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Clarifying the Relation of Acculturative Stress and Anxiety/Depressive Symptoms: The Role of Anxiety Sensitivity Among Hispanic College Students

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Objectives: Recent work has highlighted the link between acculturative stress and depression/anxiety symptoms among Hispanic young adults, but the nature of these relations is not well understood. The present study aimed to clarify the relation between acculturative stress and depression/anxiety symptoms by examining anxiety sensitivity, globally and via subfactors, as an explanatory variable. ***Method:*** A cross-sectional sample of 788 Hispanic college students (80.8% female; M_{age} = 20.83 years, SD = 1.93) was recruited from a southwestern public university and completed an online self-report assessment battery. ***Results:*** Acculturative stress exerted an indirect effect, via the global construct of anxiety sensitivity, on depression symptoms, suicidality, anxious arousal, and social anxiety symptoms. Follow-up simultaneous analytic models demonstrated indirect effects via the anxiety sensitivity subfactors that were pathognomonic with each of the specific affective outcomes. ***Conclusions:*** These findings suggest the utility of assessing and targeting anxiety sensitivity in the treatment of acculturative stress-related depression/anxiety problems among Hispanic college students.

Keywords: Latinos/Latinas, acculturative stress, anxiety sensitivity, adulthood (18 years & older), depression/anxiety

Population-based research shows that Hispanics report greater levels of anxiety and depressive symptoms compared with non-Hispanic Whites (Alegría, Molina, & Chen, 2014). Some work suggest that rates of depression and anxiety symptoms among Hispanics may be as much as double those among non-Hispanic Whites (Alegria, Canino, Stinson, & Grant, 2006), while other work finds no differences between Hispanics and other racial/ethnic groups (Asnaani, Richey, Dimaite, Hinton, & Hofmann, 2010). Increased rates of depression and anxiety among Hispanics are associated with adverse health outcomes (Zimmerman, Mast, Miles, & Markides, 2009), such as cardiovascular disease (Wassertheil-Smoller et al., 2014), diabetes (Fisher, Chan, Nan, Sartorius, & Oldenburg, 2012), and some increased risk for smoking and other substance use (Substance Abuse and Mental Health Services Administration, 2014). Yet, evidence suggests Hispanics are much less likely to access treatment (Alegría et al., 2008). Combined with the steady growth rate of Hispanics within the United States (United States Census Bureau, 2011, 2016), these observed mental health disparities are a public health concern.

Among college students, Hispanics young adults are subjected to significant mental health inequalities (Del Pilar, 2009; Gore & Aseltine, 2003). Such inequalities may be due, in part, to sociopolitical pressures (Huynh & Fuligni, 2012; Ojeda, Navarro, Meza, & Arbona, 2012; Yosso, Smith, Ceja, & Solórzano, 2009). A majority of Hispanic college students attend institutions wherein the racial/ethnic composition of the faculty and student body is non-Hispanic (Aud et al., 2012). Such environments often differ from that of Hispanic students' home communities, possibly contributing to more stressful transitions and greater mental health adjustment challenges (Castillo, Conoley, & Brossart, 2004; Castillo et al., 2006). The current sociopolitical context (e.g., xenophobia, racism, discrimination) experienced by Hispanic college students, along with the challenges associated with being a racial/ethnic minority college student, may increase their vulnerability to anxiety and depressive disorders (Franklin, Smith, & Hung, 2014; Gloria, Castellanos, Kanagui-Muñoz, & Rico, 2012; Gore & Aseltine, 2003).

Acculturative Stress as a Risk Factor for Anxiety/Depression

Although policy-level changes at the community and educational level are necessary to help address many aspects of these mental health challenges for Hispanic college students (Piedra,

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The present study was not preregistered with an analysis plan in an independent, institutional registry.

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Schiffner, & Reynaga-Abiko, 2011), there is an equally important need to broaden our understanding of individual-level variables that may be related to adverse emotional states (anxiety/depression) among this group. There has been an increasing scholarly recognition of the importance of acculturative stress. Acculturative stress reflects negative affective responses to the intersections experienced between an ethnic minority's culture and the majority culture (Berry, 1998). Acculturative stress is distinguished from acculturation, which reflects the internal (e.g., psychological) and external (e.g., behavioral) modifications made among members of different cultural groups when their cultures come into consistent contact with one another (Berry, 2005). Acculturative stress is associated with increased anxiety and depressive symptoms (Baker, Soto, Perez, & Lee, 2012; Cervantes, Cardoso, & Goldbach, 2015; Revollo, Qureshi, Collazos, Valero, & Casas, 2011), including suicidal ideation (Perez-Rodriguez et al., 2014), among Hispanics, and particularly among Hispanic college students in the United States (Cano et al., 2015; Castillo et al., 2015; Mejía & McCarthy, 2010). Yet, little empirical work has explored factors that may underlie the relation between acculturative stress and anxiety/depressive symptoms among Hispanic college students.

Anxiety Sensitivity as a Potential Explanatory Factor

One construct that has received increased scholarly and clinical attention is anxiety sensitivity. Anxiety sensitivity, defined as the fear of anxiety and anxiety-related sensations (McNally, 2002), is a relatively stable individual-level factor that can theoretically increase the risk of anxiety and depressive psychopathology and other types of anxiety problems. For example, if a person believes bodily sensations are a sign of imminent personal harm or threat, this "high anxiety sensitive" individual would presumably experience escalating levels of anxiety when exposed to such internal cues. Anxiety sensitivity develops from genetic (Stein, Jang, & Livesley, 1999) and environmental influences (e.g., parent modeling of anxiety, alienation from parents; Stewart et al., 2001; Viana & Rabian, 2008), and is a multifaceted construct composed of three domains: cognitive concerns (e.g., fear of going crazy), physical concerns (e.g., fear of heart attack), and social concerns (e.g., fear of public repercussions of anxiety symptoms). Each of these domains have also shown unique relevance to specific manifestations of anxiety and depressive symptoms: physical concerns with anxious arousal symptoms (Noël, Lewis, Francis, & Mezo, 2013), cognitive concerns with depressive symptoms and suicidality (Allan, Capron, Raines, & Schmidt, 2014; Norr, Allan, Macatee, Capron, & Schmidt, 2016), and social concerns with social anxiety (Allan et al., 2014). In fact, work on primarily non-Hispanic Whites indicates that anxiety sensitivity is a risk factor for the acquisition and maintenance of anxiety and depressive psychopathology (Olatunji & Wolitzky-Taylor, 2009). Although anxiety sensitivity has primarily been examined among non-Hispanic Whites, the extant work suggests it may function similarly among Hispanics as a vulnerability factor for depression and anxiety (Pina & Silverman, 2004; Varela, Weems, Berman, Hensley, & de Bernal, 2007; Zvolensky et al., 2015), with Hispanics at times reporting higher levels of anxiety sensitivity than non-Hispanic White peers (Weems, Hayward, Killen, & Taylor, 2002).

Consistent with transactional models of acculturative stress (Berry, 2006; Pedersen, 2006), anxiety sensitivity may help explain the relation of acculturative stress and anxiety/depressive symptoms and disorders among Hispanic college students. Past work has demonstrated that greater identification with Hispanic culture relative to mainstream American culture may associate with higher levels of anxiety sensitivity (Cintrón, Carter, Suchday, Sbrocco, & Gray, 2005), and experiencing more stressful life events may lead to increases in anxiety sensitivity levels (McLaughlin & Hatzenbuehler, 2009; Zavos et al., 2012). Greater exposure to stressful life events, including those related to acculturation (e.g., perceived discrimination from campus faculty), may lead to increased attention to internal signs of distress and fear about the ramifications of experiencing such internal distress, thus increasing anxiety sensitivity (McLaughlin & Hatzenbuehler, 2009). In turn, increases in anxiety sensitivity may then yield increases in depressive and anxious symptoms. As such, anxiety sensitivity may mediate the influence of acculturative stress on anxiety/depression among Hispanic college students.

Moreover, the lower order facets of anxiety sensitivity may differentially explain anxiety/depressive expression, and therefore, may represent different mechanisms for certain types of psychopathology. That is, anxiety sensitivity domains may be pathognomonic to the specific type of affective symptoms experienced (i.e., anxious arousal, social anxiety, depressive symptoms). To illustrate, a Hispanic college student experiencing greater acculturative stress may be more attuned to physiological sensations and more likely to negatively interpret physical sensations. In turn, these physical concerns about physiological sensations may manifest into affective symptomatology, particularly anxious arousal, thereby creating a feed-forward loop of hypervigilance of physical sensations and catastrophic interpretation of the sensations. Additionally, a Hispanic college student may worry about the cognitive consequences of acculturative stress, such as fearing that s/he is going crazy, which may intensify into depressive symptoms. Finally, a Hispanic college student may become increasingly concerned about how acculturative stress and associated reactions are perceived by others, which may increase anxiety and fears of displaying such anxiety in social situations. Taken together, greater acculturative stress may be associated with increases in each facet of anxiety sensitivity, which may uniquely explain expressions of anxiety/depressive symptoms and together help explain expression of anxiety/depressive psychopathology among Hispanic college students. Accordingly, exploring the role of anxiety sensitivity in the acculturative stress-anxiety/depressive symptoms relation among Hispanic college students is an important next research step.

Together, the present investigation sought to address whether anxiety sensitivity explained the relation between acculturative stress and symptoms of depression, suicidality, anxious arousal, and social anxiety among Hispanic college students. First, it was hypothesized that anxiety sensitivity (global construct) would uniquely explain the relation between acculturative stress and depression/anxiety outcomes. Further, in a simultaneous analytic model, it was hypothesized that the specific lower-order factors of anxiety sensitivity (physical, cognitive, and social concerns) will be pathognomonic to the type of affective symptoms experienced, including: (a) physical concerns of anxiety sensitivity would explain relations between acculturative stress and anxious arousal,

(b) cognitive concerns would explain relations between acculturative stress and depressive symptoms and suicidality, and (c) social concerns would explain relations between acculturative stress and social anxiety symptoms. The literature suggests anxiety sensitivity functions as a higher-order, global construct (Ebesutani, McLeish, Luberto, Young, & Maack, 2014; Osman et al., 2010); however, past work (mentioned above) has demonstrated the clinical utility of examining the unique relations of anxiety sensitivity subdomains with specific types of anxiety/depressive symptoms (Allan et al., 2014; Noël et al., 2013; Norr et al., 2016). For this reason, both the global anxiety sensitivity construct and its subdomains were examined as explanatory variables in separate models. For all models, it was expected that the observed effects would be evident above and beyond the variance accounted for by sex, relationship status, sexual minority status, age, financial strain, and negative affectivity. Demographic covariates were selected due to associations with anxiety and depressive symptoms, with greater vulnerability for symptom elevations among being female, single, identifying as a sexual minority, younger age, and greater financial strain (Cochran & Mays, 2009; Leach, Butterworth, Olesen, & Mackinnon, 2013; Myers et al., 2015; Rosenthal & Schreiner, 2000). Negative affect was covaried with acculturative stress and anxiety sensitivity based on past positive correlations with each of these variables and with anxiety/depressive symptoms (Crawford & Henry, 2004; Osman et al., 2010; Paukert, Pettit, Perez, & Walker, 2006).

Method

Participants

Hispanic university students between the ages of 18 and 25 years (n = 924, 80.9% female, M_{age} = 20.83 years, SD = 1.93) were recruited via flyers and the psychology subject pool of a large, ethnically diverse southwestern university (student body: 11% African American, 22% Asian, 31% non-White Hispanic, 28% non-Hispanic White, 8% Other/Mixed) between April 2014 and April 2016 as part of a larger study examining mental and physical health among college students. While a wider age range was collected in the original sample, participants between the ages of 18 and 25 years were selected for the present study's focus on the period of young adulthood. Participants received extra credit toward their psychology course as compensation. Exclusion criteria included being younger than age 18, nonproficiency in English (to ensure comprehension of study questions). There were 136 participants excluded from analyses for not completing all measures (n = 93) and inconsistent responding (n = 43; as measured by attention control items, e.g., "Who is the current President of the United States?"). The final sample consisted of 788 Hispanic university students (80.8% female, M_{age} = 20.83 years, SD = 1.97). Participants in the final sample identified themselves as follows: 47.3% single (not in a committed relationship); 89% heterosexual, 2.4% gay, 1.9% lesbian, 5.6% bisexual, and 1.1% other/unsure.

Measures

A demographic questionnaire assessed the sex, age, relationship status (exclusive relationship = 0; single/nonexclusive dating = 1), and sexual minority status (heterosexual = 0; gay/lesbian/bisexual/other/unsure = 1) of participants.

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 (e.g., "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 (α = .87 to .89; Fuertes & Westbrook, 1996; Joiner & Walker, 2002; Mena et al., 1987), including among Hispanic college students (Fuertes & Westbrook, 1996). Past work has been inconclusive about how best to characterize the factor structure of the SAFE, but generally suggests a general stress factor (Fuertes & Westbrook, 1996; Suh et al., 2016). Therefore, the present study employed the total scale score as the predictor variable, which demonstrated excellent internal consistency (α = .93).

The Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007) is an 18-item measure developed based upon the original Anxiety Sensitivity Index (Peterson & Reiss, 1992). Respondents indicate the extent to which they are concerned about possible negative consequences of anxiety-related symptoms (e.g., "It scares me when my heart beats rapidly"). Responses are rated on a 5-point Likert scale ranging from 0 (*very little*) to 4 (*very much*) and summed to create a total score. The ASI-3 has three subscales: physical, cognitive, and social. Each have demonstrated acceptable to good internal consistency in past work (Taylor et al., 2007). An earlier version of the ASI also demonstrated acceptable validity among Hispanic adults (Cintrón et al., 2005). In the current study, the internal consistency of ASI-3 total scale was excellent (α = .92), while that for each of the subscales was good (α's = .82–.89).

The Inventory of Depression and Anxiety Symptoms (IDAS; Watson et al., 2007) is a 64-item self-report measure of depression and anxiety symptoms experienced during the previous two weeks. 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 (α = .80–.89) and convergent validity with other measures of depression and anxiety among university students (Watson et al., 2007) and a diverse sample of community adults (Watson et al., 2012). The present study utilized as outcome variables the general depression (e.g., "I felt inadequate," α = .91), suicidality (e.g., "I had thoughts of suicide," "I hurt myself purposely," α = .86), anxious arousal (e.g., "I felt faint," α = .88), and social anxiety (e.g., "I was worried about embarrassing myself socially," α = .87) subscales, which demonstrated good to excellent internal consistency as expected from previous work among Hispanics (Paulus et al., 2016).

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), including among Hispanic university students (Ortuño-Sierra, Santarén-Rosell, Albéniz, & Fonseca-Pedrero, 2015). The present study utilized the NA subscale (total sample: $\alpha = .88$) as a covariate to adjust for the broad-based tendency to experience negative mood states.

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 ($\alpha = .88$), and the scale was employed as a covariate.

Procedures

Study procedures complied with the Institutional Review Board at the university in which the study was conducted. Each participant completed online informed consent before proceeding to an Internet-based self-report survey. All study measures were completed online. No identifying information was retained linking participants to survey responses.

Data Analytic Strategy

To examine whether anxiety sensitivity explained the relation between acculturative stress and four measures of depression/anxiety symptoms, the PROCESS Macro (Hayes, 2013) was used in Statistical Package for the Social Sciences (SPSS) 22.0. The PROCESS Macro is a publicly available syntax package designed for mediation analyses. The PROCESS Macro combines a regression framework with bootstrapping to examine the indirect effect of a predictor variable on an outcome variable through a proposed explanatory variable. Indirect effects are calculated as the product of the beta coefficients from two linear models ($a \times b$): the first predicting the explanatory variable from the proposed predictor (path a); and the second predicting the proposed outcome variable from the proposed explanatory variable (path b). Bootstrapping is a resampling method that generates, with replacement, thousands of smaller "samples" from a sample of observed scores. Within the PROCESS Macro, the sampling distribution of the indirect effect is estimated from the indirect effect calculated within each bootstrapped sample (Hayes, 2013). The present study estimated the indirect effect from 5,000 bootstrapped samples. Unlike traditional regression theory, bootstrapping does not assume normality of observed data (Hayes, 2013). Bias-corrected (BC) confidence intervals were calculated, and an indirect effect was determined to be significant if the confidence interval did not include zero. To compare the size of the indirect effect, the completely standardized indirect effects was calculated and reported below. In addition, κ^2, defined as "the proportion of the maximum possible indirect effect" (Hayes, 2013, p. 191; see also: Preacher & Kelley, 2011), was calculated and interpreted according to the benchmarks of small (.01), medium (.09), and large (.25), as suggested by Preacher and Kelley (2011). A simple explanatory model first examined whether the ASI-3 total score explained the relation of acculturative stress (i.e., predictor) with each depression/anxiety outcome. Follow-up models then examined each of the three subfactors of the ASI-3 as explanatory variables in the relation of acculturative stress and each depression/anxiety outcome in separate simultaneous analytic models. The simultaneous analytic model was used to reduce the likelihood of a Type I error. For significant indirect effects, a comparison model was examined in which the predictor (i.e., acculturative stress) and explanatory (e.g., ASI-3 cognitive concerns) variables were reversed to provide further support for the hypothesized direction of the indirect effect. When indirect effects were observed via two or more ASI-3 subfactors, separate comparison models were examined for each ASI-3 subfactor.

Results

Comparisons were made between included ($n = 788$) and excluded ($n = 136$) participants using t tests for continuous data and χ^2 tests for categorical data. No differences were observed across any of the study variables. In addition, an analysis of missing data was conducted using Little's Missing Completely At Random test (Little, 1988), which resulted in a failure to reject the null hypothesis that data were not missing completely at random, $\chi^2[27] = 27.397$, $p = .342$.

Indirect Effects

The descriptive statistics and bivariate relations among the study variables are presented in Table 1. A number of participants reported not having enough money to obtain necessities, such as adequate food (15%), clothing (16.9%), medical care (52.3%), and leisure activities (24.5%). Comparing the observed ASI-3 total scores to past clinical samples (Taylor et al., 2007), 26.1% were at or above past clinical average. For outcome variables, 13.5% of depression symptoms scores, 10.7% of suicidality scores, 11.3% of anxious arousal scores, and 17% of social anxiety scores were at or above past clinical averages (Watson et al., 2007). Indirect, direct, and total effects for the hypothesized models are presented in Table 2.

Depression. For depression symptoms, there was an indirect effect of acculturative stress via the ASI-3 total score (completely standardized effect = .061, $SE = .015$, 95% CI [.035, .093], $\kappa^2 = .052$), while the comparison model (with ASI-3 total score as predictor and acculturative stress as the explanatory variable) did not yield a significant indirect effect. Upon examining the simultaneous analytic model with the three ASI-3 subscales as the explanatory variables, cognitive concerns (completely standardized effect = .040, $SE = .013$, 95% CI [.019, .069], $\kappa^2 = .035$) and social concerns (completely standardized effect = .023, $SE = .010$, 95% CI [.007, .047], $\kappa^2 = .020$) demonstrated significant indirect effects, while physical concerns did not. The total effect of acculturative stress on depression symptoms was significant ($B = .079$, $SE = .024$, $t = 3.270$, $p = .001$), while the direct effect was

Table 1
Descriptive Statistics and Zero-Order Pearson Correlations Among Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Gender[a]	—	−.096**	−.145**	.033	.086†	.005	.032	.071†	.107*	.027	.051	−.021	−.070*	.006	−.009
2. Sexual minority status[a]		—	.015	.036	−.008	.120*	−.007	.104*	.060	.120*	.090†	.128**	.152**	.077†	.120*
3. Relationship status[a]			—	−.186**	.077†	.113*	.074†	.047	.018	.030	.072†	.076†	.018	.018	.089†
4. Age (years)[a]				—	−.230**	−.055	−.073†	−.048	−.033	−.009	−.081†	.003	−.018	−.004	−.072†
5. Financial strain[a]					—	.041	.037	.084†	.080†	.064	.074†	.069	.021	.014	.100*
6. Negative affectivity[a]						—	.401**	.479**	.367**	.466**	.412**	.609**	.371**	.462**	.507**
7. Acculturative stress[b]							—	.375**	.307**	.342**	.326**	.323**	.242**	.282**	.321**
8. Anxiety sensitivity[c]								—	.868**	.879**	.854**	.486**	.334**	.448**	.525**
9. Physical concerns[c]									—	.672**	.594**	.364**	.263**	.395**	.367**
10. Cognitive concerns[c]										—	.617**	.480**	.366**	.430**	.451**
11. Social concerns[c]											—	.420**	.241**	.341**	.544**
12. Depression[d]												—	.572**	.580**	.583**
13. Suicidality[d]													—	.540**	.409**
14. Anxious arousal[d]														—	.560**
15. Social anxiety[d]															—
$N = 788$ Mean (*n*)		637	87	373	20.84	16.78	21.03	50.93	20.7	6.03	5.22	9.45	41.61	7.32	10.71	8.71
SD (%)		80.8	11	47.3	1.97	4.33	7.43	17.36	14.49	5.47	5.53	5.70	13.58	3.01	4.61	4.51

Note. Gender, coded female = 0 and male = 1, with number/percentage female presented; sexual minority status, coded heterosexual = 0 and gay/lesbian/bisexual/other = 1, with number/percentage gay/lesbian/bisexual/other presented; relationship status, coded as single/nonexclusive dating = 0 and exclusive relationship = 1, with number/percentage single/uncommitted presented; age, in years; 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 Scale–negative affect subscale; acculturative stress = SAFE acculturative stress total scale score; anxiety sensitivity, total scale score of the Anxiety Sensitivity Index-3; physical concerns, subscale of the Anxiety Sensitivity Index-3; cognitive concerns, subscale of the Anxiety Sensitivity Index-3; social concerns, subscale of the Anxiety Sensitivity Index-3; 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] Explanatory Variable. [d] Outcome.
† $p < .05$. * $p < .01$. ** $p < .001$.

not significant ($B = .037$, $SE = .024$, $t = 1.538$, $p = .124$). In the total effects model that included all study variables and covariates in predicting depression symptoms (the path *b* model), the only significant covariate was negative affectivity ($B = .840$, $SE = .059$, $t = 14.150$, $p < .001$). Upon examination, the indirect effects in the comparison models (with cognitive and social concerns, respectively, as predictors via acculturative stress) were not significant.

Suicidality. In examining suicidality, there was an indirect effect of acculturative stress via the ASI-3 total score (completely standardized effect = .040, $SE = .012$, 95% CI [.020, .069], $\kappa^2 = .039$). The comparison model also yielded a significant indirect effect (completely standardized effect = .018, $SE = .009$, 95% CI [.003, .040], $\kappa^2 = .019$), but the effect size was less than half of the hypothesized indirect effect. Upon examining the simultaneous analytic model with the three ASI-3 subscales as the explanatory variables, there was a significant positive indirect effect through cognitive concerns (completely standardized effect = .044, $SE = .014$, 95% CI [.021, .075], $\kappa^2 = .043$), while the indirect effects through physical and social concerns were not significant. The direct ($B = .014$, $SE = .006$, $t = 2.233$, $p = .026$) and total ($B = .021$, $SE = .006$, $t = 3.394$, $p < .001$) effects of acculturative stress on suicidality were also significant. Significant covariates in the total effects model included gender ($B = -.586$, $SE = .252$, $t = -2.329$, $p = .020$), sexual minority status ($B = .891$, $SE = .313$, $t = 2.846$, $p = .005$), and negative affectivity ($B = .094$, $SE = .016$, $t = 6.013$, $p < .001$). The comparison model (with cognitive concerns as a predictor via acculturative stress) also yielded a significant indirect effect (completely standardized effect = .006, $SE = .004$, 95% CI [<.001, .017], $\kappa^2 = .009$), which was less than one quarter of the hypothesized effect and was less than the standard .01 for a small effect size (Preacher & Kelley, 2011).

Anxious arousal. Predicting anxious arousal symptoms, there was an indirect effect of acculturative stress via the ASI-3 total score (completely standardized effect = .064, $SE = .014$, 95% CI [.037, .095], $\kappa^2 = .061$), while the comparison model did not yield a significant indirect effect. Upon examining the simultaneous analytic model with the three ASI-3 subscales as the explanatory variables, significant indirect effects were observed via both physical concerns (completely standardized effect = .030, $SE = .011$, 95% CI [.012, .056], $\kappa^2 = .029$) and cognitive concerns (completely standardized effect = .031, $SE = .012$, 95% CI [.012, .060], $\kappa^2 = .030$). The total effect ($B = .032$, $SE = .009$, $t = 3.464$, $p < .001$) of acculturative stress on anxious arousal was significant, while the direct effect was not ($B = .015$, $SE = .009$,

Table 2
The Indirect Effect of Acculturative Stress via the Three Subfactors of Anxiety Sensitivity on Depression/Anxiety Symptoms

Variable	Mediator	Effect of IV on M (*a*)	Effect of M on DV (*b*)	Direct effect (*c′*)	Indirect effect ($a \times b$)	Indirect effect 95% CI	Total effect (*c*)	Effect size κ^2
Depression	ASI-3-Total	.183 (.028)	.225 (.030)	.038 (.024)	.041 (.010)	.025–.064	.079 (.024)	.052
	ASI-3-Physical	.059 (.011)	−.011 (.096)	.037 (.024)	−.001 (.007)	−.013–.013	.079 (.024)	—
	ASI-3-Cognitive	.061 (.011)	.449 (.100)		.027 (.009)	.013–.049		.035
	ASI-3-Social	.062 (.012)	.247 (.088)		.015 (.007)	.005–.031		.020
Suicidality	ASI-3-Total	.183 (.028)	.039 (.008)	.014 (.006)	.007 (.002)	.003–.012	.021 (.006)	.039
	ASI-3-Physical	.059 (.011)	.014 (.025)	.014 (.006)	.001 (.016)	−.002–.005	.021 (.006)	—
	ASI-3-Cognitive	.061 (.011)	.126 (.026)		.008 (.003)	.004–.014		.043
	ASI-3-Social	.062 (.012)	−.02 (.023)		−.001 (.002)	−.005–.001		—
Anxious arousal	ASI-3-Total	.183 (.028)	.090 (.011)	.015 (.009)	.017 (.004)	.010–.025	.032 (.009)	.061
	ASI-3-Physical	.059 (.011)	.131 (.037)	.015 (.009)	.008 (.003)	.003–.015	.032 (.009)	.029
	ASI-3-Cognitive	.061 (.011)	.132 (.038)		.008 (.003)	.003–.016		.030
	ASI-3-Social	.062 (.012)	.009 (.033)		.001 (.002)	−.003–.004		—
Social anxiety	ASI-3-Total	.183 (.028)	.108 (.010)	.017 (.008)	.020 (.004)	.013–.030	.037 (.009)	.076
	ASI-3-Physical	.059 (.011)	−.032 (.033)	.017 (.008)	−.002 (.002)	−.007–.003	.037 (.009)	—
	ASI-3-Cognitive	.061 (.011)	.068 (.034)		.004 (.003)	−.001–.010		—
	ASI-3-Social	.062 (.012)	.288 (.030)		.018 (.004)	.010–.027		.071

Note. ASI-3 = Anxiety Sensitivity Index-3; DV = Dependent Variable. Unstandardized indirect effects are presented with standard errors in accompanying parentheses. Effect sizes are presented only for the significant indirect effects.

$t = 1.706$, $p = .089$). Among the covariates in the total effects model, only negative affectivity was significantly associated with the dependent measure ($B = .191$, $SE = .023$, $t = 8.467$, $p < .001$). Neither of the comparison models (with ASI-3 physical concerns and ASI-3 cognitive concerns as the predictor, respectively) were significant.

Social anxiety. In the model of social anxiety symptoms, there was an indirect effect of acculturative stress via the ASI-3 total scale score (completely standardized effect = .081, $SE = .016$, 95% CI [.053, .120], $\kappa^2 = .076$). However, the comparison model yielded a significant indirect effect (completely standardized effect = .016, $SE = .009$, 95% CI [.001, .037], $\kappa^2 = .018$). Upon examining the simultaneous analytic model with the three ASI-3 subscales as the explanatory variables, the only indirect effect observed was through social concerns (completely standardized effect = .074, $SE = .017$, 95% CI [.041, .108], $\kappa^2 = .071$). The direct ($B = .017$, $SE = .008$, $t = 2.057$, $p = .040$) and total ($B = .037$, $SE = .009$, $t = 4.268$, $p < .001$) effects of acculturative stress were both significant. In the total effects model, the covariates associated with social anxiety symptoms were financial strain ($B = .059$, $SE = .030$, $t = 1.982$, $p = .048$) and negative affectivity ($B = .181$, $SE = .020$, $t = 8.954$, $p < .001$). The comparison model with social concerns as the predictor yielded a significant indirect effect (completely standardized effect = .006, $SE = .004$, 95% CI [<.001, .016], $\kappa^2 = .008$), but the effect size was 89% smaller than the hypothesized indirect effect via ASI-3 social concerns and was less than the standard .01 for a small effect size (Preacher & Kelley, 2011).

Discussion

The present study was, to our knowledge, the first to demonstrate the explanatory role of anxiety sensitivity in acculturative stress-affect associations among Hispanic college students, or in general. Results of this study were consistent with the hypotheses. As expected, the global anxiety sensitivity construct explained the relation between acculturative stress and symptoms of depression, suicidality, anxious arousal, and social anxiety. Importantly, these effects were observed after accounting for the influence of theoretically and empirically relevant demographic covariates and negative affectivity.

Results also indicated that the indirect effect of acculturative stress was pathognomonic to each of the anxiety/depression outcomes via the specific lower-order factors of anxiety sensitivity (physical, cognitive, and social concerns). Thus, the findings suggest facets of anxiety sensitivity play unique explanatory roles in the associations between acculturative stress and specific manifestations of anxiety/depression among Hispanic college students. In particular, ASI-3 cognitive concerns were implicated as an explanatory factor in three of the four models tested in the present study. For depression and suicidality symptoms, these findings were in line with the study's hypotheses and past research (Allan et al., 2014; Capron, Allan, Ialongo, Leen-Feldner, & Schmidt, 2015; Norr et al., 2016). Of note, the comparison model predicting suicidality symptoms from anxiety sensitivity cognitive concerns via acculturative stress was also significant; however, it yielded an effect size that fell below the standard for a small effect of .01 (Preacher & Kelley, 2011) and was smaller than the hypothesized indirect effect via ASI-3 cognitive concerns (hypothesized indirect effect via cognitive concerns $\kappa^2 = .043$ effect size compared with comparison model indirect effect $\kappa^2 = .009$ effect size). In the present sample of Hispanic college students, fear of cognitive incapacitation may be particularly salient given the academic pressures experienced during this developmental period (Holliday et al., 2016; Regehr, Glancy, & Pitts, 2013). Moreover, discrimination and other stressful acculturation experiences may lead to greater self-focused thoughts and experiences of cognitive dyscontrol when aspects of the dominant culture conflict with one's cultural identity (Kim, 2002; Weber, Appel, & Kronberger, 2015), as in the situation of stereotype threat (Nadler & Clark, 2011). For example, reductions in working memory capacity associated with

stereotype threat may lead to decreased cognitive capacities and increased anxiety about one's cognitive abilities suggestive of anxiety sensitivity cognitive concerns (Lu et al., 2015; Osborne, 2007; Schmader & Johns, 2003). Repeated experiences of acculturative stress-related cognitive incapacitation over time may then impact academic performance and increase anxiety/depression symptoms, perhaps through the additional mechanisms of hopelessness (Polanco-Roman & Miranda, 2013) or an avoidant coping style (Driscoll & Torres, 2013). Future work is needed examining anxiety sensitivity alongside other potential explanatory variables (e.g., hopelessness) to further parse the relation of acculturative stress with depression symptoms. Although the observed effect size was small, this may be explained by the inclusion of negative affectivity in the model. The unexpected indirect effect via ASI-3 cognitive concerns on anxious arousal may reflect the importance of cognitive appraisal in experiences of panic (Sandin, Sánchez-Arribas, Chorot, & Valiente, 2015).

As expected, the effect of acculturative stress on anxious arousal symptoms was partly explained by ASI-3 physical concerns. This finding supported past work demonstrating the strong relation between the ASI-3 physical concerns and anxious arousal symptoms (Olatunji & Wolitzky-Taylor, 2009), as well as the cultural tendency among Hispanics for psychological distress to manifest as physiological sensations (Escobar et al., 1987). With the heightened attention to the self that is typical of emerging adulthood (Arnett, 2004), the present results suggest the accumulation of acculturative stress may accentuate attention to and catastrophic interpretations of internal cues (e.g., sensations), which may then increase anxious arousal. Like the indirect effects observed via ASI-3 cognitive concerns, the effect size for the indirect effect through ASI-3 physical concerns was small. This finding was unexpected and may suggest that, in the context of acculturative stress, it may be important to account for the effect of both cognitive concerns and physical concerns in understanding the effect of anxiety sensitivity on anxious arousal. Further work is needed to examine potential moderators (e.g., country of nativity) of the indirect effect via ASI-3 physical concerns to better understand the small effect size observed in the present study.

The expected indirect effect of acculturative stress on social anxiety via ASI-3 social concerns was also in line with past research demonstrating the influence of the social concerns subfactor on social anxiety (Allan et al., 2014), as was the unexpected indirect effect observed on depression symptoms (Allan et al., 2014). The observed effect sizes supported past work (Allan et al., 2014; Naragon-Gainey, 2010), with a stronger indirect effect demonstrated for social anxiety symptoms compared with depressive symptoms. These findings also extended past work by suggesting that ASI-3 social concerns may serve as a transdiagnostic mechanism linking acculturative stress with both social anxiety and depressive symptoms. Acculturation often entails the experience of being between cultures, with pressures to conform emanating from both the culture of origin and the dominant culture (Berry, 2005). In this context, interpersonal interactions with members of either the dominant (e.g., peers) or original (e.g., family) cultures may lead to experiences of withholding aspects of one's identity and internal experience, particularly negative affective experiences related to the interaction (Lorenzo-Blanco & Unger, 2015; Xu & Chi, 2013). Such concealment may inadvertently contribute to greater social displays of anxiety (i.e., anxiety sensitivity social concerns). In emerging adulthood, during which identity formation is a primary focus (Arnett, 2004), the role of anxiety sensitivity social concerns in the connection between acculturative stress and social anxiety may be particularly salient. Indeed, the present study observed the indirect effect via ASI-3 social concerns on social anxiety symptoms to be the strongest tested, nearly twice as strong as each of the other significant indirect effects observed. Here again, the comparison model also observed a small indirect effect of ASI-3 social concerns, via acculturative stress, on social anxiety symptoms. This comparison effect, however, was 89% smaller (comparison $\kappa^2 = .008$ effect size compared with hypothesized indirect effect via ASI-3 social concerns $\kappa^2 = .071$ effect size) than the hypothesized indirect effect of acculturative stress via social concerns. Therefore, social anxiety sensitivity may be a particularly important factor for consideration as a transdiagnostic factor underlying the relation of acculturative stress with social anxiety.

Limitations to the present study should be noted. Results were based upon a cross-sectional study design and cannot speak to causation. Further research is needed employing longitudinal and/or cross-sequential designs to confirm the findings reported above. Second, the study was conducted at a highly ethnically diverse institution, and non-English speaking college students were excluded from the sample, which may have mitigated the impact of acculturative stress. However, the observed mean and standard deviation for acculturative stress in the present sample was similar to past work that utilized the SAFE acculturative stress measure among college students (Joiner & Walker, 2002; Polanco-Roman & Miranda, 2013). Third, while the number of males was substantial ($n = 151$), the sample consisted of a much higher proportion of females. Confirmation in future samples with greater parity for gender and possibly other sociodemographic variables (e.g., age) would strengthen the generalizability of the study's conclusions. Furthermore, gender was a significant covariate in one model, that predicting suicidality symptoms; future work is needed to determine whether gender may moderate the indirect effect of acculturative stress on suicidality via anxiety sensitivity cognitive concerns. Fourth, the study examined manifest indicators of some of the most common and disabling anxiety/depressive symptoms, but did not examine culturally variant forms of distress (e.g., *ataques de nervios*). Fifth, levels of depression/anxiety may differ depending on country of origin (Alegría et al., 2008), yet nativity was not assessed in the present study. Future work examining native country as a moderator of the relations among acculturative stress, anxiety sensitivity, and depression/anxiety may identify specific at-risk demographic groups in need of targeted prevention efforts. Lastly, results were based upon self-report assessments of the study's measures. A multimethod protocol would further enhance confidence in the study's findings by reducing measurement bias and could be accomplished through the use of interview and laboratory paradigms.

The present findings extend past work by demonstrating anxiety sensitivity as a transdiagnostic vulnerability factor that may explain the multifinality of depression/anxiety related to acculturative stress among Hispanic college students. In conjunction with past work (Allan et al., 2014; Olatunji & Wolitzky-Taylor, 2009), these data also highlight the need to account for the unique relations of anxiety sensitivity subfactors across specific manifestations of depression and anxiety. These findings also suggest the importance of assessing for and monitoring the influence of culture and experiences as an ethnic minority on anxiety/depressive symptoms and problems among Hispanic college students. Clinically, it may be advantageous to address anxiety sensitivity in the context of acculturative stress and anxiety/

depression among Hispanic college students. Although treatments are available to reduce levels of anxiety sensitivity (Schmidt, Capron, Raines, & Allan, 2014), cultural-specific interventions for specific facets may be warranted for young Hispanic adults. Future work is needed to develop and examine targeted anxiety sensitivity interventions among this population to offset the relative risk of anxiety/depressive symptoms and disorders.

References

Alegría, M., Canino, G., Shrout, P. E., Woo, M., Duan, N., Vila, D., . . . Meng, X.-L. (2008). Prevalence of mental illness in immigrant and non-immigrant U.S. Latino groups. *The American Journal of Psychiatry, 165,* 359–369. http://dx.doi.org/10.1176/appi.ajp.2007.07040704

Alegria, M., Canino, G., Stinson, F. S., & Grant, B. F. (2006). Nativity and *DSM–IV* psychiatric disorders among Puerto Ricans, Cuban Americans, and non-Latino Whites in the United States: Results from the National Epidemiologic Survey on alcohol and related conditions. *The Journal of Clinical Psychiatry, 67,* 56–65. http://dx.doi.org/10.4088/JCP.v67n0109

Alegría, M., Molina, K. M., & Chen, C.-N. (2014). Neighborhood characteristics and differential risk for depressive and anxiety disorders across racial/ethnic groups in the United States. *Depression and Anxiety, 31,* 27–37.

Allan, N. P., Capron, D. W., Raines, A. M., & Schmidt, N. B. (2014). Unique relations among anxiety sensitivity factors and anxiety, depression, and suicidal ideation. *Journal of Anxiety Disorders, 28,* 266–275. http://dx.doi.org/10.1016/j.janxdis.2013.12.004

Arnett, J. J. (2004). *Emerging adulthood: The winding road from the late teens through the twenties*. New York, NY: Oxford University Press.

Asnaani, A., Richey, J. A., Dimaite, R., Hinton, D. E., & Hofmann, S. G. (2010). A cross-ethnic comparison of lifetime prevalence rates of anxiety disorders. *Journal of Nervous and Mental Disease, 198,* 551–555. http://dx.doi.org/10.1097/NMD.0b013e3181ea169f

Aud, S., Hussar, W., Johnson, F., Kena, G., Roth, E., Manning, E., & Zhang, J. (2012). *The Condition of Education 2012 (NCES 2012–045)*. Washington, DC: National Center for Education Statistics. ERIC, Institute of Educational Sciences. Retrieved from http://nces.ed.gov/pubsearch

Baker, A. M., Soto, J. A., Perez, C. R., & Lee, E. A. (2012). Acculturative status and psychological well-being in an Asian American sample. *Asian American Journal of Psychology, 3,* 275–285. http://dx.doi.org/10.1037/a0026842

Berry, J. W. (1998). Acculturative stress. In P. B. Organista, K. M. Chun, & G. Marín (Eds.), *Readings in ethnic psychology* (pp. 117–122). Florence, KY: Taylor & Frances/Routledge.

Berry, J. W. (2005). Acculturation: Living successfully in two cultures. *International Journal of Intercultural Relations, 29,* 697–712. http://dx.doi.org/10.1016/j.ijintrel.2005.07.013

Berry, J. W. (2006). Contexts of acculturation. In D. L. Sam, & J. W. Berry (Eds.), *The Cambridge handbook of acculturation psychology* (pp. 27–42). New York, NY: Cambridge University Press. http://dx.doi.org/10.1017/CBO9780511489891.006

Cano, M. Á., de Dios, M. A., Castro, Y., Vaughan, E. L., Castillo, L. G., Lorenzo-Blanco, E. I., . . . Molleda, L. M. (2015). Alcohol use severity and depressive symptoms among late adolescent Hispanics: Testing associations of acculturation and enculturation in a bicultural transaction model. *Addictive Behaviors, 49,* 78–82. http://dx.doi.org/10.1016/j.addbeh.2015.06.002

Capron, D. W., Allan, N. P., Ialongo, N. S., Leen-Feldner, E., & Schmidt, N. B. (2015). The depression distress amplification model in adolescents: A longitudinal examination of anxiety sensitivity cognitive concerns, depression and suicidal ideation. *Journal of Adolescence, 41,* 17–24.

Castillo, L. G., Conoley, C. W., & Brossart, D. F. (2004). Acculturation, White marginalization, and family support as predictors of perceived distress in Mexican American female college students. *Journal of Counseling Psychology, 51,* 151–157. http://dx.doi.org/10.1037/0022-0167.51.2.151

Castillo, L. G., Conoley, C. W., Choi-Pearson, C., Archuleta, D. J., Phoummarath, M. J., & Van Landingham, A. (2006). University environment as a mediator of Latino ethnic identity and persistence attitudes. *Journal of Counseling Psychology, 53,* 267–271. http://dx.doi.org/10.1037/0022-0167.53.2.267

Castillo, L. G., Navarro, R. L., Walker, J. E. O. Y., Schwartz, S. J., Zamboanga, B. L., Whitbourne, S. K., . . . Caraway, S. J. (2015). Gender matters: The influence of acculturation and acculturative stress on Latino college student depressive symptomatology. *Journal of Latina/o Psychology, 3,* 40–55. http://dx.doi.org/10.1037/lat0000030

Cervantes, R. C., Cardoso, J. B., & Goldbach, J. T. (2015). Examining differences in culturally based stress among clinical and nonclinical Hispanic adolescents. *Cultural Diversity and Ethnic Minority Psychology, 21,* 458–467. http://dx.doi.org/10.1037/a0037879

Cintrón, J. A., Carter, M. M., Suchday, S., Sbrocco, T., & Gray, J. (2005). Factor structure and construct validity of the Anxiety Sensitivity Index among island Puerto Ricans. *Journal of Anxiety Disorders, 19,* 51–68. http://dx.doi.org/10.1016/j.janxdis.2003.10.007

Cochran, S. D., & Mays, V. M. (2009). Burden of psychiatric morbidity among lesbian, gay, and bisexual individuals in the California Quality of Life Survey. *Journal of Abnormal Psychology, 118,* 647–658. http://dx.doi.org/10.1037/a0016501

Crawford, J. R., & Henry, J. D. (2004). The positive and negative affect schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology, 43,* 245–265. http://dx.doi.org/10.1348/0144665031752934

Del Pilar, J. A. (2009). Mental health and Latino/a college students: A psychological perspective and new findings. *Journal of Hispanic Higher Education, 8,* 263–281. http://dx.doi.org/10.1177/1538192708328891

Driscoll, M. W., & Torres, L. (2013). Acculturative stress and Latino depression: The mediating role of behavioral and cognitive resources. *Cultural Diversity and Ethnic Minority Psychology, 19,* 373–382. http://dx.doi.org/10.1037/a0032821

Ebesutani, C., McLeish, A. C., Luberto, C. M., Young, J., & Maack, D. J. (2014). A bifactor model of anxiety sensitivity: Analysis of the Anxiety Sensitivity Index-3. *Journal of Psychopathology and Behavioral Assessment, 36,* 452–464. http://dx.doi.org/10.1007/s10862-013-9400-3

Escobar, J. I., Golding, J. M., Hough, R. L., Karno, M., Burnam, M. A., & Wells, K. B. (1987). Somatization in the community: Relationship to disability and use of services. *American Journal of Public Health, 77,* 837–840. http://dx.doi.org/10.2105/AJPH.77.7.837

Fisher, E. B., Chan, J. C. N., Nan, H., Sartorius, N., & Oldenburg, B. (2012). Co-occurrence of diabetes and depression: conceptual considerations for an emerging global health challenge. *Journal of affective disorders, 142,* S56–S66.

Franklin, J. D., Smith, W. A., & Hung, M. (2014). Racial battle fatigue for Latina/o students: A quantitative perspective. *Journal of Hispanic Higher Education, 13,* 303–322. http://dx.doi.org/10.1177/1538192714540530

Fuertes, J. N., & Westbrook, F. D. (1996). Using the Social, Attitudinal, Familial, and Environmental (SAFE) Acculturation Stress Scale to assess the adjustment needs of Hispanic college students. *Measurement and Evaluation in Counseling and Development, 29,* 67–76.

Gloria, A. M., Castellanos, J., Kanagui-Muñoz, M., & Rico, M. A. (2012). Assessing Latina/o undergraduates' depressive symptomatology: Comparisons of the Beck Depression Inventory-II, the Center For Epidemiological Studies-Depression Scale, and the Self-Report Depression Scale. *Hispanic Journal of Behavioral Sciences, 34,* 160–181. http://dx.doi.org/10.1177/0739986311428893

Gore, S., & Aseltine, R. H., Jr. (2003). Race and ethnic differences in depressed mood following the transition from high school. *Journal of Health and Social Behavior, 44,* 370–389. http://dx.doi.org/10.2307/1519785

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.

Holliday, R., Anderson, E., Williams, R., Bird, J., Matlock, A., Ali, S., . . . Surís, A. (2016). A pilot examination of differences in college adjustment stressors and depression and anxiety symptoms between White, Hispanic and White, non-Hispanic female college students. *Journal of Hispanic Higher Education, 15,* 277–288. http://dx.doi.org/10.1177/1538192715607331

Huynh, V. W., & Fuligni, A. J. (2012). Perceived ethnic stigma across the transition to college. *Journal of Youth and Adolescence, 41,* 817–830.

Joiner, T. E., Jr., & Walker, R. L. (2002). Construct validity of a measure of acculturative stress in African Americans. *Psychological Assessment, 14,* 462–466. http://dx.doi.org/10.1037/1040-3590.14.4.462

Kim, Y. (2002). The role of cognitive control in mediating the effect of stressful circumstances among Korean immigrants. *Health & Social Work, 27,* 36–46. http://dx.doi.org/10.1093/hsw/27.1.36

Leach, L. S., Butterworth, P., Olesen, S. C., & Mackinnon, A. (2013). Relationship quality and levels of depression and anxiety in a large population-based survey. *Social Psychiatry and Psychiatric Epidemiology, 48,* 417–425. http://dx.doi.org/10.1007/s00127-012-0559-9

Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 83,* 1198–1202.

Lorenzo-Blanco, E. I., & Unger, J. B. (2015). Ethnic discrimination, acculturative stress, and family conflict as predictors of depressive symptoms and cigarette smoking among Latina/o youth: The mediating role of perceived stress. *Journal of Youth and Adolescence, 44,* 1984–1997. http://dx.doi.org/10.1007/s10964-015-0339-4

Lu, A., Feng, Y., Yu, Z., Tian, H., Hong, X., & Zheng, D. (2015). Anxiety and mind wandering as independent consequences of stereotype threat. *Social Behavior and Personality, 43,* 537–558. http://dx.doi.org/10.2224/sbp.2015.43.4.537

McLaughlin, K. A., & Hatzenbuehler, M. L. (2009). Stressful life events, anxiety sensitivity, and internalizing symptoms in adolescents. *Journal of Abnormal Psychology, 118,* 659–669. http://dx.doi.org/10.1037/a0016499

McNally, R. J. (2002). Anxiety sensitivity and panic disorder. *Biological Psychiatry, 52,* 938–946. http://dx.doi.org/10.1016/S0006-3223(02)01475-0

Mejía, O. L., & McCarthy, C. J. (2010). Acculturative stress, depression, and anxiety in migrant farmwork college students of Mexican heritage. *International Journal of Stress Management, 17,* 1–20. http://dx.doi.org/10.1037/a0018119

Mena, F. J., Padilla, A. M., & Maldonado, M. (1987). Acculturative stress and specific coping strategies among immigrant and later generation college students. *Hispanic Journal of Behavioral Sciences, 9,* 207–225. http://dx.doi.org/10.1177/07399863870092006

Myers, H. F., Wyatt, G. E., Ullman, J. B., Loeb, T. B., Chin, D., Prause, N., . . . Liu, H. (2015). Cumulative burden of lifetime adversities: Trauma and mental health in low-SES African Americans and Latino/as. *Psychological Trauma: Theory, Research, Practice, and Policy, 7,* 243–251. http://dx.doi.org/10.1037/a0039077

Nadler, J. T., & Clark, M. H. (2011). Stereotype threat: A meta-analysis comparing African Americans to Hispanic Americans. *Journal of Applied Social Psychology, 41,* 872–890. http://dx.doi.org/10.1111/j.1559-1816.2011.00739.x

Naragon-Gainey, K. (2010). Meta-analysis of the relations of anxiety sensitivity to the depressive and anxiety disorders. *Psychological Bulletin, 136,* 128–150. http://dx.doi.org/10.1037/a0018055

Noël, V. A., Lewis, K., Francis, S. E., & Mezo, P. G. (2013). Relationships between the multiple dimensions of anxiety sensitivity and symptoms of anxiety and depression in men and women. *Journal of Cognitive and Behavioral Psychotherapies, 13,* 333–353.

Norr, A. M., Allan, N. P., Macatee, R. J., Capron, D. W., & Schmidt, N. B. (2016). The role of anxiety sensitivity cognitive concerns in suicidal ideation: A test of the Depression-Distress Amplification Model in clinical outpatients. *Psychiatry Research, 238,* 74–80. http://dx.doi.org/10.1016/j.psychres.2016.02.016

Ojeda, L., Navarro, R. L., Meza, R. R., & Arbona, C. (2012). Too Latino and not Latino enough: The role of ethnicity-related stressors on Latino college students' life satisfaction. *Journal of Hispanic Higher Education, 11,* 14–28. http://dx.doi.org/10.1177/1538192711435553

Olatunji, B. O., & Wolitzky-Taylor, K. B. (2009). Anxiety sensitivity and the anxiety disorders: A meta-analytic review and synthesis. *Psychological Bulletin, 135,* 974–999. http://dx.doi.org/10.1037/a0017428

Ortuño-Sierra, J., Santarén-Rosell, M., Albéniz, A. P., & Fonseca-Pedrero, E. (2015). Dimensional structure of the Spanish version of the Positive and Negative Affect Schedule (PANAS) in adolescents and young adults. *Psychological Assessment, 27*(3), e1–e9. http://dx.doi.org/10.1037/pas0000107

Osborne, J. W. (2007). Linking stereotype threat and anxiety. *Educational Psychology, 27,* 135–154. http://dx.doi.org/10.1080/01443410601069929

Osman, A., Gutierrez, P. M., Smith, K., Fang, Q., Lozano, G., & Devine, A. (2010). The Anxiety Sensitivity Index-3: Analyses of dimensions, reliability estimates, and correlates in nonclinical samples. *Journal of Personality Assessment, 92,* 45–52. http://dx.doi.org/10.1080/00223890903379332

Paukert, A. L., Pettit, J. W., Perez, M., & Walker, R. L. (2006). Affective and attributional features of acculturative stress among ethnic minority college students. *The Journal of Psychology: Interdisciplinary and Applied, 140,* 405–419. http://dx.doi.org/10.3200/JRLP.140.5.405-419

Paulus, D. J., Bakhshaie, J., Garza, M., Ochoa-Perez, M., Mayorga, N. A., Bogiaizian, D., . . . Zvolensky, M. J. (2016). Pain severity and emotion dysregulation among Latinos in a community health care setting: Relations to mental health. *General Hospital Psychiatry, 42,* 41–48. http://dx.doi.org/10.1016/j.genhosppsych.2016.07.002

Pearlin, L. I., Menaghan, E. G., Lieberman, M. A., & Mullan, J. T. (1981). The stress process. *Journal of Health and Social Behavior, 22,* 337–356. http://dx.doi.org/10.2307/2136676

Pedersen, P. B. (2006). Knowledge gaps about stress and coping in a multicultural context. In P. T. P. Wong, & L. C. J. Wong (Eds.), *Handbook of multicultural perspectives on stress and coping* (pp. 579–595). Dallas, TX: Spring Publications. http://dx.doi.org/10.1007/0-387-26238-5_25

Perez-Rodriguez, M. M., Baca-Garcia, E., Oquendo, M. A., Wang, S., Wall, M. M., Liu, S.-M., & Blanco, C. (2014). Relationship between acculturation, discrimination, and suicidal ideation and attempts among US Hispanics in the National Epidemiologic Survey of Alcohol and Related Conditions. *The Journal of Clinical Psychiatry, 75,* 399–407. http://dx.doi.org/10.4088/JCP.13m08548

Peterson, R. A., & Reiss, S. (1992). *Anxiety Sensitivity Index revised manual*. Worthington, OH: IDS Publishing.

Piedra, L. M., Schiffner, T. A., & Reynaga-Abiko, G. (2011). Investing in the future: Expanding educational opportunities for first-generation Latino college students. In L. P. Buki, & L. M. Piedra (Eds.), *Creating infrastructures for Latino mental health* (pp. 117–137). New York, NY: Springer Science.

Pina, A. A., & Silverman, W. K. (2004). Clinical phenomenology, somatic symptoms, and distress in Hispanic/Latino and European American youths with anxiety disorders. *Journal of Clinical Child and Adolescent Psychology, 33,* 227–236. http://dx.doi.org/10.1207/s15374424jccp3302_3

Polanco-Roman, L., & Miranda, R. (2013). Culturally related stress, hopelessness, and vulnerability to depressive symptoms and suicidal ideation in emerging adulthood. *Behavior Therapy, 44,* 75–87. http://dx.doi.org/10.1016/j.beth.2012.07.002

Preacher, K. J., & Kelley, K. (2011). Effect size measures for mediation models: Quantitative strategies for communicating indirect effects. *Psychological Methods, 16,* 93–115. http://dx.doi.org/10.1037/a0022658

Regehr, C., Glancy, D., & Pitts, A. (2013). Interventions to reduce stress in university students: A review and meta-analysis. *European Psychiatry, 28,* 1–11.

Revollo, H.-W., Qureshi, A., Collazos, F., Valero, S., & Casas, M. (2011). Acculturative stress as a risk factor of depression and anxiety in the Latin American immigrant population. *International Review of Psychiatry, 23,* 84–92. http://dx.doi.org/10.3109/09540261.2010.545988

Rosenthal, B. S., & Schreiner, A. C. (2000). Prevalence of psychological symptoms among undergraduate students in an ethnically diverse urban public college. *Journal of American College Health, 49,* 12–18. http://dx.doi.org/10.1080/07448480009596277

Sandin, B., Sánchez-Arribas, C., Chorot, P., & Valiente, R. M. (2015). Anxiety sensitivity, catastrophic misinterpretations and panic self-efficacy in the prediction of panic disorder severity: Towards a tripartite cognitive model of panic disorder. *Behaviour Research and Therapy, 67,* 30–40. http://dx.doi.org/10.1016/j.brat.2015.01.005

Schmader, T., & Johns, M. (2003). Converging evidence that stereotype threat reduces working memory capacity. *Journal of Personality and Social Psychology, 85,* 440–452. http://dx.doi.org/10.1037/0022-3514.85.3.440

Schmidt, N. B., Capron, D. W., Raines, A. M., & Allan, N. P. (2014). Randomized clinical trial evaluating the efficacy of a brief intervention targeting anxiety sensitivity cognitive concerns. *Journal of Consulting and Clinical Psychology, 82,* 1023–1033. http://dx.doi.org/10.1037/a0036651

Stein, M. B., Jang, K. L., & Livesley, W. J. (1999). Heritability of anxiety sensitivity: A twin study. *The American Journal of Psychiatry, 156,* 246–251.

Stewart, S. H., Taylor, S., Jang, K. L., Cox, B. J., Watt, M. C., Fedoroff, I. C., & Borger, S. C. (2001). Causal modeling of relations among learning history, anxiety sensitivity, and panic attacks. *Behaviour Research and Therapy, 39,* 443–456. http://dx.doi.org/10.1016/S0005-7967(00)00023-1

Substance Abuse and Mental Health Services Administration. (2014). *Results from the 2013 National Survey on Drug Use and Health (NSDUH): Mental health detailed tables*. Retrieved from http://www.samhsa.gov/data/sites/default/files/2013MHDetTabs/NSDUH-MHDetTabs2013.htm

Suh, H., Rice, K. G., Choi, C.-C., van Nuenen, M., Zhang, Y., Morero, Y., & Anderson, D. (2016). Measuring acculturative stress with the SAFE: Evidence for longitudinal measurement invariance and associations with life satisfaction. *Personality and Individual Differences, 89,* 217–222. http://dx.doi.org/10.1016/j.paid.2015.10.002

Taylor, S., Zvolensky, M. J., Cox, B. J., Deacon, B., Heimberg, R. G., Ledley, D. R., . . . Cardenas, S. J. (2007). Robust dimensions of anxiety sensitivity: Development and initial validation of the Anxiety Sensitivity Index-3. *Psychological Assessment, 19,* 176–188. http://dx.doi.org/10.1037/1040-3590.19.2.176

United States Census Bureau. (2011). *The Hispanic population: 2010*. Retrieved from http://www.census.gov/prod/cen2010/briefs/c2010br-04.pdf

United States Census Bureau. (2016). *Quick facts: United States*. Retrieved from https://www.census.gov/quickfacts/table/PST045215/00

Varela, R. E., Weems, C. F., Berman, S. L., Hensley, L., & de Bernal, M. C. R. (2007). Internalizing symptoms in Latinos: The role of anxiety sensitivity. *Journal of Youth and Adolescence, 36,* 429–440. http://dx.doi.org/10.1007/s10964-007-9168-4

Viana, A. G., & Rabian, B. (2008). Perceived attachment: Relations to anxiety sensitivity, worry, and GAD symptoms. *Behaviour Research and Therapy, 46,* 737–747. http://dx.doi.org/10.1016/j.brat.2008.03.002

Wassertheil-Smoller, S., Arredondo, E. M., Cai, J., Castaneda, S. F., Choca, J. P., Gallo, L. C., . . . Zee, P. C. (2014). Depression, anxiety, antidepressant use, and cardiovascular disease among Hispanic men and women of different national backgrounds: Results from the Hispanic Community Health Study/Study of Latinos. *Annals of Epidemiology, 24,* 822–830. http://dx.doi.org/10.1016/j.annepidem.2014.09.003

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063–1070. http://dx.doi.org/10.1037/0022-3514.54.6.1063

Watson, D., O'Hara, M. W., Naragon-Gainey, K., Koffel, E., Chmielewski, M., Kotov, R., . . . Ruggero, C. J. (2012). Development and validation of new anxiety and bipolar symptom scales for an expanded version of the IDAS (the IDAS-II). *Assessment, 19,* 399–420. http://dx.doi.org/10.1177/1073191112449857

Watson, D., O'Hara, M. W., Simms, L. J., Kotov, R., Chmielewski, M., McDade-Montez, E. A., . . . Stuart, S. (2007). Development and validation of the Inventory of Depression and Anxiety Symptoms (IDAS). *Psychological Assessment, 19,* 253–268. http://dx.doi.org/10.1037/1040-3590.19.3.253

Weber, S., Appel, M., & Kronberger, N. (2015). Stereotype threat and the cognitive performance of adolescent immigrants: The role of cultural identity strength. *Contemporary Educational Psychology, 42,* 71–81. http://dx.doi.org/10.1016/j.cedpsych.2015.05.001

Weems, C. F., Hayward, C., Killen, J., & Taylor, C. B. (2002). A longitudinal investigation of anxiety sensitivity in adolescence. *Journal of Abnormal Psychology, 111,* 471–477. http://dx.doi.org/10.1037/0021-843X.111.3.471

Williams, E. D., Steptoe, A., Chambers, J. C., & Kooner, J. S. (2009). Psychosocial risk factors for coronary heart disease in UK South Asian men and women. *Journal of Epidemiology and Community Health, 63,* 986–991. http://dx.doi.org/10.1136/jech.2008.084186

Xu, L., & Chi, I. (2013). Acculturative stress and depressive symptoms among Asian immigrants in the United States: The roles of social support and negative interaction. *Asian American Journal of Psychology, 4,* 217–226. http://dx.doi.org/10.1037/a0030167

Yosso, T. J., Smith, W. A., Ceja, M., & Solórzano, D. G. (2009). Critical race theory, racial microaggressions, and campus racial climate for Latina/o undergraduates. *Harvard Educational Review, 79,* 659–691. http://dx.doi.org/10.17763/haer.79.4.m6867014157m707l

Zavos, H. M. S., Wong, C. C. Y., Barclay, N. L., Keers, R., Mill, J., Rijsdijk, F. V., . . . Eley, T. C. (2012). Anxiety sensitivity in adolescence and young adulthood: The role of stressful life events, 5HTTLPR and their interaction. *Depression and Anxiety, 29,* 400–408. http://dx.doi.org/10.1002/da.21921

Zimmerman, J. A., Mast, B. T., Miles, T., & Markides, K. S. (2009). Vascular risk and depression in the Hispanic Established Population for the Epidemiologic Study of the Elderly (EPESE). *International Journal of Geriatric Psychiatry, 24,* 409–416. http://dx.doi.org/10.1002/gps.2136

Zvolensky, M. J., Bakhshaie, J., Garza, M., Valdivieso, J., Ortiz, M., Bogiaizian, D., . . . Vujanovic, A. (2015). The role of anxiety sensitivity in the relation between experiential avoidance and anxious arousal, depressive, and suicidal symptoms among Latinos in primary care. *Cognitive Therapy and Research, 39,* 688–696. http://dx.doi.org/10.1007/s10608-015-9696-2