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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

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Abstract

Latino youth can experience a range of cultural (i.e., ethnic discrimination and acculturative stress) and familial (i.e. family conflict) risk factors that can contribute to their perceived stress, thereby increasing their risk for depressive symptoms and cigarette smoking. To understand the mechanisms by which ethnic discrimination, acculturative stress and family conflict influence the risk for depressive symptoms and cigarette smoking of youth, the current study investigated the mediating role of perceived stress in these associations. The data came from a longitudinal study of acculturation and substance use with 1919 Latino adolescents (52 % female; 84 % 14 year-olds; 87 % U.S. born). Structural equation modeling indicated that discrimination and family conflict (Time 1) related with higher perceived stress (Time 2), which, in turn, related with more depressive symptoms and smoking (Time 3). The results suggest that perceived stress might be one mechanism by which ethnic discrimination and family conflict contribute to Latino youth symptoms of depression and cigarette smoking. The findings highlight the need for prevention and intervention strategies that help youth manage their general perceived stress and/or focus on stress reduction techniques.

Keywords

Ethnic discrimination; Acculturative stress; Family conflict; Latino youth; Depressive symptoms; Cigarette smoking

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Authors' contributions ELB conceived the study, participated in its design, conducted analyses, interpreted the data, and wrote up the results, and other parts of the manuscript. JB helped in the design of the study, the data analyses, and manuscript preparation. ELB and JB have read and approved the final manuscript.

Conflict of interest The authors report no conflicts of interests.

Introduction

Adolescents in the United States (U.S.) are at high risk for experiencing symptoms of depression (CDC 2014), and depressive symptoms can become a chronic and serious condition (Pratt and Brody 2014). Recent national estimates indicate that approximately 30 % of high school students in the U.S. report a past month episode of sadness (CDC 2014). Depressive symptoms also often co-occur with cigarette smoking (Nezami et al. 2005), and cigarette smoking is the leading cause of preventable death in the United States (USDHHS 2014). The majority of people experience depression for the first time before age 18 (Weersing and Brent 2006) and most smoking begins in adolescence (Prokhorov et al. 2006). These data suggests that adolescence is a critical developmental period for preventing these health outcomes.

Although many U.S. adolescents experience depressive symptoms and smoke cigarettes (CDC 2014, Johnston et al. 2015), Latino youth in the U.S. seem to be especially at high risk for experiencing depressive symptoms and for experimenting with cigarettes (CDC 2014). Recent national estimates indicate higher rates of depressive symptoms (36.8 %) and lifetime cigarette smoking (43.2 %) among Latino youth compared to White (depressive symptoms: 27.3 %; cigarette smoking: 42.9 %) and Black (depressive symptoms: 27.5 %; cigarette smoking: 34 %) youth (CDC 2014; Johnston et al. 2015). Thus, given this high risk, it is important to investigate ways to reduce and prevent these health outcomes among Latino youth.

Latino youth also belong to one of the largest and fastest growing ethnic minority groups in the U.S. (Fry and Passel 2009; Ennis et al. 2011). Latinos make up 16 % of the U.S. population and they are expected to account for 30 % of the U.S. population by 2050. Latinos are also a young population and make up 22 % of all children under the age of 18. Because early onset of depression and cigarette smoking can lead to serious and chronic health problems later in life (Prokhorov et al. 2006; Weersing and Brent 2006), it is important to identify modifiable risk and protective factors for Latino youth.

Studies have identified numerous risk factors for depressive symptoms (Romero et al. 2014) and cigarette smoking (Lorenzo-Blanco and Cortina 2012) among adolescents. For U.S. Latino youth, these include normative risk factors such as family conflict (Lorenzo-Blanco et al. 2012b) but also socio-cultural risk factors associated with being an ethnic minority (e.g., ethnic discrimination; Lorenzo-Blanco et al. 2011; Kam et al. 2010) and the acculturation process (e.g. acculturative stress; Hovey and King 1996; Romero and Roberts 2003). Consistent with prior scholarship, we propose that cultural (ethnic discrimination and acculturative stress) and familial risk (family conflict) experiences constitute stressors (Cano et al. 2015; Cervantes et al. 2012; Romero and Roberts 2003) that may influence Latino youth depressive symptoms and cigarette smoking by contributing to their overall perceived stress (Cervantes et al. 2012), thereby affecting their health (Pascoe and Smart Richman 2009).

Although studies have established direct links between cultural/familial risk experiences and Latino youth depressive symptoms and cigarette smoking, it is important to understand the

role of indirect and modifiable factors that help explain these associations. According to theory (Lazarus and Folkman 1984; Ong et al. 2009; Pascoe and Smart Richman 2009; Slavin et al. 1991) and existing cross-sectional research with African American (Sellers et al. 2003) and Latino youth and adults (Edwards and Romero 2008; Flores et al. 2008), perceived stress—defined as individuals' perception that they are unable to control their lives, cope with difficulties, feel overwhelmed, taxed, nervous, and stressed—may constitute such a modifiable intervening factor (Flores et al. 2008; Pascoe and Smart Richman 2009; Sellers et al. 2003). Indeed research with Latino adults suggests that perceived stress is associated with more depressive symptoms (Flores et al. 2008). Additionally, research indicates that Latina youth who participated in a coping intervention scored lower on measures of perceived stress and depressive symptoms after they completed the intervention (Garcia et al. 2011). Overall, these studies suggest that cultural and familial risk factors may influence depressive symptoms and cigarette smoking among youth by influencing their perceived stress.

Moreover, prior intervention research indicates that youth can learn to manage these cultural and familial risk experiences in ways that they do not contribute to their perceived level of stress, depressive symptoms, and cigarette smoking (Garcia et al. 2011; Edwards and Romero 2008; Hampel et al. 2008; Sibinga et al. 2011). For example, Latina adolescents who participated in a school-based coping intervention reported lower perceived stress, lower symptoms of depression, and more effective coping that Latina youth who did not participate in the coping intervention (Garcia et al. 2011). Thus, to the extent that perceived stress mediates the links from cultural and familial risk factors with symptoms of depression and cigarette smoking, preventive interventions may benefit from helping youth manage these experiences in ways that they do not contribute to their perceived stress level.

Some researchers have viewed cultural and familial risk factors within a stress and coping framework (Cervantes et al. 2012; Lazarus and Folkman 1984; Slavin et al. 1991) and investigated the degree to which these experiences contribute to youth's general stress level (Pascoe and Smart Richman 2009; Romero and Roberts 2003; Slavin et al. 1991). Few studies, however, have investigated the role of general perceived stress in the longitudinal associations of familial and cultural risk experiences with Latino youth mental health and substance use. To address this gap in the literature, the current study investigates the mediating role of Latino youth general perceived stress in the longitudinal association of cultural and familial risk factors with symptoms of depression and cigarette smoking.

Cultural and Familial Risk Experiences, Symptoms of Depression, and Cigarette Smoking

Ethnic Discrimination—One common cultural risk factor for Latino youth is ethnic discrimination, conceptualized as perceived daily experiences of unfair, differential treatment (Guyll et al. 2001). Studies have linked ethnic discrimination with higher levels of depressive symptoms and cigarette smoking among Latino youth (Lorenzo-Blanco et al. 2011), and according to Pascoe and Smart Richman (2009), ethnic discrimination may lead to symptoms of depression and cigarette smoking through heightened perceived stress. Theory also suggests that discrimination constitutes a form of daily, chronic stress that over time may take a toll on Latino youth's ability to cope with stressful life situations (Ong

et al. 2009), thereby negatively influencing their health. Overall, scholarship and empirical data indicate that ethnic discrimination constitutes a significant risk factor for Latino youth depressive symptoms and cigarette smoking.

Acculturative Stress—Latino youth can also experience acculturative stress, defined as the stress that results from the acculturation process (Smart and Smart 1995; Hovey and King 1996). Acculturation refers to the changes Latino youth experience when they come into continuous contact with their U.S. receiving culture (Schwartz et al. 2010). Stressors related to the acculturative process can include the pressures of learning a new language, maintaining the native language, balancing differing cultural values, and having to balance American and Latino ways of daily living (Torres et al. 2012). Studies have linked acculturative stress among Latino youth with symptoms of depression (Hovey and King 1996; Romero and Roberts 2003), suicidal ideation (Hovey and King 1996), alcohol use (Gil et al. 2000), and substance use (Kam et al. 2010), suggesting that acculturative stress may indeed increase Latino youth's risk for depressive symptoms and cigarette smoking.

Family Conflict—Latino youth can also experience family conflict (Céspedes and Huey 2008; Gonzales et al. 2006). Although many U.S. adolescents experience family conflict, research indicates that family conflict may be exacerbated for Latino youth due to parent–child acculturation differences and the strong emphasis on the family in many Latino cultures (e.g., Céspedes and Huey 2008; Lugo Steidel and Contreras 2003). Moreover, family conflict has been associated with increased depressive symptoms among Latino youth (Gonzales et al. 2006; Lorenzo-Blanco et al. 2012b) and adults (Lorenzo-Blanco and Cortina 2013). Although researchers do not consistently report a direct positive relationship between family conflict and cigarette smoking among Latino youth and adults (Lorenzo-Blanco et al. 2013; Lorenzo-Blanco and Cortina 2013), family conflict has been associated with more substance use in Latino adults (Canino et al. 2008), suggesting that family conflict may constitute a significant risk factor for depressive symptoms and cigarette smoking.

The Current Study: Understanding the Role of Perceived Stress

Lazarus and Folkman (1984) define stress as the individual-cultural environment relationship that individuals appraise as taxing or exceeding their adaptive coping resources. Thus, in regards to Latino youth mental health and substance use, risk factors such as ethnic discrimination, acculturative stress, and family conflict may affect Latino youth well-being through youth's general perceived stress (Cervantes et al. 2012; Lazarus and Folkman 1984; Slavin et al. 1991). In research with African American adults (Sellers et al. 2003), discrimination was indirectly linked with perceived distress by way of general stress, suggesting that cultural and familial risk factors could indeed contribute to youth's general perceived stress, thereby negatively impacting their well-being. Informed by Lazarus and Folkman's (1984) stress and coping framework, the current study is one of few to investigate the degree to which cultural and familial risk factors contribute, longitudinally, to Latino youth's overall perceived stress, thereby contributing to our understanding of the process by which cultural and familial risk factors affect youth health.

Based on the literature and empirical work reviewed above, we developed the conceptual model depicted in Fig. 1, which leads from ethnic discrimination, acculturative stress, and family conflict to youth depressive symptoms and cigarette smoking by way of perceived stress. We used data from a three wave longitudinal school-based research project with youth from Southern California. To reflect Lazarus and Folkman's (1984) assertion that stress influences mental health and substance use problems over time, we used longitudinal data. We also included indicators of baseline perceived stress to assess for change in perceived stress at Time 2 as a function of cultural and familial stressors (discrimination, acculturative stress, family conflict). We also included indicators of baseline cigarette smoking and depressive symptoms so that we could assess for change in these outcomes at Time 3 as a function of perceived stress at Time 2.

We included a range of cultural and familial risk factors that are common among Latino youth and have been linked with symptoms of depression and cigarette smoking (Gil et al. 2000; Hovey and King 1996; Lorenzo-Blanco et al. 2011, 2012a, b; Romero et al. 2014). We did so because according to theory (Lazarus and Folkman 1984), not all cultural and familial risk factors may equally contribute to youth-reported general stress. For example, evidence indicates that uncontrollable stressors (i.e., stressors that youth may not be able to predict, control, or modify) may have a greater negative impact on youth health than controllable stressors (i.e., stressors that youth can predict, eliminate, or control; Lazarus and Folkman 1984; Pascoe and Smart Richman 2009; Torres et al. 2012) and research is needed that investigates which specific cultural and familial risk experiences contribute to Latino youth's general perceived stress. Our study contributes to this knowledge by including a measure of perceived stress that assesses the degree to which youth perceive their lives to be predictable and controllable (Cohen and Williamson 1988).

Based on our theoretical model depicted in Fig. 1, we expected everyday discrimination, acculturative stress, and family conflict (Time 1) to be positively associated with perceived stress (Time 2) (Hypothesis 1). We also hypothesized that perceived stress (Time 2) would be associated with higher levels of depressive symptoms (Time 3) and more cigarette smoking (Time 3) (Hypothesis 2). Lastly, we expected perceived stress (Time 2) to mediate the associations of everyday discrimination, acculturative stress, and family conflict (Time 1) with symptoms of depression and cigarette smoking (Time 3) (Hypothesis 3). Figure 1 summarizes this collection of hypotheses, showing which relationships are expected (as indicated by an arrow between constructs) and the anticipated valence of each relationship (positive or negative).

Method

Participants

Participants included 1919 students who participated in Project RED (Retiendo y Entendiendo Diversidad para Salud) (Unger et al. 2009), a school-based longitudinal study of acculturation and substance use among Hispanic adolescents from Southern California. At baseline, 52 % of the students were female, and 84 % of the students were 14 years old. At baseline, all students self-identified as Latino or Hispanic, and 87 % of the students were born in the United States. The majority of the students at baseline (84 %) reported

having a parent, grandparent, or great-grandparent who was born in Mexico, followed by the United States (27 %), El Salvador (9 %), Guatemala (6 %), Honduras (1 %), and Spain (1 %). At baseline, over half of the students (54 %) reported speaking “English and another language equally” at home, 13 % of the students reported “speaking mostly English” at home, and 14 % reported “speaking mostly another language” at home. Similarly, about 35 % of the students reported speaking “mostly English” with their friends, 33 % reported speaking “only English” with their friends, and 29 % reported speaking “English and another language equally” with their friends.

Data Source and Procedure

Adolescents were enrolled in the study when they were in 9th-grade, attending seven high schools in the Los Angeles area. Schools were invited to participate if they contained at least 70 % of Hispanic students, as indicated by data from the California Board of Education. Our sampling included an emphasis on schools with a wide range of socioeconomic characteristics. The median annual household incomes in the ZIP codes served by the schools ranged from $29,000 to $73,000, according to 2000 census data. Because students were sampled from seven schools with a wide spread of median annual household income, we tested for intraclass correlations (ICC) which were low. This suggests that contextual school-related differences should not have impacted the results (Field 2012, pp. 817–818). We calculated ICC correlations for youth age at Time 1 (ICC = .006), ethnic discrimination at Time 1 (ICC = .005), acculturative stress at Time 1 (ICC = .000), family conflict at Time 1(ICC = .000), perceived stress at Times 1 and 2 (ICC = .000 and ICC = .000, respectively), symptoms of depression at Times 1 and 3 (ICC = .001 and ICC = .000, respectively), past-30-day smoking at Times 1 and 3 (ICC = .001 and ICC = .000, respectively).

The 9th grade survey (Year 1) was administered in the Fall of 2005, the 10th grade survey (Year 2) in the Fall of 2006, and the and 11th grade survey (Year 3) in the Fall of 2007. In 2005, all 9th-graders (regardless of their race or ethnicity) in selected schools (n = 3218) were invited to participated in the survey. Of those, 75 % (n = 2420) provided parental consent and student assent. Of the 2420 students who provided consent and assent, 2222 (92 %) completed the survey in 9th grade. Of the 2222 students who completed the 9th grade survey, 1773 (80 %) also completed surveys in 10th and 11th grade with 182 (8 %) students completing a survey in 10th grade but not in 11th grade, 50 students (2 %) completing a survey in 11th grade but not in 10th grade, and 217 (10 %) students were lost to attrition before the 10th grade survey. For the current study, we used data from Years 1, 2, and 3 and excluded students who did not self-identify as either Hispanic, Latino or Latina, Mexican, Mexican–American, Chicano or Chicana, Central American, South American, Mestizo, La Raza, or Spanish. This resulted in a final analytic sample of 1919 students who self-identified as either Latino or Hispanic. Among the analytic sample, 1538 students (80 %) completed surveys in 9th, 10th, and 11th grade, 187 (10 %) completed surveys in 9th grade but not in in 10th and 11th grade, 146 (8 %) participated in 9th and 10th grade but not in 11th grade, and 47 (2.5 %) students participated in the 9th and 11th grade survey but not in 10th grade survey.

On the day of the survey, data collectors read the survey aloud during one class period in order to help students with low literacy skills. The surveys were available in English and Spanish and 99.2 % of the students completed the survey in English. The Spanish translation of the survey was created by first identifying translated items published or recommended by the scales' authors. When translations of items were not available, one bilingual person translated the items from English to Spanish after which the translation was checked by a translation team that included bilingual researchers from various Latin American countries. This translation was employed to ensure that translations reflected the idioms used among Mexican-Americans and other Hispanics living in Southern California. A more detailed description of data collection can be found elsewhere (Unger et al. 2009).

Measures

Everyday Discrimination—Everyday discrimination was assessed with ten items (Guyll et al. 2001). A sample item is "You are treated with less respect than other people." At baseline, adolescents indicated on a 4-point scale ranging from 1 (*Never*) to 4 (*Often*) their perceived experiences with ethnic discrimination. The Cronbach's α was .86. Because this scale can apply to various types of discrimination (e.g., based on race/ethnicity, gender, age, sexual orientation, physical handicaps, etc.), the scale was preceded by the following text: "Sometimes people feel that they are treated differently because of their ethnic or cultural background. How do people treat you?"

Acculturative Stress—We assessed acculturative stress with three items (Gil et al. 2000; Beal et al. 2014). At baseline, student reported on their experiences with acculturative stress. A sample items included "Do you ever feel uncomfortable when you have to choose between doing things like Americans or non-Americans?" Response options ranged from 1 (*Never*) to 4 (*Very often*). The Cronbach's α was .71 and higher scores represent more acculturative stress.

Family Conflict—Family conflict was measured with five items from the FACES-II scale (Olson et al. 1982). The five items were selected because they had the highest factor loadings in a pilot study with a comparable sample (Lorenzo-Blanco et al. 2012a, b; Unger, unpublished data). The sample items included "We have difficulty thinking of things to do as a family" and "Family members avoid each other at home." At baseline, adolescents indicated on a scale ranging from 1 (*Almost Never*) to 4 (*Almost Always*) the degree of their experiences with family conflict (*Cronbach's* α = .63).

Perceived Stress—Perceived stress was assessed with ten items at time 2 and four items at time 1. Items came from The Perceived Stress Scale (long and short forms, respectively; Cohen et al. 1983; Cohen and Williamson 1988). The Perceived Stress Scale assesses how unpredictable, uncontrollable, and overloading participants find their lives. Both, the short and long forms of the perceived stress scale have been validated and shown to tap into the same construct (Cohen and Williamson 1988). The sample items include "In the last month, how often have you felt nervous or stressed?," "In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?," and in the last month, how often have you been angered because of things that were outside of

your control." Youth indicated the frequency of these experiences on a scale ranging from 1 (*Never*) to 5 (*Very often*) (Cronbach's α = .72).

Depressive Symptoms—Depressive symptoms were assessed with the Center for Epidemiological Studies Depression Scale (CES-D) (Radloff 1977), which consists of 20 items and has been validated with Latino youth (Crockett et al. 2005). It is a widely used screening tool for depression, with a clinical cut-off score of 16 indicating risk for clinical depression (Crockett et al. 2005; Radloff 1977). In the current study, at times 1 and 3, youth reported the frequency with which they had experienced depressive symptoms in the past week (Cronbach's α = .88).

Past-30-Day-Smoking—One question assessed adolescents' past-30-day cigarette use at times 1 and 3; "During the past 30 days, on how many days did you smoke cigarettes?" Responses were rated on a 7-point scale ranging from 1 (0 days) to 7 (All 30 days).

Demographic Characteristics—Age and gender were self-reported.

Analytic Plan

We used Mplus Version 7.1 (Muthén and Muthén 1998–2012) to conduct descriptive statistics, estimate structural equation models, and conduct mediation analyses. In conducting mediation analyses, we utilized the Mplus command "model indirect" and we utilized bootstrapping to test for mediation (Hayes 2009). The missing data were handled in Mplus Version 7.1 using full-information maximum likelihood (FIML), which uses all available data to calculate parameter estimates (Kline 2011). FIML has been demonstrated to be superior to other missing data techniques (e.g. list-wise and pair-wise deletion) in terms of aspects of model estimation, bias, and efficiency, and relatively equivalent to multiple imputation techniques (Enders and Bandalos 2001).

Results

Descriptive Statistics

Table 1 displays descriptive statistics for all study variables for the full sample (N = 1919). Bivariate correlations among all measured study variables are shown in Table 2.

Overall Structural Equation Modeling (SEM): Hypotheses 1 and 2

First, we constructed parcels as indicators of latent constructs to improve the parsimony of our measurement and structural models (Little et al. 2013). Parceling reduces a large number of indicator items into a smaller number of parceled indicators, increasing the likelihood that the latent construct will explain the majority of the shared variability among the indicators (Little et al. 2013). After constructing parcels, we estimated a structural equation model to test our theoretical model shown in Fig. 1. For all models, we evaluated overall fit using the comparative fit index (*CFI*), the Chi-square test of model fit (χ^2), and the root mean square error of approximation (*RMSEA*) (Hu and Bentler 1998). We did not consider the p value of the Chi square test because a large sample size tends to inflate the Chi square value, making it difficult to achieve a non-significant Chi square statistic (Little et al. 2002).

We first estimated the measurement model to ensure that the psychometric properties of the measures were adequate and that the items loaded on the hypothesized factors. Next, we estimated the structural model (Fig. 1). Our model was designed to assess change in our intervening (i.e., perceived stress) and outcome variables (symptoms of depression and cigarette smoking) as a result of everyday discrimination, acculturative stress, and family conflict. Accordingly, we included participants' baseline (Time 1) perceived stress, depressive symptoms, and cigarette smoking in our model. That is, perceived stress at Time 1 was included in the model as a predictor of perceived stress at Time 2, and depressive symptoms and cigarette smoking at Time 1 were included in the model as predictors of depressive symptoms and smoking at Time 3. Our analyses also included baseline age and gender as predictors of our Time 3 outcome variables (i.e., depressive symptoms and cigarette smoking) to rule these out as alternative explanations for higher symptoms of depression and cigarette smoking. We correlated all exogenous variables with each other and also correlated the two outcomes (i.e., symptoms of depression and cigarette smoking) with each other. Our analyses also controlled for the influence of baseline age and gender to rule these out as alternative explanations for higher levels of depressive symptoms and cigarette smoking.

The measurement [χ^2 = 303.808, *df* = 125, $p < .001$; *CFI* = .983; *RMSEA* = .027, 90 % *CI* (.023, .031)] and the structural model (Fig. 1) provided excellent model fit [χ^2 = 727.725, *df* = 225, $p < .001$; *CFI* = .955; *RMSEA* = .0.035, 90 % *CI* (.032, .037)]. As shown in Fig. 2, standardized path coefficients indicated that everyday discrimination and family conflict were associated with higher levels of perceived stress ($\beta = .14$, $p < .001$ and $\beta = .15$, $p < .05$, respectively), and perceived stress, in turn, was related with higher levels of depressive symptoms ($\beta = .46$, $p < .001$) and more cigarette smoking ($\beta = .09$, $p < .05$).

Mediation Analyses: Hypothesis 3

Next, we examined whether perceived stress qualified as a mediator in the associations of ethnic discrimination, acculturative stress, and family conflict with symptoms of depression and cigarette smoking. We first tested our model depicted in Fig. 1 without direct paths from ethnic discrimination, acculturative stress, and family conflict to our outcome variables. Our results without direct paths from discrimination, acculturative stress, and family conflict to symptoms of depression and cigarette smoking indicated that perceived stress qualified as a mediator in the association of discrimination with symptoms of depression ($\beta = .06$; $p < .05$; 95 % *CI* .027, .101) and cigarette smoking ($\beta = .01$; $p < .05$; 95 % *CI* .002, .024). Perceived stress also mediated the relationships of family conflict with depressive symptoms ($\beta = .07$; $p < .05$; 95 % *CI* .022, .114) and cigarette smoking ($\beta = .01$; $p < .05$; 95 % *CI* .001, .026).

Next, we extended the model depicted in Fig. 1 by including direct paths from ethnic discrimination, acculturative stress and family conflict to symptoms of depression and cigarette smoking. The model with direct paths had excellent model fit [χ^2 = 715.413, *df* = 219, $p < .001$; *CFI* = .955; *RMSEA* = . 0.035, 90 % *CI* (.032, .038)] but did not improve model fit significantly ($\Delta\chi^2$ = 12,31, $\Delta df = 10$, $p = .26$) compared to the model without direct paths (Fig. 1). As such, we retained the more parsimonious model. Of note, acculturative stress had a positive and direct relationship with cigarette smoking ($\beta = .09$;

$p < .05$). The direct links from ethnic discrimination and family conflict to symptoms of depression and cigarette smoking were not significant.

Discussion

The current study draws from the stress and coping literature (Cervantes et al. 2012; Lazarus and Folkman 1984; Slavin et al. 1991) to investigate how cultural and familial risk factors such as ethnic discrimination, acculturative stress, and family conflict contribute to Latino youth's general perceived stress to better understand the process by which cultural and familial stressors influence Latino youth symptoms of depression and cigarette smoking. Prior studies have documented positive associations of ethnic discrimination, acculturative stress and family conflict with Latino youth mental health and substance use (Hovey and King 1996; Kam et al. 2010; Lorenzo-Blanco et al. 2011, 2012a, b; Romero and Roberts 2003) but less is known about the mechanisms by which these experiences impact youth health.

According to theory, experiences of ethnic discrimination, acculturative stress, and family conflict may influence youth mental health and substance use (Cervantes et al. 2012; Pascoe and Smart Richman 2009; Slavin et al. 1991) by contributing to youth's general perceived stress (i.e., the degree to which youth feel nervous, unable to cope with difficulties, taxed, stress, and overloaded). Consistent with this notion, the current study examined the mediating role of perceived stress in the associations of discrimination, acculturative stress, and family conflict with symptoms of depression and cigarette smoking. We hypothesized that perceived stress would mediate the associations of discrimination, acculturative stress, and family conflict with symptoms of depression and cigarette smoking.

Key Findings and Their Implications

As expected, perceived stress qualified as a mediator in the association of everyday discrimination with depressive symptoms and cigarette smoking. Perceived stress also mediated the associations of family conflict with symptoms of depression and cigarette smoking. Although mediation results were relatively small, these findings suggest that ethnic discrimination and family conflict may contribute to youth's general perceived stress, which in turn, may negatively influence their mental health and substance use behaviors. These findings are consistent with research among African American adults, in which discrimination was indirectly linked with perceived distress by way of general stress (Sellers et al. 2003). Our findings also corroborate research with Latino adults, in which general perceived stress was associated with more depressive symptoms and worse physical health (Flores et al. 2008). The present study extends this line of research to Latino youth and further provides important information about the role of perceived stress in the links of perceived discrimination and family conflict with Latino youth well-being.

Surprisingly, perceived stress did not qualify as a mediator in the association of acculturative stress with depressive symptoms and cigarette smoking, suggesting that acculturative stress may contribute to Latino youth's mental health and substance use through pathways other than perceived stress. For example, it is possible that acculturative stress may contribute to youth not feeling connected and supported, possibly contributing to youth symptoms

of depression and cigarette smoking (Gil et al. 2000). Among Latino adolescent males, acculturative stress related with higher alcohol involvement by way of lower family support (Gil et al. 2000), suggesting that acculturative stress may be associated with lower levels of perceived social support which in turn may relate with more depressive symptoms and cigarette smoking. Future studies should test the mediating role of perceived social support from friends, family, and other people in youth's lives in the associations of acculturative stress with symptoms of depression and cigarette smoking.

Although acculturative stress did not predict youth depressive symptoms and cigarette smoking by way of general perceived stress, our findings indicate that acculturative stress may have a direct effect on youth smoking and may constitute a significant cultural risk factor for Latino youth cigarette smoking. These findings are consistent with prior research that has found significant and positive relationships between acculturative stress and substance use, including cigarette smoking (Kam et al. 2010). However, unlike prior cross-sectional research acculturative stress did not predict symptoms of depression (Hovey and King 1996; Romero and Roberts 2003). This pattern of results suggest that the longitudinal influence of acculturative stress on youth health outcomes may depend on the health outcome under investigation, and further suggests that acculturative stress may affect youth symptoms of depression through pathways other than perceived stress (e.g., perceived social support as discussed above).

Consistent with our hypotheses, ethnic discrimination and family conflict were linked with higher levels of perceived stress, and perceived stress in turn related with higher levels of depressive symptoms and cigarette smoking. However, acculturative stress was not associated with perceived stress. It is possible that ethnic discrimination and family conflict contribute to youth's perceived stress because youth may be less able to predict and control these experiences than they may be able to predict and control acculturative stress (Torres et al. 2012). Lazarus and Folkman (1984) suggested that the perceived stressfulness of stressful life events depends on their predictability and the control that individuals have over these experiences. It is possible that youth are less able to anticipate and control acts of ethnic discrimination against them because these experiences depend on other people's attitudes and behaviors toward them (Flores et al. 2008). Similarly, youth may not be able to anticipate or control family conflict because instances of family conflict may depend on other family members. As a result, Latino youth's lack of control and unpredictability of these events may contributing to youth perceiving that they don't have available options or resources for successful coping. This perceived lack of control may enhance their level of perceived stress, which in turn, may negatively influence their mental health and substance use (Pascoe and Smart Richman 2009; Torres et al. 2012). Acculturative stress, on the other hand, has been described as problematic for acculturating youth but controllable and surmountable (Berry 2006) and as such it may not contribute to youth's general perceived stress. For example, youth may learn to speak two languages and to learn how to live their lives the American and Latino way and this may allow them to successfully navigate both the U.S. and Latino cultural context (Smokowski and Bacallao 2009).

Importantly, our findings indicate that Latino youth could benefit from learning how to effectively cope with cultural and familial stressors in order to reduce the influence these

risk factors can have on youth's overall perceived stress (Hampel et al. 2008). Survey research with Mexican–American adolescents, suggests that youth who use active/voluntary behavioral coping strategies such as problem solving, emotional expression and emotional emulation are less negatively affected by discrimination stress (Edwards and Romero 2008) than youth who rely on involuntary/avoidant coping strategies. This suggests that preventive interventions for Latino youth could benefit from teaching youth active/voluntary coping strategies when dealing with cultural and familial stress.

Indeed, numerous interventions exist that teach children and youth voluntary coping strategies through school-based programs to effectively manage normative day-to-day stress (Hampel et al. 2008; Pincus and Friedman 2004) but few of these stress and coping interventions reflect the socio-cultural reality of Latino youth by incorporating coping strategies for dealing with cultural (discrimination, acculturative stress) and familial risk factors (family conflict). Although, to the best of our knowledge, no stress and coping intervention exists that addresses cultural and familial stress, evidence from Project Wings, a coping intervention for Latina adolescents, suggests that teaching Latino youth problem- and emotion-focused coping skills can result in lower levels of perceived stress, lower symptoms of depression, lower substance use, and more use of active/voluntary coping strategies (Garcia et al. 2011). In all, these data suggest that stress and coping interventions have the potential to reduce the negative effects cultural and familial risk factors have on youth's perceived stress, depressive symptoms, and cigarette smoking by teaching youth how to effectively cope with cultural and familial stress.

Additionally, youth could benefit from acquiring mindfulness based stress reduction (MBSR) techniques that have been shown to result in lower stress and better well-being (Bazzano et al. 2013). For example, in research with parents and caregivers (Bazzano et al. 2013) who experienced uncontrollable caregiver stress, mindfulness based stress reduction (MBSR) techniques related with reduced levels of stress and better perceived well-being. Similarly, in research with high risk urban youth, MBSR techniques linked with better health outcomes and less stress related to the school context and interpersonal relationships (Sibinga et al. 2011). These MBSR studies suggest that Latino youth who face ethnic discrimination and family conflict could benefit from stress-reduction techniques, which could help reduce or prevent symptoms of depression and cigarette smoking. Few studies have investigated the utility of teaching youth engagement coping and MBSR techniques to help them manage cultural and familial stressors. Research is needed that investigates the utility of stress-reduction and engagement coping techniques to help youth cope with ethnic discrimination and family conflict in ways that do not compromise their health.

Lastly, our findings suggest that existing evidence-based culturally tailored interventions to prevent health risk behaviors among Latino youth, such as Family Effectiveness Training (Szapocznik et al. 1989), Familia Adelante (Cervantes et al. 2011), Familias Unidas (Coatsworth et al. 2002), culturally adapted Parent Management Training (Martínez Jr. and Eddy 2005), and Keepin' it REAL (Hecht et al. 2003) could benefit from including exercises to teach Latino youth active/voluntary coping strategies to more effectively deal with cultural and familial stress (Zayas 2001). Although some of these existing interventions target family functioning by focusing on acculturative stress and acculturation-related family

stress, few of these interventions teach youth active/behavioral coping. Given that active/behavioral coping may buffer the influence of ethnic discrimination and family conflict on perceived stress, existing interventions could be further enhanced by helping youth learn how to manage these experiences in effective ways.

Limitations

The present results should be interpreted in light of several important limitations. First, youth in the current study resided in Los Angeles, which is a relatively large and well-established receiving community for Latino youth with many ethnic enclave neighborhoods. This may influence opportunities for experiencing discrimination, family conflict, and acculturative stress. This context may also dictate the availability of diverse coping resources and options. As such, findings from this investigation may not reflect the cultural and familial experiences of youth who live in and attend schools in new settlement communities (e.g., the Midwest and Deep South) that have less experience interacting with newcomers (Barrington et al. 2012) and have fewer ethnic enclave neighborhoods. Future studies should replicate this study with Latino youth in less established but growing settlement communities (Rodríguez 2012).

Similarly, the majority of youth (84 %) were U.S. born and findings from this study may not fully reflect the experiences of foreign-born youth. In the present study, we observed that foreign born youth were slightly older and reported higher levels of acculturative stress than U.S. born youth, indicating that differences between these two groups might exist. However, the imbalance in distribution of these two groups and the small number of foreign-born youth in comparison to U.S. born youth might have impacted these results and prevented us from investigating if and how the process from cultural and familial risk factors to symptoms of depression and cigarette smoking varies by nativity. Thus, future studies should examine if the process from discrimination, acculturative stress, and family conflict to depressive symptoms and cigarette smoking by way of perceived stressed generalizes to foreign-born youth. Moreover, youth in the current study were predominantly Mexican–American and findings may not generalize to other Latino subgroups. Thus, future studies should replicate this study with Latino youth from Cuba, Puerto Rico, and other Latino subgroups.

Moreover, findings from the current study my not generalize to youth who did not fill out surveys or all the survey items across all time points. Baseline symptoms of depression, cigarette smoking, and age were associated with more missing data in outcome variables at Times 2 and 3. Similarly, baseline age and baseline perceived stress were associated with more missing data in the perceived stress measure at Time 2. Thus, results of the current study may not generalize to youth who did not fill out surveys or all survey items across all time points. To overcome these limitations, Graham (2012) recommends to add survey measures for possible causes of missing data. This helps researchers understand how missing data influences the results. Thus, future studies should aim at replicating the current study and add measures of causes for missingness when conducting longitudinal research on cultural and familial risk factors, stress, mental health and substance use among Latino youth. Further, we had approximately 30 % of missing data at Time 3, and in future

longitudinal research with Latino youth, researchers should take necessary steps to avoid missing data.

Additionally, our study did not assess coping behaviors that could modify the influence of cultural and familial risk factors on perceived stress as well as the influence of perceived stress on symptoms of depression and smoking (Edwards and Romero 2008; Garcia et al. 2011; Lazarus and Folkman 1984). Thus, future studies should assess coping strategies among youth and test more comprehensive models that assess for the role of coping in the paths from cultural and familial risk factors to Latino youth symptoms of depression and cigarette smoking by way of perceived stress (Edwards and Romero 2008; Garcia et al. 2011).

Similarly, the current study could be expanded by adding a perceived social support measure as an alternative mediator in the associations of ethnic discrimination, acculturative stress, and family conflict on youth symptoms of depression and cigarette smoking. Measures of perceived social support from friends, family, and other important persons exist (Zimet et al. 1988), and as such the current study could be expanded by also testing the mediating role of perceived social support. This would provide additional information about how to best intervene to prevent smoking and depressive symptoms among Latino youth.

Moreover, research on familial risk factors among Latino youth could benefit from including both universal and culture-specific familial risk factors. Family conflict in the current study was assessed with items from the FACES-II scale (Olson et al. 1982), which does not account for culture-specific familial risk factors such as acculturation-gap stress and family immigration stress (Cervantes et al. 2012). Thus, future research on the role of cultural and familial risk factors, perceived stress, and youth symptoms of depression and cigarette smoking should include a range of both universal and culture-specific stressors.

Furthermore, in the present study, we were not able to investigate the temporal relationship between depressive symptoms and cigarette smoking. Research indicates that depressive symptoms and cigarette smoking often co-occur among adolescents (e.g., Nezami et al. 2005), and numerous studies have tested the temporal ordering of depressive symptoms and smoking initiation (e.g. Beal, Negriff, Dorn, Pabst, and Schulenberg). While some studies suggest that individuals use cigarettes to self-medicate their depressive symptoms (e.g., Breslau et al. 1998; Kim et al. 2009; Maslowsky and Schulenberg 2013; i.e., depressive symptoms come before cigarette smoking), other studies indicate the opposite, that nicotine/smoking leads to depressive symptoms through various mechanisms (e.g., Beal et al. 2014; Munafò et al. 2008; Quattrocki et al. 2000; i.e., cigarette smoking leads to depression). Still others have negated a causal relationship between smoking and depression, proposing that depression and smoking are simply influenced by common factors such as stress (Kendler et al. 1993). Given the purpose of the present study (i.e., to test the mediating role of perceived stress in the associations of cultural and familial risk factors with depressive symptoms and cigarette smoking), we elected to model both smoking and depressive symptoms as outcomes of the same stress process. However, future longitudinal research is needed that expands our model to include a temporal test between the relationship of depressive symptoms and cigarette smoking.

Lastly, the study design of this research could not account for change over time in ethnic discrimination, acculturative stress, and family conflict. It is, however, possible that youth experience changes in cultural and familial risk experiences over time (Schwartz et al. 2015). That said, an important next direction in research on Latino youth ethnic discrimination, acculturative stress, and family conflict is to investigate how these experiences change over time and how this change influences perceived stress in youth, their symptoms of depression, and smoking behavior.

Notwithstanding these limitations, the present study advances our understanding of how experiences of ethnic discrimination, acculturative stress, and family conflict contribute to youth reported perceived stress, thereby providing valuable information about modifiable intervening factors. Knowledge from the current study can inform prevention and intervention strategies to help reduce depressive symptoms and cigarette smoking among Latino youth by targeting youth's general stress level.

Conclusion

Adolescence is a time of rapid change and transitions for most U.S. youth (Coleman 2011), and many adolescents in the U.S. are at risk for experiencing symptoms of depression (CDC 2014) and experiment with cigarette smoking (CDC 2014; Pratt and Brody 2014). Adolescence is also a critical developmental period for preventing depressive symptoms and cigarette smoking because the majority of people experience depression for the first time before age 18 (Weersing and Brent 2006) and most smoking begins in adolescence (Prokhorov et al. 2006). Latino youth, in particular, seem to be at risk for depressive symptoms and cigarettes smoking (CDC 2014), stressing the need to understand effective ways to prevent and reduce risk for depressive symptoms and cigarette smoking among this population.

With this need in mind, the current study is one of the first to investigate the role of perceived stress in the associations of cultural (ethnic discrimination and acculturative stress) and familial (family conflict) risk factors with symptoms of depression and cigarette smoking. Our results indicate that perceived stress qualifies as a mediator in the links from ethnic discrimination and family conflict to symptoms of depression and cigarette smoking. These findings suggest that Latino youth may benefit from learning how to manage cultural and familial risk factors in a way that these experiences do not contribute to their perceived stress. Such efforts could reduce and/or prevent depressive symptoms and cigarette smoking among Latino youth.

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References

Barrington C, Messias DKH, & Weber L (2012). Implications of racial and ethnic relations for health and well-being in new Latino communities: A case study of West Columbia, South Carolina. Latino Studies, 10, 155–178. doi:10.1057/lst.2012.5.

Bazzano A, Wolfe C, Zylowska L, Wang S, Schuster E, Barrett C, & Lehrer D (2013). Mindfulness based stress reduction (MBSR) for parents and caregivers of individuals with developmental disabilities: A community-based approach. Journal of Child and Family Studies. doi:10.1007/s10826-013-9836-9.

Beal SJ, Negriff S, Dorn LD, Pabst S, & Schulenberg J (2014). Longitudinal associations between smoking and depressive symptoms among adolescent girls. Prevention Science, 15(4), 506–515. doi:10.1007/s11121-013-0402-x. [PubMed: 23689842]

Berry JW (2006). Acculturative stress. In Wong PTP & Wong LCS (Eds.), Handbook of multicultural perspectives on stress and coping. Langley, BC: Springer. doi:10.1007/0-387-26238-5_12.

Breslau N, Peterson EL, Schultz LR, Chilcoat HD, & Andreski P (1998). Major depression and stages of smoking: A longitudinal investigation. Archives of General Psychiatry, 55(2), 161–166. doi:10.1001/pubs.ArchGenPsychiatry-ISSN-0003-990x-55-2-yoa6330. [PubMed: 9477930]

Canino G, Vega WA, Sribney WM, Warner LA, & Alegria M (2008). Social relationships, social assimilation, and substanceuse disorders among adult Latinos in the U.S. Journal of Drug Issues, 38(1), 69–101. doi:10.1177/002204260803800104. [PubMed: 20011228]

Cano MÁ, Schwartz SJ, Castillo LG, Romero AJ, Huang S, Lorenzo-Blanco EI, & Szapocznik J (2015). Depressive symptoms and externalizing behaviors among Hispanic immigrant adolescents: Examining longitudinal effects of cultural stress. Journal of adolescence, 42, 31–39. doi:10.1016/j.adolescence.2015.03.017. [PubMed: 25899132]

Centers for Disease Control and Prevention (CDC). (2014). Youth risk behavior surveillance—United States, 2013. MMWR, 63(4), 1–168.

Cervantes RC, Fisher DG, Córdova D Jr, & Napper LE (2012). The Hispanic Stress Inventory—Adolescent Version: A culturally informed psychosocial assessment. Psychological Assessment, 24(1), 187. doi:10.1037/a0025280. [PubMed: 21942232]

Cervantes R, Goldbach J, & Santos SM (2011). Familia adelante: A multi-risk prevention intervention for Latino families. The Journal of Primary Prevention, 32(3–4), 225–234. doi:10.1007/s10935-011-0251-y. [PubMed: 21822979]

Céspedes YM, & Huey SJ Jr. (2008). Depression in Latino adolescents: A cultural discrepancy perspective. Cultural Diversity and Ethnic Minority Psychology, 14(2), 168–172. doi:10.1037/1099-9809.14.2.168. [PubMed: 18426290]

Coatsworth JD, Pantin H, & Szapocznik J (2002). Familias Unidas: A family-centered ecodevelopmental intervention to reduce risk for problem behavior among Hispanic adolescents. Clinical Child and Family Psychology Review, 5, 113–132. doi:10.1023/A:1015420503275. [PubMed: 12093012]

Cohen S, Kamarck T, & Mermelstein R (1983). A global measure of perceived stress. Journal of Health and Social Behavior, 24, 385–396. [PubMed: 6668417]

Cohen S, & Williamson G (1988). Perceived stress in a probability sample of the U.S. In Spacapam S & Oskamp S (Eds.), The social psychology of health: Claremont symposium on applied social psychology. Newbury Park, CA: Sage.

Coleman JC (2011). The nature of adolescence (4th ed.). New York: Routlege.

Crockett LJ, Randall BA, Shen Y, Russell ST, & Driscoll AK (2005). Measurement equivalence of the center for epidemiological studies depression scale for Latino and Anglo adolescents: A national study. Journal of Consulting and Clinical Psychology, 73(1), 47–58. doi:10.1037/0022-006X.73.1.47. [PubMed: 15709831]

Edwards LM, & Romero AJ (2008). Coping with discrimination among Mexican descent adolescents. Hispanic Journal of Behavioral Sciences, 30(1), 24–39. doi:10.1177/0739986307311431.

Enders CK, & Bandalos DL (2001). The relative performance of full information máximum likelihood estimation for missing data in structural equation models (SEM). Structural Equation Modeling, 8(3), 430–457. doi:10.1207/S15328007SEM0803_5.

Ennis SR, Rios-Vargas M, & Albert NG (2011). The Hispanic population: 2010 (Census Brief C2010BR-04). Washington: U.S. Census Bureau.

Field A (2012). Multilevel level linear models. In Field A (Ed.), Discovering statistics using SPSS (4th ed., pp. 815–819). Thousand Oaks, CA: Sage.

Flores E, Tschann JM, Dimas JM, Pasch LA, & de Groat CL (2008). Perceived discrimination, perceived stress, and mental and physical health among Mexican-origin adults. Hispanic Journal of Behavioral Sciences, 30(4), 401–424. doi:10.1177/0739986308323056.

Fry R, & Passel J (2009). Latino children: A majority are U.S. born-born offspring of immigrants. Washington, DC: Pew Hispanic Center.

Garcia C, Pintor J, Vazquez G, & Alvarez-Zumarraga E (2011). Project Wings, a coping intervention for Latina adolescents a pilot study. Western Journal of Nursing Research, 35(4), 434–458. doi:10.1177/0193945911407524. [PubMed: 21593284]

Gil AG, Wagner EF, & Vega WA (2000). Acculturation, familism and alcohol use among Latino adolescent males: Longitudinal relations. Journal of Community Psychology, 28, 443–458. doi:10.1002/1520-6629(200007).

Gonzales NA, Deardorff J, Formoso D, Barr A, & Barrera M Jr. (2006). Family mediators of the relation between acculturation and adolescent mental health. Family Relations, 55(3), 318–330. doi:10.1111/j.1741-3729.2006.00405.x.

Graham JW (2012). Missing data: Analysis and design (pp. 3–44). New York: Springer.

Guyll M, Matthews KA, & Bromberger JT (2001). Discrimination and unfair treatment: Relationship to cardiovascular reactivity among African American and European American women. Health Psychology, 20(5), 315–325. doi:10.1037/0278-6133.20.5.315. [PubMed: 11570645]

Hampel P, Meier M, & Kümmel U (2008). School-based stress management training for adolescents: Longitudinal results from an experimental study. Journal of Youth and Adolescence, 37(8), 1009–1024. doi:10.1007/s10964-007-9204-4.

Hayes AF (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. Communication Monographs, 76(4), 408–420. doi:10.1080/03637750903310360.

Hecht ML, Marsiglia FF, Elek E, Wagstaff DA, Kulis S, Dustman P, et al. (2003). Culturally grounded substance use prevention: An evaluation of the Keepin' it REAL curriculum. Prevention Science, 4, 233–248. doi:10.1023/A:1026016131401. [PubMed: 14598996]

Hovey JD, & King CA (1996). Acculturative stress, depression, and suicidal ideation among immigrant and second-generation Latino adolescents. Journal of the American Academy of Child and Adolescent Psychiatry, 35(9), 1183–1192. doi:10.1097/00004583-199609000-00016. [PubMed: 8824062]

Hu L, & Bentler PM (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. Psychological Methods, 3(4), 424. doi:10.1037/1082-989X.3.4.424.

IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM.

Johnston LD, O'Malley PM, Bachman JG, & Schulenberg JE (2015). Monitoring the future national survey results on drug use, 1975–2014. Overview, key findings on adolescent drug use. Ann Arbor: University of Michigan, Institute for Social Research.

Kam JA, Cleveland MJ, & Hecht ML (2010). Applying general strain theory to examine perceived discrimination's indirect relation to Mexican-heritage youth's alcohol, cigarette, and marijuana use. Prevention Science, 11(4), 397–410. doi:10.1007/s11121-010-0180-7. [PubMed: 20490921]

Kendler KS, Neale MC, MacLean CJ, Heath AC, Eaves LJ, & Kessler RC (1993). Smoking and major depression. A causal analysis. Archives of General Psychiatry, 50(1), 36–43. [PubMed: 8422220]

Kim MJ, Fleming CB, & Catalano RF (2009). Individual and social influences on progression to daily smoking during adolescence. Pediatrics, 124(3), 895–902. doi:10.1542/peds.2008-2015. [PubMed: 19706575]

Kline RB (2011). Principles and practices of structural equation modeling (3rd ed.). New York: Guilford Press.

Lazarus RS, & Folkman S (1984). Stress, appraisal, and coping. New York: Springer.

Little T, Cunningham W, Shahar G, & Widaman K (2002). To parcel or not to parcel: Exploring the question, weighing the merits. Structural Equation Modeling, 9(2), 151. doi:10.1207/S15328007SEM0902_1.

Little TD, Rhemtulla M, Gibson K, & Schoemann AM (2013). Why the items versus parcels controversy needn't be one. Psychological Methods, 18, 285. doi:10.1037/a0033266. [PubMed: 23834418]

Lorenzo-Blanco EI, Bares C, & Delva J (2012a). Correlates of Chilean adolescents' negative attitudes toward cigarettes: The role of gender, peer, parental, and environmental factors. Nicotine & Tobacco Research, 14(2), 142–152. doi:10.1093/ntr/ntr152. [PubMed: 22157230]

Lorenzo-Blanco EI, & Cortina LM (2012). Latino/a depression and smoking: An analysis through the lenses of culture, gender, and ethnicity. American Journal of Community Psychology, 51(3–4), 332–346. doi:10.1007/s10464-012-9553-3.

Lorenzo-Blanco EI, & Cortina LM (2013). Towards an integrated understanding of Latino/a acculturation, depression, and smoking: A gendered analysis. Journal of Latina/o Psychology, 1, 3–20. doi:10.1037/a0030951.

Lorenzo-Blanco EI, Unger JB, Baezconde-Garbanati L, Ritt-Olson A, & Soto D (2012b). Acculturation, enculturation, and symptoms of depression in Hispanic youth: The roles of gender, Hispanic cultural values, and family functioning. Journal of Youth and Adolescence, 41, 1350–1365. doi:10.1007/s10964-012-9774-7. [PubMed: 22627624]

Lorenzo-Blanco EI, Unger JB, Ritt-Olson A, Soto D, & Baezconde-Garbanati L (2011). Acculturation, gender, depression, and cigarette smoking among U.S. Hispanic youth: The mediating role of perceived discrimination. Journal of Youth and Adolescence, 40, 1519–1533. doi:10.1007/s10964-011-9633-y. [PubMed: 21293915]

Lorenzo-Blanco EI, Unger JB, Ritt-Olson A, Soto D, & Baezconde-Garbanati L (2013). A longitudinal analysis of hispanic youth acculturation and cigarette smoking: The roles of gender, culture, family, and discrimination. Nicotine & tobacco research, 15(5), 957–968. doi:10.1093/ntr/nts204. [PubMed: 23109671]

Lugo Steidel AG, & Contreras JM (2003). A New familism scale for use with Latino populations. Hispanic Journal of Behavioral Sciences, 25(3), 312–330. doi:10.1177/0739986303256912.

Martínez CR Jr., & Eddy JM (2005). Effects of culturally adapted parent management training on Latino youth behavioral outcomes. Journal of Consulting and Clinical Psychology, 73, 841–851. doi:10.1037/0022-006X.73.5.841. [PubMed: 16287384]

Maslowsky J, & Schulenberg JE (2013). Interaction matters: Quantifying Conduct Problem × Depressive Symptoms interaction and its association with adolescent alcohol, cigarette, and marijuana use in a national sample. Development and Psychopathology, 25(4pt1), 1029–1043. doi:10.1017/S0954579413000357. [PubMed: 24229547]

Munafò MR, Hitsman B, Rende R, Metcalfe C, & Niaura R (2008). Effects of progression to cigarette smoking on depressed mood in adolescents: Evidence from the National Longitudinal Study of Adolescent Health. Addiction, 103(1), 162–171. doi:10.1111/j.1360-0443.2007.02052.x. [PubMed: 18031565]

Muthén LK, & Muthén BO (1998–2012). Mplus user's guide, (7th ed.). Los Angeles, CA: Muthén & Muthén Copyright.

Nezami E, Unger J, Tan S, Mahaffey C, Ritt-Olson A, Sussman S, et al. (2005). The influence of depressive symptoms on experimental smoking and intention to smoke in a diverse youth sample. Nicotine & Tobacco Research, 7(2), 243–248. doi:10.1080/14622200500055483. [PubMed: 16036281]

Olson DH, Portner J, & Bell R (1982). Family adaptability and cohesion evaluation scales. In Olson DH, McCubbin HI, Barnes HL, Larsen A, Muxen M, & Wilson M (Eds.), Family inventories (pp. 5–24). St. Paul: Minnesota.

Ong AD, Fuller-Rowell T, & Burrow AL (2009). Racial discrimination and the stress process. Journal of Personality and Social Psychology, 96(6), 1259–1271. doi:10.1037/a0015335. [PubMed: 19469600]

Pascoe EA, & Smart Richman L (2009). Perceived discrimination and health: A meta-analytic review. Psychological Bulletin, 135(4), 531. doi:10.1037/a0016059. [PubMed: 19586161]

Pincus DB, & Friedman AG (2004). Improving children's coping with everyday stress: Transporting treatment interventions to the school setting. Clinical Child and Family Psychology Review, 7(4), 223–240. doi:10.1007/s10567-004-6087-8. [PubMed: 15648277]

Pratt LA, & Brody DJ (2014). Depression in the U.S. household population, 2009–2012. NCHS data brief, no 172. Hyattsville, MD: National Center for Health Statistics.

Prokhorov AV, Winickoff JP, Ahluwalia JS, Ossip-Klein D, Tanski S, Lando HA, et al. (2006). Youth tobacco use: A global perspective for child health care clinicians. Pediatrics, 118(3), e890. [PubMed: 16950972]

Quattrocki E, Baird A, & Yurgelun-Todd D (2000). Biological aspects of the link between smoking and depression. Harvard Review of Psychiatry, 8(3), 99–110. [PubMed: 10973935]

Radloff LS (1977). The CES-D scale a self-report depression scale for research in the general population. Applied Psychological Measurement, 1, 385–401. doi:10.1177/014662167700100306.

Rodríguez N (2012). New Southern Neighbors: Latino immigration and prospects for intergroup relations between African-Americans and Latinos in the South. Latino Studies, 10, 18–40. doi:10.1057/lst.2012.1.

Romero AJ, Edwards LM, Bauman S, & Ritter MK (2014). Latina adolescent resilience rooted within cultural strengths. In Preventing adolescent depression and suicide among Latinas: Resilience research and theory (pp. 21–33). New York: Springer.

Romero AJ, & Roberts RE (2003). Stress within a bicultural context for adolescents of Mexican descent. Cultural Diversity and Ethnic Minority Psychology, 9(2), 171. doi:10.1037/1099-9809.9.2171. [PubMed: 12760328]

Schwartz SJ, Unger JB, Baezconde-Garbanati L, Zamboanga BL, Lorenzo-Blanco EI, Des Rosiers SE, et al. (2015). Trajectories of cultural stressors and effects on mental health and substance use among Hispanic immigrant adolescents. Journal of Adolescent Health, 56, 433–439. doi:10.1016/j.jadohealth.2014.12.011.

Schwartz SJ, Unger JB, Zamboanga BL, & Szapocznik J (2010). Rethinking the concept of acculturation: Implications for theory and research. American Psychologist, 65, 237–251. doi:10.1037/a0019330. [PubMed: 20455618]

Sellers RM, Caldwell CH, Schmeelk-Cone KH, & Zimmerman MA (2003). Racial identity, racial discrimination, perceived stress, and psychological distress among African American young adults. Journal of Health and Social Behavior, 44(3), 302–317. [PubMed: 14582310]

Sibinga EM, Kerrigan D, Stewart M, Johnson K, Magyari T, & Ellen JM (2011). Mindfulness-based stress reduction for urban youth. The Journal of Alternative and Complementary Medicine, 17(3), 213–218. doi:10.1089/acm/2009.0605. [PubMed: 21348798]

Slavin LA, Rainer KL, McCREARY ML, & Gowda KK (1991). Toward a multicultural model of the stress process. Journal of Counseling & Development, 70(1), 156–163.

Smart JF, & Smart DW (1995). Acculturative stress of Hispanics: Loss and challenge. Journal of Counseling & Development, 73(4), 390–396. doi:10.1002/j.1556-6676.1995.tb01770.x.

Smokowski PR, & Bacallao M (2009). Entre dos mundos/between two worlds youth violence prevention comparing psychodramatic and support group delivery formats. Small Group Research, 40(1), 3–27. doi:10.1177/1046496408326771.

Szapocznik J, Santisteban D, Rio A, Perez-Vidal A, Santisteban D, & Kurtines WM (1989). Family effectiveness training: An intervention to prevent drug abuse and problem behaviors in Hispanic adolescents. Hispanic Journal of Behavioral Sciences, 11, 4–27. doi:10.1177/07399863890111002.

Torres L, Driscoll MW, & Voell M (2012). Discrimination, acculturation, acculturative stress, and Latino psychological distress: A moderated mediational model. Cultural Diversity and Ethnic Minority Psychology, 18(1), 17. doi:10.1037/a0026710. [PubMed: 22250895]

Unger JB, Ritt-Olson A, Wagner KD, Soto DW, & Baezconde-Garbanati L (2009). Parent-child acculturation patterns and substance use among Hispanic adolescents: A longitudinal analysis. The Journal of Primary Prevention, 30(3–4), 293–313. doi:10.1007/s10935-009-0178-8. [PubMed: 19384604]

Weersing RV, & Brent DA (2006). Cognitive behavioral therapy for depression in youth. Child and Adolescent Psychiatric Clinics of North America, 15, 939–957. [PubMed: 16952769]

Zayas LH (2001). Incorporating struggles with racism and ethnic identity in therapy with adolescents. Clinical Social Work Journal, 29, 361–373. doi:10.1023/A:1012267230300.

Zimet GD, Dahlem NW, Zimet SG, & Farley GK (1988). The multidimensional scale of perceived social support. Journal of Personality Assessment, 52(1), 30–41. doi:10.1207/s15327752jpa5201_2.

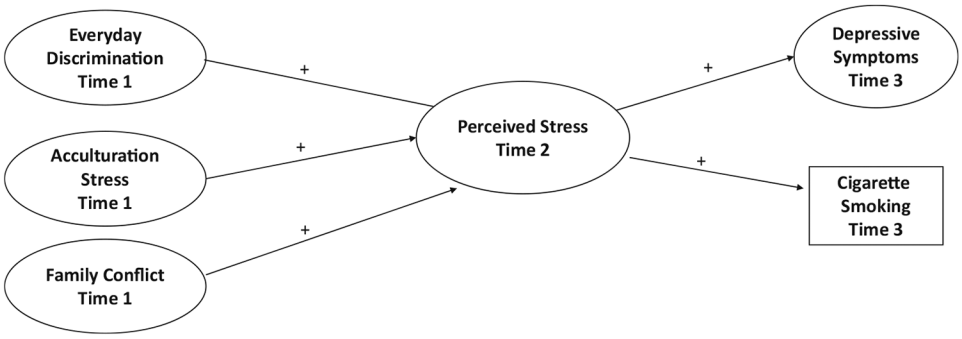

Fig. 1.
Hypothesized model, showing all expected relationship and their predicted valence

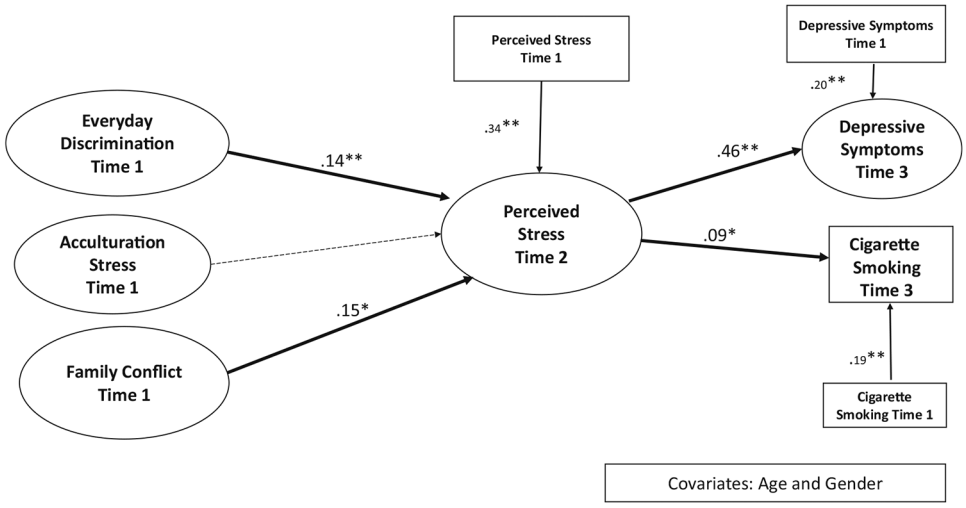

Fig. 2.

Results with the overall sample ($N = 1919$), showing associations of everyday discrimination, acculturative stress, and family conflict with stress, depressive symptoms and cigarette smoking, controlling for age and gender in all structural paths and accounting for baseline stress, depressive symptoms, and cigarette smoking. *Note Dashed lines* non-significant paths and *bold lines* significant paths. *$p < 0.05$; **$p < 0.001$

Table 1

Descriptive characteristics for overall sample (N = 1919)

Variables	N (%) or M (SE)
Age (T1)	14.01 (.41)
Everyday discrimination (T1)	1.73 (.01)
Acculturative stress (T1)	1.47 (.01)
Family conflict (T1)	2.22 (.02)
Stress (T1)	2.60 (.02)
Stress (T2)	2.76 (.02)
Depressive symptoms (T1)	1.76 (.01)
Depressive symptoms (T3)	1.77 (.01)
CES-D (= >16) (T1)	621 (32.4)
CES-D (= >16) (T3)	438 (22.8)
Past 30 day smoking (T1)	
0 days	1764 (91.9)
1 or 2 days	70 (3.6)
3–5 days	24 (1.3)
6–9 days	17 (.9)
10–19 days	19 (1.0)
20–29 days	2 (.1)
All 30 days	8 (.4)
Missing	15 (.8)
Past 30 day smoking (T3)	
0 days	1196 (62.3)
1 or 2 days	66 (3.4)
3–5 days	25 (1.3)
6–9 days	11 (.6)
10–19 days	6 (.3)
20–29 days	1 (.0)
All 30 days	4 (.0)
Missing	616 (32.1)

Table 2

Intercorrelations between all study variables

	1	2	3	4	5	6	7	8	9	10	11
01. Age (T1)	1										
02. Gender (T1)	−.05*	1									
03. Everyday discrimination (T1)	.02	−.18**	1								
04. Acculturative stress (T1)	.08*	.01	.21**	1							
05. Family conflict (T1)	.02	.02	.28**	.22**	1						
06. Stress (T1)	.00	.06*	.29**	.18**	.27**	1					
07. Stress (T2)	.01	.01	.24**	.24**	.24**	.41**	1				
08. Depressive symptoms (T1)	.01	.24**	.34**	.25**	.33**	.58**	.28**	1			
09. Depressive symptoms (T3)	−0.2	.14**	.16**	.13**	.17**	.30**	.45**	.37**	1		
10. Past 30 day smoking (T1)	.05	−.04	.13**	.09**	.08*	.11**	.06**	.09**	.04**	1	
11. Past 30 day smoking (T3)	.04*	−.15**	.07**	.03**	.03*	.04*	.09*	.01	.05	.20**	1

Categorical measures: Gender.

* $p < 0.05$

** $p < 0.001$

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