic minority students. Further studies are needed to explore which aspect(s) of minority stress (e.g., achievement stress, racism and discrimination stress, or interracial stress) can be most effectively moderated by perceived bicultural competence or specific components of perceived bicultural competence. Moreover, because we wanted to focus on a single outcome to sharpen the study's emphasis on possible buffering effects, only depressive symptoms were assessed. We were concerned that a global symptom measure might obscure such effects if bicultural competence is helpful only for a specific subset of outcomes. Once we decided to measure specific symptoms instead of global distress, we chose depressive symptoms because it is such a common presenting problem and because it is a likely outcome of minority stress. However, future studies are needed to examine other aspects of psychological distress (e.g., anxiety or general psychological distress), academic outcomes (e.g., retention, grade point average, and timely progress toward graduation), and positive psychological outcomes (e.g., life satisfaction and well-being). Of course, it is also important to extend this line of research to samples of ethnic minorities who are not college students, such as immigrants or ethnic minorities with low SES, for whom buffering resources may be particularly important.

With regard to implications for practice, our findings suggest that minority stress is a unique additional experience for ethnic minority students, and this stress can have a serious impact on adjustment. Therefore, it might be beneficial to help ethnic minority students understand the external sources (e.g., racial discrimination) of their depressive symptoms. Counselors need to be prepared to assess minority stress when working with ethnic minority students. Results of this study also suggest that counselors should consider perceived bicultural competence as a coping resource. LaFromboise et al. (1993) suggested that dimensions of perceived bicultural competence could be used as "the framework for developing programs designed to facilitate the involvement of minority people in majority institutions" (p. 408). Because perceived bicultural competence may serve as a protective factor to lessen the impact of minority stress, counselors might alleviate depressive symptoms by helping their clients learn how to cultivate and improve their perceived bicultural competence.

We examined only three of the six components of perceived bicultural competence due to concerns about the low reliability of the other three subscales in combination with the modest sample size of this study. Thus, it would be incorrect to conclude that the three components we did not assess (i.e., communication ability, role repertoire, and bicultural beliefs) are not beneficial. Further research is needed because the current study did not have sufficient statistical power to investigate these components, given that the subscales had reliabilities that ranged from .46 to .66. Among the three components we did examine, exploratory analyses suggested that two components might be especially promising targets for intervention, namely, social groundedness and knowledge of cultural beliefs and values.

Perhaps small group outreach programs or individual counseling could eventually prove effective in increasing these two components of perceived bicultural competence. Efforts might focus on helping clients develop deeper knowledge of the history, values, and beliefs of their heritage culture (or cultures) as well as of the "mainstream" American culture. Social groundedness involves developing supportive networks, strong ties, and satisfying personal relationships with members of one's heritage culture and people from the mainstream culture. Multicultural interpersonal groups facilitated by trained counselors might provide a safe setting for ethnic minority and White students to engage in difficult dialogues about culture, ethnicity, and differences, thereby building bicultural skills for all participants. In these groups, participants with high perceived bicultural competence may share with other group members their successful strategies for managing cultural differences and conflicts. Research has found that the skills needed to navigate a college campus are positively associated with retention among Latino/a students (Hurtado & Carter, 1997) and that high accessibility of cultural resources is associated with college retention for members of all racial/ethnic groups (Walpole, 2003). Therefore, enhancing bicultural competence may potentially increase minority students' persistence to stay at college. Finally, it should be noted that even though this study identified protective factors (e.g., perceived bicultural competence) to lessen the negative impact of minority stress for individuals, counselors and university administrators need to address the problem of minority stress at an institutional level as well.

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