Depressive symptoms and externalizing behaviors among Hispanic immigrant adolescents: Examining longitudinal effects of cultural stress

Miguel Ángel Cano a,*, Seth J. Schwartz b, Linda G. Castillo c, Andrea J. Romero d, Shi Huang b, Elma I. Lorenzo-Blanco e, Jennifer B. Unger f, Byron L. Zamboanga g, Sabrina E. Des Rosiers h, Lourdes Baezconde-Garbanati i, Karina M. Lizzi b, Daniel W. Soto f, Assaf Oshri i, Juan Andres Villamar j, Monica Pattarroyo f, Josée Szapocznik b

a Florida International University, United States
b University of Miami, United States
c Texas A&M University, United States
d University of Arizona, United States
e University of South Carolina, United States
f University of Southern California, United States
g Smith College, United States
h Barry University, United States
i University of Georgia, United States
j Northwestern University, United States

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A B S T R A C T

This study examined longitudinal effects of cultural stress (a latent factor comprised of bicultural stress, ethnic discrimination, and negative context of reception) on depressive symptoms and a range of externalizing behaviors among recently (<5 years in the U.S. at baseline) immigrated Hispanic adolescents. A sample of 302 adolescents (53% boys; mean age 14.51 years) completed baseline measures of perceived ethnic discrimination, bicultural stress, and perceived negative context of reception; and outcome measures of depressive symptoms, cigarette smoking, alcohol use, aggressive behavior, and rule-breaking behavior six months post-baseline. A path analysis indicated that higher cultural stress scores predicted higher levels of all outcomes. These effects were consistent across genders, but varied by study site. Specifically, higher cultural stress scores increased depressive symptoms among participants in Miami, but not in Los Angeles. Findings suggest that cultural stress is a clinically relevant predictor of depressive symptoms and externalizing behaviors among Hispanic immigrant adolescents.
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The adolescent population of the United States is becoming increasingly diverse. Currently, about one in five adolescents in the U.S. is Hispanic, and this proportion is expected to reach nearly one in three adolescents by the year 2040 (U.S. Census Bureau, 2012). Both immigration and births are expected to serve as significant drivers of Hispanic population growth through the middle of this century (Bernstein, 2013; Fry & Passel, 2009). Given the growing proportion of Hispanic youth within the U.S. population, identifying and understanding factors associated with health among this population is a critical public health priority.

Compared to non-Hispanic Whites, Hispanics in middle adolescence (ages 14–17; Steinberg, 2008) have disproportionately higher rates of depressive symptoms (McLaughlin, Hilt, & Nolen-Hoeksema, 2007) and externalizing behaviors such as smoking cigarettes, binge drinking (Centers for Disease Control and Prevention, 2014), and conduct problems (Forster, Grigsby, Soto, Schwartz, & Unger, 2014). To this end, theoretical models posit that the burden of cultural stressors (e.g., acculturative stress and ethnic discrimination) may increase the probability of poor mental health and externalizing behaviors among Hispanic immigrants and Hispanics adolescents (Berry, 2003a; Vega, Zimmerman, Warheit, Apostori, & Gil, 1997; Viruell-Fuentes, 2007).

Thus, the purpose of the present study was to examine the longitudinal effects of cultural stressors on depressive symptoms and externalizing behaviors (i.e., cigarette smoking, alcohol use, aggression, and rule-breaking) among recently immigrated Hispanics (≤5 years in the U.S. at baseline) in middle adolescence. The effects of cultural stressors on depressive symptoms and externalizing behaviors behavior may be especially applicable to adolescent immigrants. Bacallao and Smokowski (2007) suggest that immigrant adolescents may be more likely to respond negatively to cultural stressors because, unlike their parents who made the decision to migrate, adolescents may perceive that the costs of migration outweigh the benefits. Further, research has indicated that Hispanics who immigrate to the United States as adolescents report more cultural stressors compared to those who immigrate as young children (Padilla, Alvarez, & Lindholm, 1986) — suggesting that studies are needed to investigate effects of cultural stressors on health outcomes among recently immigrated Hispanic adolescents.

Cultural stress and health

In addition to normative stressors associated with adolescence, Hispanic adolescents may also face cultural stressors (Cervantes, Padilla, Napper, & Goldbach, 2013). Although cultural stressors such as ethnic discrimination (negative attitudes, beliefs, and differential treatment toward members of minority ethnic groups; Williams & Mohammed, 2009), negative context of reception (the perception that the host culture is unwelcoming and hostile; Schwartz et al., 2014a), and bicultural stress (perceived pressures emanating from interactions with both the heritage and receiving cultural communities; Romero & Roberts, 2003) are often treated as unique constructs, the conceptualization and measurement of these indicators suggests that they may have considerable overlap (Kulis, Marsiglia, & Nieri, 2009; Rudmin, 2009).

In the present study, cultural stress is defined as the constellation of multiple factors that contribute to the stress experience of being a Hispanic immigrant in the U.S. This includes three key facets of cultural stress that have been identified in previous literature: (a) subjective cognitive appraisal of bicultural stressors due to pressure to adopt the majority culture as well as to maintain the heritage culture (Romero & Roberts, 2003), (b) experiences of discrimination (Phinney, Madden, & Santos, 1998; Viruell-Fuentes, 2007), and (c) a perception that the receiving culture is unwelcoming or presents limited opportunities (Portes & Rumbaut, 2006; Schwartz et al., 2014a). We propose that these three factors operationalized by cognitive appraisal, frequency, and perception of negative encounters with the receiving and heritage cultures will converge in a manner that will demonstrate the multifaceted reality of cultural stress as experienced by Hispanic adolescent immigrants in the United States. As part of the present study, we examined how these three indicators may contribute to a latent cultural stress factor.

Regardless of how cultural stress indicators are operationalized or measured, research has shown that higher reports of cultural stressors increase the probability of poor mental health and externalizing behaviors. For instance, among Hispanic adolescents, higher perceptions of ethnic discrimination have been linked with more depressive symptoms, cigarette smoking, alcohol use, and aggression (Araújo & Borrell, 2006; Delgado, Updegraff, Roosa, & Umana-Taylor, 2011; Kulis et al., 2009; Lorenzo-Blanco, Unger, Ritt-Olson, Soto, & Baezconde-Garbanati, 2013; Okamoto, Ritt-Olson, Soto, Baezconde-Garbanati, & Unger, 2009; Smokowski & Bacallao, 2006). Negative context of reception has been associated with conduct problems (Forster et al., 2014). Similarly, bicultural stress has been associated with higher levels of depressive symptoms, cigarette smoking, alcohol use, and conduct problems (Forster et al., 2014; Romero, Martinez, & Carvajal, 2007).

Gender, environmental factors, and cultural stress

The effects of cultural stressors on health outcomes may differ across gender (Berry, 2003a). Some literature has indicated that girls may experience lower levels of cultural stressors because Hispanic parents tend to be more protective of adolescent girls than boys. As such, girls may be more likely to remain at home, whereas boys are given more freedom and have more opportunities for experiencing cultural stressors (Delgado et al., 2011). In addition, the health of girls may be less affected by cultural stressors because they are more likely to use constructive coping strategies and seek social support (Araújo & Borrell, 2006). Conversely, other literature (Phinney, Berry, Sam, & Vedder, 2006) suggest that boys and girls are equally exposed to
both the receiving and heritage cultures and may thus experience similar levels of cultural stressors. Further, cultural stressors may have a greater adverse effect on girls, especially in relation to depressive symptoms.

Lawton and Gerdes (2014) proposed a conceptual model where environmental factors such as the geographic region of the U.S. may directly affect cultural stress, and in turn, influence health outcomes. This proposition is not surprising because geographic regions and communities of settlement (e.g., Miami vs. Los Angeles) within the United States have diverse characteristics such as attitudes toward Hispanic immigrants, sociopolitical history, ethnic density, public policies, and available resources. Similarly, geographic regions may also have different expectations regarding the manner in which immigrants should interact with and acculturate toward the receiving culture, and in turn, these expectations may affect levels of cultural stress (Berry, 2003b; Bourhis, Moïse, Perreault, & Senecal, 1997). To date, few multisite studies (Cervantes et al., 2013; Smokowski & Bacallao, 2006) have compared the effects of cultural stressors on health among Hispanic adolescents in different regions of the United States. A priori study that examined the effects of cultural stressors between study sites on conduct problems found no differences (Forster et al., 2014). Thus, more prospective studies are needed that examine environmental differences in relation to mental health and other externalizing behaviors such as substance use. The present study is distinct from previous research because it tested an operationalization of cultural stress that accounted for cultural stressors from the receiving culture (e.g., negative context of reception, ethnic discrimination, bicultural stress) and the heritage culture (e.g., bicultural stress). In turn, this construct was used to estimate effects on outcomes of mental health, substance use, and conduct problems in a single model (Fig. 1).

The present study

Aim 1 of the present study examined the effects of baseline cultural stress levels on depressive symptoms and externalizing behaviors six months post-baseline. Aim 2 examined whether gender and study site moderated these main effects. Based on the body of work reviewed above, the following hypotheses were proposed. Hypothesis 1, a higher degree of cultural stress would predict higher reports of depressive symptoms, substance use, aggression, and rule-breaking. Hypothesis 2, it is expected that both gender and study site would moderate the effects of cultural stress on all outcomes. Given the mixed findings with gender and the scarcity of multisite studies, we did not advance a priori hypotheses regarding moderated effects. Analyses in the study controlled for age, gender, study site, years in the U.S., parental education; as well as baseline levels of depressive symptoms, aggressive behavior, and rule-breaking behavior.

Method

Participants

The present analyses used the first two timepoints from a longitudinal cohort study of acculturation, family functioning, and risk behavior among Hispanic adolescents (Schwartz et al., 2012; 2014b). Participants included in the present analyses included Hispanic immigrant adolescents from Los Angeles (n = 150) and Miami (n = 152) who had resided in the United States for five years or less at baseline. Each adolescent participated in the study with her/his primary parent (although only adolescent data were used in the present analyses). To be included in the study, adolescents had to be entering or completing the ninth grade. Baseline data were collected between May and November 2010, and data for the six-month follow-up were collected between February and June 2011.

![Fig. 1. Conceptual model tested in the present study with the full sample.](image-url)
At baseline, the mean adolescent age was 14.51 years ($SD = .88$ years, range 14–17), and 53% of adolescents were boys. Adolescents in Miami had resided in the United States for a significantly shorter period of time ($Mdn = 1$ year, interquartile range $= 0–3$ years) compared to those in Los Angeles ($Mdn = 3$ years, interquartile range $= 1–4$ years), Wilcoxon $Z = 6.39, p < .001$. A majority of adolescents in Miami had migrated from Cuba (61%), with others coming from the Dominican Republic (8%), Nicaragua (7%), Honduras (6%), and Colombia (6%). In Los Angeles, a majority of adolescents had migrated from Mexico (70%), with others from El Salvador (9%), and Guatemala (6%). Per parents' self-reports, the mean annual household income was $30,854 ($SD = 10,824) and the median was $30,029 (interquartile range $= 22,815$ to $35,744$). Twenty-seven percent of parents reported less than nine years of education, 18% attended high school but did not graduate, 33% completed high school, 12% attended college but did not graduate, and 10% reported having a bachelor’s degree or higher.

**Procedure**

Families were recruited from 23 randomly selected schools (10 in Miami-Dade County and 13 in Los Angeles County) where the student body was at least 75% Hispanic. The study was approved by the Institutional Review Boards of the sponsoring academic institutions and by the Research Review Committees for each of the school districts that participated in the study. Initially 632 families that met inclusion criteria were referred, 435 families were reached via phone to schedule the baseline assessment, and 302 families completed the baseline assessment.

During the initial meeting with each family, the primary caregiver was asked to provide informed consent for her/himself and the adolescent to participate, and adolescents were asked to provide informed assent. During this visit, the parent and adolescent also completed the assessment battery in English or Spanish, according to their respective preferences. Parent and adolescent assessments were conducted in separate rooms using an audio computer-assisted interviewing (A-CASI) system (Cooley et al., 2001). At baseline, 66% of Miami families were assessed at a research center and 34% at the school that the adolescent attended. In Los Angeles, 46% of assessments were completed in participants’ homes, and the remainder were conducted in locations convenient to participants (e.g., community centers and libraries). The same procedures were followed at the six-month follow-up. For their participation, parents received $40 at baseline and $45 at the six-month follow-up. Each adolescent received a voucher for a movie ticket at each timepoint. The retention rate at the six-month follow-up was 96% in Miami and 88% in Los Angeles. More information on the study procedures can be found in Schwartz et al. (2012, 2014b).

**Measures**

**Cultural stressors**

*Perceived ethnic discrimination* was assessed using seven items (Phinney et al., 1998) referring to being called names, followed around stores, and generally viewed with suspicion. A sample item from this measure is, “I feel that others behave in an unfair or negative way toward my ethnic group.” Response choices were on a 5-point Likert scale ranging from 0 (*Not at all*) to 4 (*Almost always*). The mean of the items was used to calculate scores, with higher scores indicating a greater perception of perceived ethnic discrimination. At baseline, the alpha coefficient was .90 in Miami and .88 in Los Angeles.

*Perceived negative context of reception* was measured using a 6-item scale (Schwartz et al., 2014a). Items assess the perception to which the opportunity structure (e.g., employment or grades) do not favor one’s ethnic group. A sample item is “People from my country are not welcome here.” Response choices were on a 5-point Likert scale ranging from 0 (*Strongly disagree*) to 4 (*Strongly agree*). Items were summed to calculate scores, with higher scores indicating a greater perception of negative context of reception. At baseline, the alpha coefficient was .74 in Miami and .75 in Los Angeles. Schwartz et al. (2014a) have demonstrated discriminant validity between perceived discrimination and perceived context of reception.

**Bicultural stress**, the perception of stressful interactions with both the heritage and receiving cultural contexts, were assessed using the Bicultural Stress Scale (BSS; Romero & Roberts, 2003). The BSS consists of 20 items, each of which is responded to using a 5-point Likert scale ranging from 0 (*Never happened to me*) to 4 (*Very stressful*). Items were summed to calculate scores, with higher scores indicating higher levels of bicultural stress. A sample item is, “I have worried about family members or friends having problems with immigration.” At baseline, the alpha coefficient was .90 in Miami and .88 in Los Angeles.

**Depressive symptoms**

Symptoms of depression were measured using the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), a validated measure of depressive symptomatology for use with Hispanic subgroups (Roberts, 1980). This 20-item measure asks respondents to report how they have felt during the past week on a 4-point Likert-type scale ranging from 0 (*Strongly disagree*) to 4 (*Strongly agree*). Items were summed to calculate scores, with higher scores indicating higher levels of depressive symptoms. A sample item is “I felt sad.” Higher scores are indicative of greater depressive symptoms. The alpha coefficients in Miami for CES-D were .93 at baseline and .92 at six months post-post-baseline. The alpha coefficients in Los Angeles for CES-D were .94 at baseline and .91 at six months post-post-baseline.

**Externalizing behaviors**

Cigarette smoking and binge drinking were measured using a modified version of the Monitoring the Future survey (Johnston, O’Malley, Bachman, & Schulenberg, 2011). Participants responded to questions regarding frequency of cigarette use
and alcohol use in the 90 days prior to assessment. For each substance use behavior, participants typed in the number corresponding to how many times they had engaged in that behavior during the 90 days prior to assessment. Substance use variables were dichotomized: for each substance, participants were coded regarding whether they reported using (1) or not using (0) in the past 90 days.

**Aggressive and rule-breaking behavior** with corresponding subscales from the Youth Self-Report (Achenbach & Rescorla, 2001). The aggressive behavior and rule-breaking behavior subscales consist of 17 and 15 items, respectively. Sample items include “I physically attack people” (aggressive behavior) and “I set fires” (rule-breaking behavior). Items were summed to calculate scores for each respective scale, with higher scores indicating higher levels of aggressive or rule-breaking behavior. The alpha coefficients in Miami for aggressive behavior were .89 at baseline and .94 at six months post-post-baseline. The alpha coefficients in Los Angeles for aggressive behavior were .88 at baseline and .87 at six months post-post-baseline. The alpha coefficients in Miami for rule-breaking behavior were .89 at baseline and .93 at six months post-post-baseline. The alpha coefficients in Los Angeles for rule-breaking behavior were .86 at baseline and .84 at six months post-post-baseline.

**Analytic plan**

The analytic plan included four steps. First, we computed descriptive statistics for key variables used in the model. Second, using Mplus 7 (Muthén & Muthén, 2012), we conducted a first-order confirmatory factor analysis (CFA) to estimate the fit of a latent construct including perceived ethnic discrimination, perceived negative context of reception, and bicultural stress. Using maximum likelihood to estimate the effect of a latent factor on a dichotomous outcome requires 15 dimensions of mathematical integration per outcome. Therefore, we saved a factor score from the CFA back to the dataset and used this score as an observed predictor in subsequent analyses. It should be noted that Ram et al. (2005) found that latent variables correlate at .97 with observed scores saved back to the dataset — suggesting a minimal loss of information.

Third, using a path analyses with maximum likelihood (ML) and a cultural stress factor score derived from the CFA, we estimated the effects of cultural stress at Time 1 on depressive symptoms and externalizing behaviors at Time 2. Fourth, we tested the moderating effects of gender and study site in relation to cultural stress and all the outcomes. In addition to testing interaction effects, conditional effects of statistically significant interactions were examined. PROCESS v2.13 for SPSS (Hayes, 2013) was used to estimate unstandardized conditional effects for gender (boys vs. girls) and study site (Miami vs. Los Angeles). Age, study site, gender, years in the U.S., and parental education were included as covariates in the path analysis. These covariates were included in the path analysis because prior research has indicated they are associated with the predictors and outcomes; thus, may confound the effects of cultural stress. Moderation analyses also controlled for these variables unless they were included in the interaction term. For instance, analyses that tested gender as a moderator controlled for all covariates including study site, but excluded gender.

All outcomes were included in one model to minimize Type I error risk. It has been recommended that longitudinal models also control for prior levels of each outcome variable (Cole & Maxwell, 2003); therefore, we controlled for Time 1 levels of depressive symptoms, aggressive behavior, and rule-breaking behavior. We did not control for baseline levels of cigarette smoking or binge drinking because these categorical variables can remain the same over time even though developmental change has occurred (Agresti, 2007). Controlling for prior levels of categorical variables may result in inflated standard errors for model parameters, potentially rendering baseline-adjusted results unstable or invalid (Glymour, Weuve, Berkman, Kawachi, & Robins, 2005). A sandwich covariance estimator (Kauermann & Carroll, 2001) was also used to adjust standard errors for the effects of multilevel nesting (families within schools).

**Results**

**Descriptive statistics**

Means and standard deviations for the baseline demographics and cultural stress indicators are provided in Table 1. Prevalence of cigarette smoking and binge drinking in the past 90 days; along with the mean and standard deviation for depressive symptoms and externalizing behaviors six months post-baseline, are also reported in Table 1. A cross tabulation indicated no statistically significant differences by study site or gender in relation to the cultural stress indicators and outcomes. The three cultural stress variables were significantly intercorrelated: negative context of reception with ethnic discrimination ($r = .36, p < .01$); negative context of reception with bicultural stress ($r = .30, p < .01$); and ethnic discrimination with bicultural stress ($r = .46, p < .01$) (see Table 2).

The reliability coefficient of the latent cultural stress factor was acceptable (.65). This reliability coefficient was calculated using the formula proposed by Fornell and Lacker (1981), which computes reliability as the ratio of the variability explained by the latent factor to the total variability among the indicators. A CFA using Time 1 data indicated that the standardized factor loadings were acceptable (perceived ethnic discrimination, .74; perceived negative context of reception, .49; bicultural stress, .62). According to Brown (2006), a standardized factor loading of .40 or higher is acceptable in questionnaire-based research.
Cultural stress predicting outcomes

Consistently, higher scores of cultural stress predicted higher reports of depressive symptoms and externalizing behaviors. Cultural stress predicted higher odds of cigarette smoking ($OR = 1.24, p < .001$), odds of binge drinking ($OR = 1.2, p < .001$), levels of aggressive behavior ($b = .28, p < .001$), levels of rule-breaking ($b = .25, p < .001$), and levels of depressive symptoms ($b = .38, p < .01$).

Moderation analyses

Moderation analyses were conducted to examine whether gender influenced the direction and/or strength of effects of cultural stress in relation to depressive symptoms and externalizing behavior. Results did not indicate any statistically significant moderation effects.

Table 1
Descriptive statistics for study variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Baseline Predictors</th>
<th>n (%)</th>
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</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Boys</td>
<td>161 (53.3)</td>
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<tr>
<td>Site</td>
<td>Los Angeles</td>
<td>150 (49.7)</td>
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<tr>
<td>Age</td>
<td>14.51 (.88), 14−17</td>
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<tr>
<td>Year in the U.S.</td>
<td>2.08 (1.87), 0−5</td>
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<tr>
<td>Parental Education</td>
<td>9.27 (9.83), 0−17</td>
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<tr>
<td>Cultural Stress Indicators</td>
<td>Ethnic Discrimination</td>
<td>.78 (.78), 0−4</td>
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<td></td>
<td>Negative Context of Reception</td>
<td>8.74 (4.75), 0−24</td>
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<td></td>
<td>Bicultural Stress</td>
<td>18.49 (14.35), 0−76</td>
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<tr>
<td>Substance Use (at least once in past 90 days)</td>
<td>Cigarette Smoking</td>
<td>16 (5.8)</td>
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<td>Binge Drinking</td>
<td>25 (9.0)</td>
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<tr>
<td>Depressive Symptoms (last 7 days)</td>
<td>Outcome Variables 6 Months Post-Baseline</td>
<td>30.57 (14.32), 0−64</td>
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<td></td>
<td>Aggressive Behavior</td>
<td>5.40 (6.24), 0−34</td>
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<td></td>
<td>Rule-breaking Behavior</td>
<td>4.10 (5.18), 0−30</td>
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</table>

Table 2
Bivariate correlations for variables used in path analysis (n = 302).

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<tr>
<th>Variable</th>
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<tr>
<td>1. Negative Context of Reception</td>
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<td>2. Bicultural Stress</td>
<td>.30**</td>
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<td>3. Discrimination</td>
<td>.36**</td>
<td>.46**</td>
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<td>4. Rule-Breaking (T1)</td>
<td>.27**</td>
<td>.56**</td>
<td>.35**</td>
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<tr>
<td>5. Rule-Breaking (T2)</td>
<td>.18**</td>
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<td>.32**</td>
<td>.38**</td>
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<td>6. Aggressive Behavior (T1)</td>
<td>.22**</td>
<td>.56**</td>
<td>.30**</td>
<td>.83**</td>
<td>.29**</td>
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<td>.39**</td>
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<td>.48**</td>
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<td>9. Depressive Symptoms (T2)</td>
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<td>10. Smoking (T2)</td>
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<td>15. Years in the U.S.</td>
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<td>16. Parent Education</td>
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significant moderating effects of gender. Similarly, we tested if study site moderated the effect of cultural stress on all outcomes. Results indicated that study site significantly moderated the effect of cultural stress on depressive symptoms ($\beta = -0.08, p < .05$). Conditional effects indicate that higher reports of cultural stress had a statistically significant effect on depressive symptoms among participants in Miami ($b = 1.15, p < .001, 95\% CI [0.57, 1.73]$), but not among participants in Los Angeles ($b = 0.56, p = 0.12, 95\% CI [-0.15, 1.27]$). Study site did not significant moderate effects of cultural stress on externalizing behaviors.

Discussion

In the current study, we tested the fit of a latent cultural stress factor and examined its effects on depressive symptoms and externalizing behaviors that included cigarette smoking, alcohol use, aggression, and rule-breaking among recently immigrated Hispanic adolescents. We also examined whether gender and study site moderated the effects of cultural stress on depressive symptoms and externalizing behaviors. The key study findings can be summarized as follows. First, using independent measures for perceived ethnic discrimination, bicultural stress, and perceived negative context of reception, our data support a first-order latent cultural stress factor. Second, higher cultural stress scores predicted increased odds of smoking and binge drinking, as well as higher levels of depressive symptoms and conduct problems. Third, moderation analyses indicated that gender did not moderate the effects of cultural stress on any of the outcomes. However, study site did moderate the effect of cultural stress on depressive symptoms. The conditional effects indicated that higher reports of cultural stress increased depressive symptoms among participants in Miami, but not among to participants in Los Angeles.

Findings suggest that cultural stress may be a clinically relevant factor associated with depressive symptoms and externalizing behaviors among Hispanic immigrant adolescents. Thus, existing evidence-based, culturally tailored interventions to prevent health risk behavior among Hispanic adolescents, such as *Keepin’ it REAL* (Hecht et al., 2003), *Family Effectiveness Training* (Szapocznik et al., 1989), and *Familias Unidas* (Coatsworth, Pantin, & Szapocznik, 2002) may benefit from integrating modules or exercises that help Hispanic immigrant adolescents develop constructive coping strategies to manage cultural stress (Zayas, 2001). Although the present study did not examine coping strategies, existing literature has suggested that active coping/engagement coping such as reflecting, problem solving, planning, and positive reframing may weaken the effects of cultural stress on depressive symptoms and externalizing behaviors among Hispanic adolescents (Edwards & Romero, 2008).

Our results did not support the hypothesis that gender would moderate the effects of cultural stress on depressive symptoms and externalizing behaviors. One reason for this null finding is that, contrary to other studies (Delgado et al., 2011), in the present study boys and girls reported similar levels of cultural stress. This null finding also suggests that the effects of cultural stress to depressive symptoms and externalizing unfold similarly for boys and girls. Although some literature has suggested that there may be gender differences in cultural stress exposure and in coping with cultural stress, a majority of studies have been focused on Hispanic adults (Umana-Taylor & Alfaro, 2009). Thus, more research is needed with adolescent populations. In addition to examining differences between gender, future studies may be more effective in informing prevention interventions by examining coping strategies that moderate the relation between cultural stress and health outcomes among boys and girls (Araújo & Borrell, 2006). Similarly, future research may benefit from examining adaptive and mal-adaptive aspects of gender roles (e.g., *machismo* and *marianismo*) that have been linked with health outcomes among Hispanic adolescents (Kulis, Marsiglia, & Nagoshi, 2012).

The data partially support the hypothesis that study site would moderate the effects between cultural stress and the outcomes. Although findings indicate that levels of cultural stress were similar among participants in Miami and Los Angeles; higher cultural stress scores were related to higher levels of depressive symptoms among participants in Miami, but not in Los Angeles. One explanation for this difference is that participants in Miami had resided in the United States for a shorter duration, compared to participants in Los Angeles. Thus, encounters of cultural stress may have been more evident or more taxing as a function of the brief length of stay in the United States.

In this study, 70% of the families in Los Angeles immigrated from Mexico. This is noted again because another explanation for this site difference is that Mexican families may exert a higher degree of parental control than other Latin American/Hispanic nationalities (Halgunseth, Ispa, & Rudy, 2006), which may weaken the effect of cultural stress on depressive symptoms. In addition to conducting more multisite studies, future studies may benefit from examining more contextual characteristics of the geographic region and community of settlement, such as neighborhood social cohesion (Rios, Aiken, & Zautra, 2012), that may be more responsive to interventions. This field of research may also advance by examining if country of origin (e.g., Mexico vs. Cuba) contributes to the within-group differences among Hispanic immigrants regarding the association between cultural stress and outcomes.

Limitations

Although the present results provide some important advances, some limitations should be considered when interpreting the findings. First, a significant majority of the Miami sample was Cuban and a significant majority of the Los Angeles sample was Mexican. Other Hispanic nationalities were represented in much smaller numbers. The extent to which findings from this study would generalize to other Hispanic nationalities is therefore not known. Second, because the sample was comprised of recent-immigrant high school students, we do not know the extent to which our results generalize to early or late
adolescence, immigrants who have lived in the United States for a longer period of time, or second-generation immigrants who were born in the United States. Third, we did not collect data on documentation status; therefore, we do not know the extent to which undocumented participants may have been less likely to enroll in the study or more likely to experience cultural stress. Fourth, both study sites and all schools had a high proportion of Hispanics, which may have, affected the degree of exposure to cultural stress and its effects on the outcomes. Future studies may benefit from multisite designs that compare geographic regions with low and high proportions of Hispanics. Fifth, all data were self-report. However, it should be noted that self-reports of substance use tend to converge well with biological measures among the general population (Del Boca & Darkes, 2003; Patrick et al., 1994) and among Hispanic adolescents (Dillon, Turner, Robbins, & Szapocznik, 2005). Lastly, cultural stress is not limited to the three indicators used in the study. Future studies should examine how other indicators (e.g., immigration stress and minority stress) fit with a latent construct of cultural stress.

Conclusion

Despite these and other limitations, the present study offers several contributions to the literature. First, our data support a first-order factor of cultural stress composed of ethnic discrimination, negative context of reception, and bicultural stress. Second, our study adds to the limited body of work using longitudinal data to examine the potential effects of cultural stress on depressive symptoms and externalizing behaviors. Cultural stress appears to serve as a risk factor for all the outcomes among Hispanic immigrant adolescents, but this effect may not vary across gender. Conversely, environmental factors such as the geographic region may function as a moderator in the relation between cultural stress and health outcomes. In sum, our findings suggest that cultural stress is pertinent to health among Hispanic immigrant adolescents, and that this mechanism may be relevant to preventing health disparities among this population.

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References
