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# Acculturative stress and experiential avoidance: relations to depression, suicide, and anxiety symptoms among minority college students

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**ABSTRACT**

Although college campuses represent strategic locations to address mental health disparity among minorities in the US, there has been strikingly little empirical work on risk processes for anxiety/depression among this population. The present investigation examined the interactive effects of acculturative stress and experiential avoidance in relation to anxiety and depressive symptoms among minority college students ($n$ = 1,095; 78.1% female; $M_{age}$ = 21.92, SD = 4.23; 15.1% African-American (non-Hispanic), 45.3% Hispanic, 32.5% Asian, and 7.1% other races/ethnicities. Results provided empirical evidence of an interaction between acculturative stress and experiential avoidance for suicidal, social anxiety, and anxious arousal symptoms among the studied sample. Inspection of the significant interactions revealed that acculturative stress was related to greater levels of suicidal symptoms, social anxiety, and anxious arousal among minority college students with higher, but not lower, levels of experiential avoidance. However, in contrast to prediction, there was no significant interaction for depressive symptoms. Together, these data provide novel empirical evidence for the clinically-relevant interplay between acculturative stress and experiential avoidance in regard to a relatively wide array of negative emotional states among minority college students.

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Mental health; anxiety; depression; suicide; health disparity; college students

College students have historically been viewed by society as a privileged population, but there is an increased recognition that mental health problems are common among this group (Hunt & Eisenberg, 2010). Aside from well-publicized cases of homicide on college campuses attributed, in part, to mental illness (e.g. Virginia Tech, Northern Illinois), empirical work suggests mental health problems, particularly anxiety/depressive symptoms, are highly common and personally impairing to life functioning (Mackenzie et al., 2011). For example, major survey studies involving thousands of college students consistently report findings of elevated anxiety and depressive symptoms and suicidal ideation (American College Health Association [ACHA], 2008; Drum, Brownson, Burton Denmark, & Smith,

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2009; Weitzman, 2004). Some work has found that approximately 50% of college students meet criteria for a DSM axis I disorder in the past year (Blanco et al., 2008). Many scholars have theorized that the transition to college and greater independence may represent a vulnerable developmental period (Blanco et al., 2008; Kisch, Leino, & Silverman, 2005). Because higher-education institutions offer health services and are designed to facilitate individual and societal growth, they offer a unique "strategic portal" from a public health perspective wherein evidenced-based programming can be delivered to offset disparity in mental health (Erdur-Baker, Aberson, Barrow, & Draper, 2006).

Among college students, ethnic minorities appear to be a particularly at-risk group for anxiety and depressive problems (Benton, Robertson, Tseng, Newton, & Benton, 2003; Blanco et al., 2008; Hunt & Eisenberg, 2010), as they are forced to adapt to both the demanding intellectual environment and social pressures associated with college life as a minority student (Neville, Heppner, Ji, & Thye, 2004). Here, a clinically important construct to mental health among minority college students is acculturative stress; reflecting stress reactions to intercultural contact or the cultural adaptation process (Lonner, Wong, & Wong, 2007). Acculturative stress reflects the emotional reaction to life events and activities associated with acculturation whereas acculturation pertains to the process of cultural change (Lonner et al., 2007). Acculturative stressors may involve such activities as learning a new language, balancing differing cultural values, and managing the demands between living in a majority culture and being a minority (Dawson & Panchanadeswaran, 2010). There is rich and diverse empirical literature indicating that greater acculturative stress is related to discrimination (Dawson & Panchanadeswaran, 2010) and negative mood states as well as psychopathology (Crockett et al., 2007; Torres, 2010). For instance, acculturative stress may help explain relations between racial discrimination and poorer physical health status (Finch, Hummer, Kol, & Vega, 2001). Other work suggests acculturative stress is related to depression and anxiety symptom severity (Baker, Soto, Perez, & Lee, 2012; Revollo, Qureshi, Collazos, Valero, & Casas, 2011; Walker, Wingate, Obasi, & Joiner, 2008). Integrative models of mental health, however, posit that acculturative stress by itself is not solely apt to lead to greater anxiety/depressive symptoms (LaFromboise, Coleman, & Gerton, 1993). Rather, this construct may likely interact with various, more specific psychological factors (e.g. thinking styles, genetic history) or socio-environmental experiences (e.g. trauma, discrimination) to confer risk for anxiety/depressive conditions, much as similar work has reported that coping resources moderate the impact of experienced racism on anxiety symptoms (Graham, Calloway, & Roemer, 2015; Graham, West, & Roemer, 2013). Despite the theoretical and clinical appeal, research testing interactive models of acculturative stress in relation to anxiety/depressive symptoms among minority college students is highly limited.

Experiential avoidance is one promising, clinically-relevant risk candidate for further understanding linkages between acculturative stress and "emotional vulnerability" among minority college students. Experiential avoidance reflects individual differences in the tendency to be willing to experience or remain in contact with aversive internal experiences (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Hayes et al., 2004). At the core of experiential avoidance conceptualizations of anxiety/depressive psychopathology is inflexible responding functionally directed at altering the form or frequency of aversive internal experiences (e.g. negative thoughts, bodily sensations) and the contexts that occasion them (Hayes et al., 1996). Such inflexible responding to internal states can be a toxic process that distinguishes normal from disordered experiences of emotion (Zvolensky & Forsyth, 2002).

Indeed, experiential avoidance is theorized to be a broad-based diathesis for affective psychopathology that is culturally invariant (see review by Chawla & Ostafin, 2007) and distinct from other emotion-regulatory vulnerability factors (e.g. worry, distress intolerance, negative affectivity; Hayes et al., 2004). In line with this perspective, numerous studies among predominately European-American samples, and to a much lesser extent specific minority groups (e.g. African-Americans; Naifeh, Tull, & Gratz, 2012), have found that experiential avoidance is related to depression (Adams, Tull, & Gratz, 2012; Tull & Gratz, 2008), non-suicidal self-injury (Anderson & Crowther, 2012), and anxiety symptoms (Bardeen, Tull, Stevens, & Gratz, 2014; Feldner, Zvolensky, Eifert, & Spira, 2003; Forsyth, Parker, & Finlay, 2003; Karekla, Forsyth, & Kelly, 2004), along with negative mood more generally (Kumpula, Orcutt, Bardeen, & Varkovitzky, 2011). Yet, to the best of our knowledge, experiential avoidance has not been comprehensively explored in relation to anxiety/depressive states among minority college students from different racial/ethnic groups. One unpublished study found experiential avoidance moderated the relationship between acculturative stress and psychological distress among Asian-American college students (Lee, 2013). Thus, there is a clear need to further our understanding of the interplay of acculturative stress and experiential avoidance among minority college students.

From an integrative perspective, experiential avoidance may also impact the association between acculturative stress and the experience of negative moods by amplifying the intensity of the emotional experience. Indirect work suggests adaptive emotion regulation strategies (e.g. emotional acceptance) increase tolerance for aversive emotional states and reduce perceptions of emotional intensity (e.g. Kohl, Rief, & Glombiewski, 2012). Informed by these empirical observations, acculturative stress and experiential avoidance may operate with one another to increase the probability of greater expression of anxiety and depressive symptoms. Accordingly, acculturative stress may be exacerbated by an individual's degree of experiential avoidance. Therefore, these psychological processes may function synergistically to confer greater risk for anxiety and depressive symptoms. From this perspective, a logical next step in research is to further explore the potential interplay of current acculturative stress and experiential avoidance as an integrative explanatory process for vulnerability in the expression of anxiety and depressive symptoms and disorders among minority college students.

With this background, the aim of the current study was to examine the interactive effects of acculturative stress and experiential avoidance in relation to anxiety and depressive symptoms among minority college students. It was expected that there would be an interaction between acculturative stress and experiential avoidance, such that greater acculturative stress and experiential avoidance would be associated with increased anxiety and depressive symptoms, and that this interactive effect would be observed over and above the effect of sex, age, relationship status, financial strain, and trait negative affectivity. Demographic covariates were chosen based on their associations with anxiety and depressive symptoms in past work (Myers et al., 2015; Rosenthal & Schreiner, 2000). In addition, experiential avoidance and acculturative stress are both correlated with negative affectivity (Kumpula et al., 2011; Paukert, Pettit, Perez, & Walker, 2006); therefore, negative affectivity was included as a covariate to demonstrate that the robustness of the interaction effect of acculturative stress and experiential avoidance. By better understanding the processes that govern the expression of anxiety/depressive symptoms among minority college students, it will be possible to explicate malleable risk factors for affective vulnerability needed for targeted screening protocols and interventions.

## Method

### Participants

College students ($n$ = 1,691; 78.4% female; $M_{age}$ = 22.21; SD = 4.67; age range: 18–56 years) were recruited from a large, southwestern university between April 2014 and April 2015. The university of highly culturally diverse and routinely ranked in the top three most diverse institutions in the US. Participants received extra credit for a psychology course as compensation. Recruitment occurred via flyers and postings on the university's extra credit website. Study exclusion criteria included being under the age of 18 and non-proficient in English (to ensure comprehension of study questions). There were 341 participants excluded from analyses for incomplete study measures. Additionally, European-American participants were excluded ($n$ = 429) given the study focus on persons from minority backgrounds. The final sample consisted of 1,095 minority participants (78.1% female; $M_{age}$ = 21.92; SD = 4.23; age range: 18–52 years). The final sample was comprised of 15.1% African-American (non-Hispanic), 45.3% Hispanic, 32.5% Asian, and 7.1% other races/ethnicities (e.g. 2% Arab/Middle Eastern, 0.3% Pacific Islander, 0.1% Native American, 4.5% interracial).

### Materials

#### Demographics

Sex (coded: female = 0; male = 1), age, race/ethnicity, and relationship status (coded: single/non-exclusive dating = 0; exclusive relationship = 1) were assessed.

#### Acculturative stress

The Social, Attitudinal, Familial, and Environmental Scale (SAFE; Mena, Padilla, & Maldonado, 1987) is a 24-item measure used to assess acculturative stress. The SAFE is composed of four subscales examining acculturative stress related to social, attitudinal, familial, and environmental contexts (sample item: "I have more barriers to overcome than most people"). Response options for each item ranged from 1 ("Not Stressful") to 5 ("Extremely Stressful"). Internal reliability of the SAFE in previous studies across different ethnic groups has been good ($\alpha$ = .87 to .89; Fuertes & Westbrook, 1996; Joiner & Walker, 2002; Mena et al., 1987). In the present study, the total scale score was employed and demonstrated excellent internal consistency in the total sample ($\alpha$ = .94), as well as within each of the major racial/ethnic groups studied ($\alpha$'s = .94).

#### Experiential avoidance

The Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gámez, Chmielewski, Kotov, Ruggero, & Watson, 2011) was used to assess experiential avoidance. The MEAQ is a 62-item self-report measure containing six subscales: behavioral avoidance (e.g. "I won't do something if I think it will make me uncomfortable"), distress aversion (e.g. "If I could magically remove all of my painful memories, I would"), procrastination (e.g. "I tend to put off unpleasant things that need to get done"), distraction/suppression (e.g. "When something upsetting comes up, I try very hard to stop thinking about it"), repression/denial (e.g. "I sometimes have difficulty identifying how I feel"), and distress endurance (e.g. "People should face their fears," reverse coded in total scale score). Response options range from 1 ("strongly disagree") to 6 ("strongly agree"). The

MEAQ total scale has demonstrated excellent internal consistency ($\alpha$ = .91 to .95 across patient and college student samples) and strong convergent and divergent validity with other measures of avoidance (Gámez et al., 2011). In the present study, the total scale score of the MEAQ was used and showed excellent internal consistency in the total sample ($\alpha$ = .92), as well as within each of the racial/ethnic groups examined ($\alpha$'s = .90 to .93). Higher scores denoted greater experiential avoidance.

### *Depression, suicidality, social anxiety, and panic*

The Inventory of Depression and Anxiety Symptoms (IDAS; Watson et al., 2007) is a 64-item self-report measure depression and anxiety symptoms. The IDAS contains 12 subscales: general depression (20 items), dysphoria (10 items), well-being (8 items), anxious arousal (8 items), lassitude (6 items), insomnia (6 items), suicidality (6 items), social anxiety (5 items), ill temper (5 items), traumatic intrusions (4 items), appetite loss (3 items), and appetite gain (3 items). Some subscales share overlapping items (e.g. items 7 and 15 are both contained in the general depression and suicidality subscales). In previous work, the IDAS subscales have shown good internal reliability ($\alpha$ = .80 to .89) and convergent validity with other measures of depression and anxiety (Watson et al., 2007). The present study utilized the general depression (total sample: $\alpha$ = .91; racial/ethnic group range: $\alpha$'s = .90 to .92), suicidality (total sample: $\alpha$ = .89; racial/ethnic group range: $\alpha$'s = .87 to .92), anxious arousal (total sample: $\alpha$ = .90; racial/ethnic group range: $\alpha$'s = .88 to .91), and social anxiety (total sample: $\alpha$ = .86; racial/ethnic group range: $\alpha$'s = .86) subscales.

### *Trait affect*

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is a self-report measure that assesses the degree to which participants typically experience 20 different positive (e.g. excited, proud) or negative affective states (e.g. afraid, distressed). Responses are based on a Likert scale ranging from 1 ("very slightly or not at all") to 5 ("extremely"). The PANAS yields two subscales, positive affect (PA) and negative affect (NA), which have shown good internal consistency (PA: $\alpha$ = .86; NA: $\alpha$ = .90) and validity (Watson et al., 1988). The present study utilized the NA subscale (total sample: $\alpha$ = .90; racial/ethnic group ranges: $\alpha$'s = .89 to .90) as a covariate to adjust for the broad-based tendency to experience negative mood states.

### *Financial stress*

The Financial Strain Questionnaire (FSQ; Pearlin, Menaghan, Lieberman, & Mullan, 1981) is an 8-item self-report measure used to assess stress related to financial difficulties. The FSQ operationalizes economic stress via the level of difficulty associated with obtaining life necessities (e.g. food, clothing, housing) and conveniences (e.g. furniture, automobiles, recreation) at the present time (sample item: "Are you able to afford a home suitable for [yourself/your family]?"). Response options are as follows: 1 ("Yes, I can afford"), 2 ("I can somewhat afford"), and 3 ("No, I cannot afford"). In previous research, the FSQ has shown excellent internal consistency ($\alpha$ = .91; Williams, Steptoe, Chambers, & Kooner, 2009). In the current study, the internal consistency of the FSQ total score was good (total sample: $\alpha$ = .89; racial/ethnic group ranges: $\alpha$'s = .88 to .90) and the scale was employed as a covariate.

### Procedures

Study procedures were compliant with the Institutional Review Board. All measures were self-report and completed via the Internet. Each participant provided informed consent on an introductory web page before being routed to the study survey. No information that could identify participants was retained.

### Data analytic strategy

Data analyses were conducted using SPSS 22.0. Bivariate relations among study variables were examined using Pearson correlations. Moderation tests were conducted using hierarchical linear regression. In hierarchical regression-based moderation models, the unstandardized regression coefficients ($b_j$) for the independent variable ($b_1$) and the moderator ($b_2$) are estimated while setting the other equal to zero. Because both acculturative stress (independent variable) and experiential avoidance (moderator) were scaled such that their range of scores did not include zero, both were mean-centered so that their unstandardized coefficients would be interpretable (Cohen, Cohen, West, & Aiken, 2003; Hayes, 2013). For each outcome, study covariates (i.e. age, gender, relationship status, financial strain, negative affectivity) were entered in step 1 of a hierarchical linear regression, followed by the mean-centered independent variable (acculturative stress) and theoretical moderator (experiential avoidance) in step 2, and the interaction variable (calculated as the product of the mean-centered independent and moderator variables) in step 3. The covariates were chosen on a theoretical basis, as factors that may covary with the predictor and dependent variables. Visualization of the interaction was done by estimating the regression line at specific values of the independent variable and moderator and setting each covariate equal to its mean. The PROCESS macro, a publicly available syntax package designed to test moderation effects within a regression framework, facilitated the visualization by producing the values needed to plot the 10th, 25th, 50th, 75th, and 90th percentiles of the distribution (Hayes, 2013). Finally, to probe the interaction, regions of significance were determined using the Johnson–Neyman technique (Bauer & Curran, 2005; Spiller, Fitzsimons, Lynch, & McClelland, 2013) as calculated by the PROCESS macro (Hayes, 2013). In contrast to other interaction probing methods, the Johnson–Neyman technique estimates the exact values of the moderator that will yield the critical value used to determine significance (Bauer & Curran, 2005).

## Results

Descriptive statistics and correlations among study variables are presented in Table 1. Of the outcome variables, the suicidality (skewness = 3.10; kurtosis = 10.64) and anxious arousal (skewness = 2.40; kurtosis = 6.46) subscales were not normally distributed; therefore, data were log-transformed. Acculturative stress and experiential avoidance both were significantly associated with the dependent variables (all $p$'s < .001). Acculturative stress and experiential avoidance were significantly correlated ($r$ = .36; $p$ < .001).

Regarding depressive symptoms, the covariates entered in the first step of the regression accounted for 36.2% of the variance (Adjusted $R^2$ = .362; $F$[5, 1089] = 124.953, $p$ < .001). The covariates with significant effects on depressive symptoms included financial strain

**Table 1.** Zero-order correlations among study variables.

| Variable | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Age (years)[a] | | – | .023 | −.207** | −.251** | −.114** | −.093* | −.102* | −.065 | −.051 | −.121 | −.082* |
| 2. | Gender[a] | | | – | −.133** | .057 | .027 | −.016 | .083* | .026 | −.085 | −.025 | −.002 |
| 3. | Relationship status[a] | | | | – | .118** | .082** | .092* | .110** | .085 | .059 | .019 | .096* |
| 4. | Financial stain[a] | | | | | – | .108** | .120* | .164** | .123 | .056 | .039 | .092* |
| 5. | Negative affect[a] | | | | | | – | .419* | .406** | .600 | .367** | .461** | .481** |
| 6. | Acculturative stress[b] | | | | | | | – | .362** | .371 | .251** | .337** | .361** |
| 7. | Experiential avoidance[c] | | | | | | | | – | .404 | .192** | .265** | .346** |
| 8. | Depression[d] | | | | | | | | | – | .565** | .596** | .610** |
| 9. | Suicidality[d] | | | | | | | | | | – | .612** | .457** |
| 10. | Anxious arousal[d] | | | | | | | | | | | – | .628** |
| 11. | Social anxiety[d] | | | | | | | | | | | | – |
| Descriptive | | Mean (*n*) | 21.92 | 855 | 530 | 16.69 | 21.30 | 52.95 | 207.53 | 42.58 | 7.48 | 10.97 | 8.86 |
| Statistics | | SD (%) | 4.23 | 78.10 | 48.40 | 4.64 | 7.84 | 18.69 | 37.12 | 13.93 | 3.38 | 4.90 | 4.41 |

*Notes.* Age = age in years; Gender, coded female = 0 and male = 1, with descriptive statistics for number and percentage female; Relationship Status = romantic relationship status, coded as single/non-exclusive dating = 0 and exclusive relationship = 1, with descriptive statistics for number and percentage in an exclusive relationship; Financial Strain, total scale score of the Financial Strain Questionnaire; Negative Affect = trait negative affect, reported as the total score for the Positive and Negative Affect Schedule Negative Affect subscale; Social, Attitudinal, Familial, and Environmental Scale = SAFE Acculturative Stress total scale score; Experiential Avoidance = total scale score of the Multidimensional Experiential Avoidance Questionnaire; Depression = General Depression subscale score of the Inventory of Depression and Anxiety Symptoms (IDAS); Suicidality = Suicidality subscale score of the IDAS; Anxious Arousal= Anxious Arousal subscale score of the IDAS; Social Anxiety = Social Anxiety subscale score of the IDAS.

[a]Covariates; [b]Predictor; [c]Moderator; [d]Outcome Variables;

$^{\dagger}p < .05$; $^{*}p < .01$; $^{**}p < .001$.

($\beta$ = .060; $t$ = 2.375, $p$ = .018) and negative affectivity ($\beta$ = .593; $t$ = 24.246, $p$ < .001). In step 2, significant main effects were observed for both acculturative stress ($\beta$ = .104; $t$ = 3.900, $p$ < .001) and experiential avoidance ($\beta$ = .163; $t$ = 6.109, $p$ < .001), which together accounted for an additional 3.5% of variance in depressive symptoms (Adjusted $R^2$ = .397). However, contrary to expectations, the interaction of acculturative stress and experiential avoidance in step 3 was not significant ($\beta$ = .014; $t$ = .594, $p$ = .552). Table 2 presents model statistics and all variable effects.

For suicidality symptoms, the study covariates entered in step 1 accounted for 15.9% of variance (Adjusted $R^2$ = .159; $F$[5, 1089] = 42.491, $p$ < .001). Among the covariates, gender ($\beta$ = –.109; $t$ = –3.902, $p$ < .001) and negative affectivity ($\beta$ = .387; $t$ = 13.804, $p$ < .001) demonstrated significant effects on suicidality symptoms. Acculturative stress ($\beta$ = .125; $t$ = 4.004, $p$ < .001) demonstrated a significant main effect on suicidality in step 2, but the main effect of experiential avoidance was not significant. Step 2 accounted for an additional 1.4% of the variance (Adjusted $R^2$ = .173). The interaction of acculturative stress with experiential avoidance ($\beta$ = .061; $t$ = 2.199, $p$ = .028) was significant and accounted for an additional 0.3% of variance (Adjusted $R^2$ = .176). The Johnson–Neyman technique showed a transition to significance at a total scale MEAQ score of 177.30 (or –30.23 below the MEAQ mean score). For scores above 177.30 on the MEAQ, increases in acculturative stress were associated with increases in suicidality. However, when MEAQ total scores were below 177.30, acculturative stress was not significantly associated with suicidality symptoms (see Figure 1). For model statistics and variable effects, see Table 2.

Study covariates accounted for 23% of the variance in anxious arousal symptoms (Adjusted $R^2$ = .230; $F$[5, 1089] = 66.330, $p$ < .001); negative affectivity was the only significant univariate predictor ($\beta$ = .485; $t$ = 18.056, $p$ < .001). At step 2, the main effects of acculturative stress ($\beta$ = .168; $t$ = 5.693, $p$ < .001) and experiential avoidance ($\beta$ = .067; $t$ = 2.259, $p$ = .024) were significant predictors (Adjusted $R^2$ = .260). Finally, the interaction of acculturative stress with experiential avoidance ($\beta$ = .056; $t$ = 2.118, $p$ = .034) was significant (Adjusted $R^2$ = .262). Based on the Johnson–Neyman technique, the area of significance extended from a MEAQ total scale score of 152.86 and above. Participants scoring above 152.86 on the MEAQ showed a significant association between acculturative stress and anxious arousal symptoms; however, for MEAQ scores below 152.86, there was no association between acculturative stress and anxious arousal symptoms (see Figure 2). For model statistics and variable effects, see Table 3.

For social anxiety symptoms, study covariates accounted for 23.6% of total variance (Adjusted $R^2$ = .233; $F$[5, 1089] = 67.383, $p$ < .001). Negative affectivity was the only significant predictor ($\beta$ = .473; $t$ = 17.643, $p$ < .001). In step 2, the main effects of acculturative stress ($\beta$ = .157; $t$ = 5.360, $p$ < .001) and experiential avoidance ($\beta$ = .141; $t$ = 4.815, $p$ < .001) were both significant predictors (Adjusted $R^2$ = .276). The interaction term entered in step 3 was also significant ($\beta$ = .077; $t$ = 2.963, $p$ = .003) and accounted for an additional 0.5% of variance (Adjusted $R^2$ = .281). The Johnson–Neyman results showed acculturative stress was significantly associated with social anxiety only for those participants reporting a MEAQ total scale score above 167.88, such that social anxiety increased as acculturative stress increased. When experiential avoidance scores were below 167.88, acculturative stress and social anxiety were unrelated (see Figure 3). For model statistics and variable effects, see Table 3.

**Table 2.** Hierarchical regression results with each step of the models of depressive (top) and suicidal (bottom) symptoms.

| | Step 1 | | | | Step 2 | | | | Step 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depressive symptoms | $\beta$ | SE | $t$ | $p$ | $\beta$ | SE | $t$ | $p$ | $\beta$ | SE | $t$ | $p$ |
| Acculturative stress | – | – | – | – | .104 | .020 | 3.900 | <.001 | .102 | .020 | 3.820 | <.001 |
| Experiential Avoidance | – | – | – | – | .163 | .010 | 6.109 | <.001 | .165 | .010 | 6.134 | <.001 |
| Interaction | – | – | – | – | – | – | – | – | .014 | .001 | .594 | .552 |
| Age | .025 | .084 | .969 | .333 | .030 | .082 | 1.205 | .229 | .029 | .082 | 1.160 | .246 |
| Gender | .011 | .823 | .436 | .663 | .001 | .804 | .027 | .978 | .001 | .804 | .031 | .975 |
| Relationship status | .036 | .698 | 1.444 | .149 | .020 | .680 | .812 | .417 | .021 | .681 | .841 | .400 |
| Financial Strain | .060 | .076 | 2.375 | .018 | .036 | .074 | 1.443 | .149 | .036 | .074 | 1.464 | .144 |
| Negative Affect | .593 | .043 | 24.246 | <.001 | .488 | .048 | 17.953 | <.001 | .487 | .048 | 17.928 | <.001 |
| Constant | – | 3.033 | 4.682 | <.001 | – | 3.028 | 6.558 | <.001 | – | 3.029 | 6.551 | <.001 |
| | $R^2$ =.365; Adj. $R^2$ =.362 | | | | $R^2$ = .401; Adj. $R^2$ =.397 | | | | $R^2$ = .401; Adj. $R^2$ =.397 | | | |
| | $F(5,1089) = 124.953, p < .001$ | | | | $F(7,1087) = 104.021, p < .001$ | | | | $F(8,1086) = 91.009, p < .001$ | | | |
| | – | | | | $\Delta R^2$ =.037, $p < .001$ | | | | Interaction $\Delta R^2$ =.000, $p < .552$ | | | |

| | Step 1 | | | | Step 2 | | | | Step 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Suicidal symptoms | $\beta$ | SE | $t$ | $p$ | $\beta$ | SE | $t$ | $p$ | $\beta$ | SE | $t$ | $p$ |
| Acculturative stress | – | – | – | – | .125 | <0.001 | 4.004 | <.001 | .118 | <0.001 | 3.772 | <.001 |
| Experiential avoidance | – | – | – | – | .033 | <0.001 | 1.060 | .290 | .038 | <0.001 | 1.221 | .222 |
| Interaction | – | – | – | – | – | – | – | – | .061 | <0.001 | 2.199 | .028 |
| Age | .004 | .001 | .126 | .900 | .007 | 0.001 | .237 | .813 | .002 | .001 | .085 | .932 |
| Gender | –.109 | .009 | –3.902 | <.001 | –.109 | 0.009 | –3.897 | <.001 | –.109 | .009 | –3.891 | <.001 |
| Relationship status | .020 | .008 | .680 | .497 | .012 | 0.008 | .409 | .683 | .015 | .008 | .524 | .600 |
| Financial strain | .019 | .001 | .648 | .517 | .007 | 0.001 | .235 | .814 | .009 | .001 | .316 | .752 |
| Negative affect | .387 | <0.001 | 13.804 | <.001 | .324 | 0.001 | 10.171 | <.001 | .322 | .001 | 10.133 | <.001 |
| Constant | – | 0.034 | 22.293 | <.001 | – | 0.034 | 22.682 | <.001 | – | .034 | 22.702 | <.001 |
| | $R^2$ = .163; Adj. $R^2$ =.159 | | | | $R^2$ = .178; Adj. $R^2$ =.173 | | | | $R^2$ = .182; Adj. $R^2$ =.176 | | | |
| | $F(5,1089) = 42.491, p < .001$ | | | | $F(7,1087) = 33.716, p < .001$ | | | | $F(7,1086) = 30.210, p < .001$ | | | |
| | – | | | | $\Delta R^2$ =.015, $p < .001$ | | | | Interaction $\Delta R^2$ =.004, $p < .028$ | | | |

*Note.* Age = age in years; Gender, coded female = 0 and male = 1; Relationship Status = romantic relationship status, coded as single/non-exclusive dating = 0 and exclusive relationship = 1; Financial Strain, total scale score of the Financial Strain Questionnaire; Negative Affect = trait negative affect, reported as the total score for the Positive and Negative Affect Schedule–Negative Affect subscale; Social, Attitudinal, Familial, and Environmental Scale = SAFE Acculturative Stress total scale score; Experiential Avoidance = total scale score of the Multidimensional Experiential Avoidance Questionnaire; Depression = General Depression subscale score of the Inventory of Depression and Anxiety Symptoms (IDAS); Suicidal Symptoms = Suicidal Symptoms subscale score of the IDAS, log-transformed.

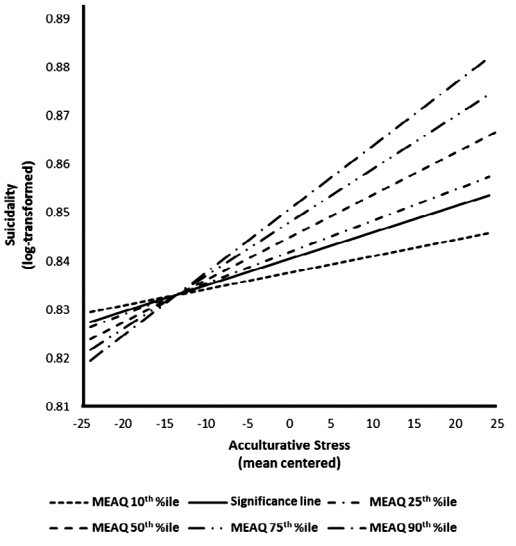


**Figure 1.** The interaction of acculturative stress with experiential avoidance in relation to suicidality.

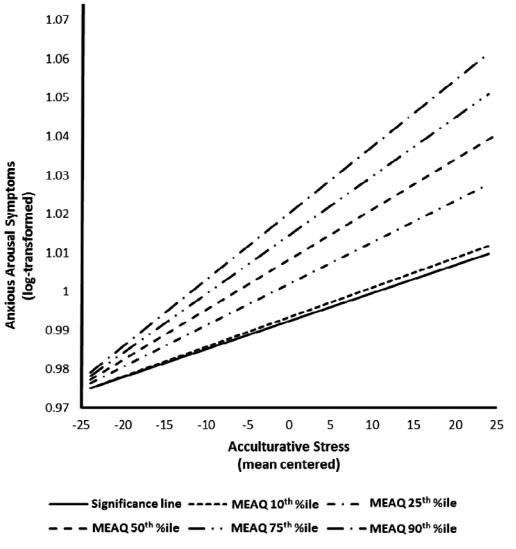


**Figure 2.** The interaction of acculturative stress with experiential avoidance in relation to anxious arousal symptoms.

## *Post hoc analyses*

As seen in the bivariate analyses, negative affectivity and financial strain were highly correlated with both acculturative stress and experiential avoidance (see Table 1). To clarify the extent to which negative affectivity and financial strain, as covariates, may have obscured the relations of acculturative stress and experiential avoidance with each of the study's outcome variables, separate analyses were performed with both of these covariates removed. The pattern of significant interaction results remained the same: non-significant for depression

**Table 3.** Hierarchical regression results with each step of the models of anxious arousal (top) and social anxiety (bottom) symptoms.

| | Step 1 | | | | Step 2 | | | | Step 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anxious arousal symptoms | $\beta$ | SE | $t$ | $p$ | $\beta$ | SE | $t$ | $p$ | $\beta$ | SE | $t$ | $p$ |
| Acculturative stress | – | – | – | – | .168 | <.001 | 5.693 | <.001 | .162 | <.001 | 5.463 | .000 |
| Experiential avoidance | – | – | – | – | .097 | <.001 | 2.259 | .024 | .072 | <.001 | 2.413 | .016 |
| Interaction | – | – | – | – | – | – | – | – | .056 | <.001 | 2.118 | .034 |
| Age | .018 | .001 | .651 | .515 | .023 | .001 | .835 | .404 | .019 | .001 | 0.688 | .492 |
| Gender | –.043 | .010 | –1.604 | .109 | –.044 | .009 | –1.667 | .096 | –.044 | .009 | –1.657 | .098 |
| Relationship status | –.014 | .008 | –.508 | .611 | –.026 | .008 | –.966 | .334 | –.023 | .008 | –.855 | .393 |
| Financial strain | .004 | .001 | .140 | .889 | –.015 | .001 | –.532 | .595 | –.012 | .001 | –.454 | .650 |
| Negative affect | .485 | .001 | 18.056 | <.001 | .391 | .001 | 12.974 | <.001 | .389 | .001 | 12.939 | .000 |
| Constant | – | .035 | 23.542 | <.001 | – | .036 | 24.673 | <.001 | – | .036 | 24.693 | .000 |
| | $R^2$ =.233; Adj. $R^2$ =.230 | | | | $R^2$ = .264; Adj. $R^2$ =.260 | | | | $R^2$ = .267; Adj. $R^2$ =.262 | | | |
| | $F$(5,1089) = 66.330, $p$ <.001 | | | | $F$(7,1087) = 55.770, $p$ <.001 | | | | $F$(8,1086) = 49.517, $p$ <.001 | | | |
| | – | | | | $\Delta R^2$ =.031, p < .001 | | | | Interaction $\Delta R^2$ =.003, $p$ < .034 | | | |

| | Step 1 | | | | Step 2 | | | | Step 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Social anxiety symptoms | $\beta$ | SE | $t$ | $p$ | $\beta$ | SE | $t$ | $p$ | $\beta$ | SE | $t$ | $p$ |
| Acculturative stress | – | – | – | – | .157 | .007 | 5.360 | <.001 | .148 | .007 | 5.056 | <.001 |
| Experiential Avoidance | – | – | – | – | .141 | .003 | 4.815 | <.001 | .148 | .004 | 5.038 | <.001 |
| Interaction | – | – | – | – | – | – | – | – | .077 | <.001 | 2.963 | <.001 |
| Age | –.009 | .029 | –.335 | .738 | –.004 | .028 | –.130 | .897 | –.009 | .028 | –.335 | .738 |
| Gender | –.009 | .286 | –.352 | .725 | –.016 | .279 | –.628 | .530 | –.016 | .278 | –.614 | .540 |
| Relationship status | .050 | .242 | 1.811 | .070 | .033 | .236 | 1.221 | .222 | .037 | .236 | 1.380 | .168 |
| Financial Strain | .034 | .026 | 1.216 | .224 | .008 | .026 | .300 | .764 | .011 | .026 | .411 | .681 |
| Negative Affect | .473 | .015 | 17.643 | <.001 | .355 | .017 | 11.919 | <.001 | .353 | .017 | 11.886 | <.001 |
| Constant | – | 1.053 | 2.685 | .007 | – | 1.051 | 4.493 | <.001 | – | 1.047 | 4.483 | <.001 |
| | $R^2$ = .236; Adj. $R^2$ =.233 | | | | $R^2$ = .280 ; Adj. $R^2$ =.276 | | | | $R^2$ = .286; Adj. $R^2$ =.281 | | | |
| | $F$(5,1089) = 67.383, $p$ <.001 | | | | $F$(7,1087) = 60.519, $p$ <.001 | | | | $F$(8,1086) = 54.430, $p$ <.001 | | | |
| | – | | | | $\Delta R^2$ =.044, $p$ < .001 | | | | Interaction $\Delta R^2$ =.006, $p$ < .003 | | | |

*Note*. Age = age in years; Gender, coded female = 0 and male = 1; Relationship Status = romantic relationship status, coded as single/non-exclusive dating = 0 and exclusive relationship = 1; Financial Strain, total scale score of the Financial Strain Questionnaire; Negative Affect = trait negative affect, reported as the total score for the Positive and Negative Affect Schedule–Negative Affect subscale; Social, Attitudinal, Familial, and Environmental Scale = SAFE Acculturative Stress total scale score; Experiential Avoidance = total scale score of the Multidimensional Experiential Avoidance Questionnaire; Anxious Arousal = Anxious Arousal subscale score of the Inventory of Depression and Anxiety Symptoms (IDAS), log-transformed; Social Anxiety = Social Anxiety subscale score of the IDAS.

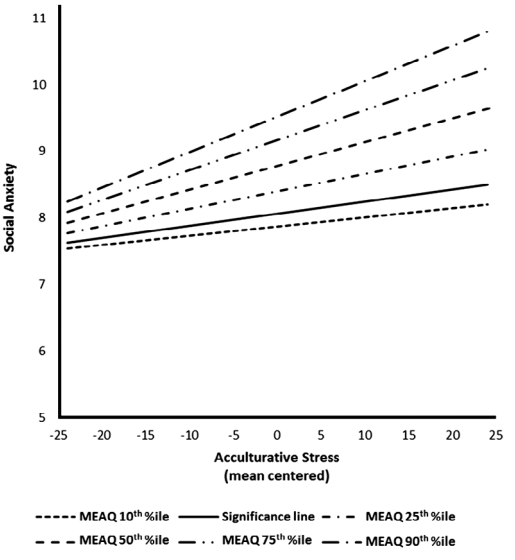


**Figure 3.** The interaction of acculturative stress with experiential avoidance in relation to social anxiety.

($\beta$ = .023; $t$ = 0.851, $p$ = .395), but significant for suicidality symptoms ($\beta$ = .068; $t$ = 2.326, $p$ = .020), anxious arousal symptoms ($\beta$ = .064; $t$ = 2.279, $p$ = .023), and social anxiety symptoms ($\beta$ = .084; $t$ = 3.045, $p$ = .002). In addition, once negative affectivity and financial strain were removed, the main effects of acculturative stress and experiential avoidance, as would be expected, accounted for a greater percentage of variance in each of the outcomes: 21.1% of depression, 8.6% of suicidality symptoms, 14.8% of anxious arousal symptoms, and 17.3% of social anxiety symptoms.

## Discussion

The aim of the current study was to examine the interactive effects of acculturative stress and experiential avoidance in relation to anxiety and depressive symptoms among minority college students. There was consistent empirical evidence of an interaction between acculturative stress and experiential avoidance for suicidal, social anxiety, and anxious arousal symptoms among the studied sample. Indeed, inspection of the forms of the significant interactions indicated a high degree of conceptual similarity. Specifically, acculturative stress was related to greater levels of suicidal symptoms, social anxiety, and anxious arousal among minority college students with higher, but not lower levels of experiential avoidance. However, in contrast to prediction, there was no significant interaction for depressive symptoms. The lack of significant interactive effect for depressive symptoms is unclear. Notably, both main effects were significantly related to depression. This pattern of findings may suggest that a different mechanism (e.g. mediation) may better explain the interrelations of acculturative stress and experiential avoidance with depressive symptoms; a possibly important area for further study. Together, the present data provide novel empirical evidence suggesting that there is indeed clinically-relevant interplay between acculturative stress and experiential avoidance in regard to certain negative affective states among minority college students.

Although not a primary aim, it is noteworthy that there was evidence that acculturative stress and experiential avoidance each independently explained unique variance in each of the dependent measures; evident above and beyond variance accounted for by the covariates, including negative affectivity (the tendency to experience negative mood states). The only exception to this pattern of results was suicidal symptoms wherein only acculturative stress showcased a significant effect. Additionally, acculturative stress and experiential avoidance shared only 13% of variance with one another, suggesting they represent related, but distinct constructs. Overall, these findings are consistent with past work on acculturative stress (Crockett et al., 2007; Torres, 2010) and experiential avoidance (Kumpula et al., 2011) among other populations and uniquely extend such results to a large sample of minority college students.

Clinically, the present findings suggest intervention programs for anxiety/depressive symptoms and disorders among minority college students might benefit from screening for acculturative stress and experiential avoidance for early intervention. Specifically, targeting minority college students with higher levels of acculturative stress and experiential avoidance may help isolate a high-risk segment of the population for anxiety/depressive problems in need of targeted interventions that address their interplay through intervention. This approach could build upon past work that has utilized behavioral and cognitive-behavioral tactics for improving mental health, and perhaps, further refine them to target transdiagnostic processes in a theoretically-driven fashion. For example, Acceptance and Commitment Therapy may be usefully adapted to the minority college student population to target experiential avoidance and the unique sociocultural stressors that they encounter (Swain, Hancock, Hainsworth, & Bowman, 2013). Also, given acculturate stress was related to the studied dependent measures in the presence of experiential avoidance, there may be clinical utility in focus intervention targets on actively and mindfully engage with the process of acculturation for better mental health adjustment.

Several study limitations should also be noted. First, due to the cross-sectional nature of these data, it is not possible to make causal statements concerning the relations under study. One next step in this line of inquiry would be to employ prospective methodologies to evaluate the consistency of the present findings over time. Second, the present sample was recruited from a highly ethnically diverse institution. At such a diverse institution, the magnitude of acculturative stress (and perhaps also experiential avoidance) may be smaller than would be observed in a less diverse context. Additionally, the sample was largely female, although given the overall sample size, the number of males was still notable ($n = 240$). Still, future work could further evaluate the generalizability of the present model to those that involve a larger percentage of males and different types of college/university settings that vary in their percentage of ethnic minorities. Third, we focused our investigation on general manifestations of anxiety/depressive phenomenology at one point in time. However, it is possible the same type of interactive model between acculturative stress and experiential avoidance is applicable to other more culturally-specific forms of distress or stress, or even more relevant to periods of greater stress (e.g. adapting to first-year of college). Thus, future work may benefit by exploring the interactive model in relation to such processes, including subjective social status, and even culturally-variant types of anxiety or depression among specific subpopulations (e.g. *ataque de nervios*), and explore the relevance of the present model to specific periods of college student transition (e.g. first-year transition). Fourth, study data were based on self-report questionnaires, leaving the potential for measurement

variance effects. A multimethod measurement protocol could be usefully employed in future work, including clinical interviews and laboratory paradigms (e.g. attentional biases for threat). Fifth, our sample had persons from African-American (non-Hispanic), Hispanic, Asian, and other races/ethnicities. The numbers of Hispanic and Asian persons were somewhat larger than the African-American and "other" race/ethnicities represented. Future work may benefit from replicating and extending this work to other groups not studied here, including American-Indian and Alaskan Natives. Finally, we conceptualized the study at a marco level of analysis as an evaluation of ethnic minorities as a whole. This approach was developmentally aligned with the initial examination of the interplay between acculturative stress and experiential avoidance among ethnic minorities. Nonetheless, future work may benefit by testing between group differences among distinct ethnic minority groups in terms of how these risk candidates interplay in relation to the expression of mental health symptoms. Although *post hoc* testing in the current data did not reveal any between group differences in the overall patterning of findings between specific minority groups (results available upon request), it is possible that future studies could isolate common and unique differences in mental health symptom expression.

In sum, although college campuses represent a strategic location to address mental health disparity among minorities in the US, strikingly little empirical work about risk processes for mental health among this population exists. The current study found novel, albeit initial, empirical evidence for an interaction between acculturative stress and experiential avoidance in terms of the likelihood of anxiety and suicide symptom expression above and beyond their singular contributions. The findings generally suggest acculturative stress is related to greater levels of mental health symptoms among individuals with higher, but not lower levels of experiential avoidance.



## Acknowledgements

This work has not been presented previously in any form. The study was approved by Institutional Review Board at the University of Houston. Informed written consent was obtained prior to initiating study procedures. No animals have been employed in this research.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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