

Acculturative Stress, Anxiety, and Depression in Latinx Youth: The Role of Behavioral Inhibition, Cultural Values, and Active Coping

By

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Abstract

Acculturative stress is a cultural stressor that predicts various internalizing problems, such as anxiety and depression. Interestingly, not every individual who experiences acculturative stress reports psychological impairment, which suggests the potential interplay of proximal risk and protective factors. Unfortunately, there is a dearth of research that considers the impact of temperamental, cultural, and behavioral factors on the relationship between acculturative stress, anxiety, and depression. The current study clarifies how temperamental (behavioral inhibition), cultural (values), and behavioral (active coping) factors may interact with the relationship between acculturative stress and youth internalizing problems (anxiety and depression) in a short-longitudinal sample of Latinx youth ($n = 161$). Results indicated a significant and positive relationship between acculturative stress, anxiety, and depression at Time 1 and Time 2. Behavioral inhibition moderated the relationship between acculturative stress and depression at Time 1, such that elevated levels of behavioral inhibition appeared to strengthen the relationship between acculturative stress and depression. Furthermore, active coping moderated the relationship between acculturative stress and depression at Time 1 and Time 2. Contrary to expected findings, elevated levels of active coping appeared to strengthen the positive relationship between acculturative stress and depression. We did not find any significant moderation effects between acculturative stress and youth anxiety. Findings from the current study make advancements towards a personalized understanding of proximal factors that interact with the experience of acculturative stress, anxiety, and depression. Finally, we identify potential specific points of intervention and support for Latinx youth in community mental health.

Keywords: Latinx youth, behavioral inhibition, cultural values, coping, anxiety, depression, acculturative stress

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Acculturative Stress, Anxiety, and Depression in Latinx Youth:

The Role of Behavioral Inhibition, Cultural Values, and Active Coping

The Latinx population is largely and rapidly growing in the United States (U.S.), with over one third of the population under the age of 18 (Noe-Bustamante, Lopez, & Krogstad, 2020). Latinx youth are at an increased risk of experiencing internalizing problems (i.e., anxiety and depression), when compared to African American and European American youth (Anderson & Mayes, 2010; Glover, Pumariega, Holzer, Wise, & Rodriguez, 1999; Gross et al., 2006; McLaughlin, Hilt, & Nolen-Hoeksema, 2007; Piña & Silverman, 2004; Varela, Sanchez-Sosa, Biggs, & Luis, 2008; Varela et al., 2004; Hankin, 2009). Although there is a growing body of research aimed to understand the well-being of Latinx youth, few studies consider temperamental, cultural, and behavioral factors that place some youth at an elevated risk to develop internalizing problems. Given this dearth of literature, it is crucial to understand specific pathways of risk and resilience to best address and contextualize the well-being of Latinx youth in the U.S.

Research suggests that Latinx youth in the U.S. may be subject to numerous psychosocial challenges partially as a result of incongruent, and often conflicting, heritage and mainstream cultural values and traditions, languages, and family systems (Ko & Perreira, 2010). Acculturation is traditionally defined as the change that results from a dynamic and evolving process of contact between dominant and nondominant cultural groups, which creates opportunities to learn and adapt (Berry, 1990; Berry, 1998). The stress that results from the acculturation process is termed acculturative stress (Cervantes, Padilla, Napper, & Goldbach, 2013). Latinx youth in particular report elevated levels of acculturative stress (Cervantes & Cordova, 2011; Williams & Berry, 1991; Gil, Vega, & Dimas, 1994; Berry, 2003; Cervantes,

Fisher, Cordova, & Napper, 2012; Marsiglia, Booth, Baldwin, & Ayers, 2013), which likely compounds the normative adolescent stressors experienced across home and school contexts. Acculturative stress spans across several domains of stress, including communication and language stress, family stress, immigration stress, peer stress, school and academic stress, and social and economic stress (Cervantes & Cordova, 2011). While the prevalence and intensity of the stressor may vary across generations, acculturative stress is intergenerational (Pina-Watson, Gonzalez, & Manzo, 2019; Vega, Khoury, Zimmerman, Gil, & Warheit, 1995), which poses significant risk to the well-being of Latinx individuals and for the onset of mental health problems.

A growing body of literature suggests that acculturative stress is a robust predictor of internalizing problems, such as anxiety and depression (Constantine, Okazaki, & Utsi, 2004; Cruz et al., 2019; Crockett et al., 2007; Hovey & Magaña, 2002; Hovey, 2000; Salgado de Snyder, 1987; Glover et al. 1999; Suarez-Morales & Lopez, 2009). Unfortunately, most of the literature between acculturative stress and resulting psychological problems to date focuses on adult populations (Crockett et al., 2007; Torres, Driscoll, & Voell, 2012; Miller, Yang, Hui, Choi, & Lim, 2011; Ng, Wang, & Chan, 2017; Ehlers, Gilder, Criado, & Caetano, 2010; Torres, 2010; Perez, Fortuna, & Alegria, 2008). For example, Hovey (2000) identified acculturative stress as the strongest predictor of depression in a sample of Mexican migrant adults; in fact, acculturative stress accounted for 29% of the variance in depression. In another study, Suarez-Morales and Lopez (2009) aimed to conduct a review of the literature on acculturative stress and anxiety in Latinx youth, but alarmingly only found one study (i.e., Glover et al., 1999) that met their inclusion criteria. Instead, the researchers proceeded to investigate acculturative stress in relation to anxiety symptoms in a sample of pre-adolescent Hispanic individuals and found that

acculturative stress was positively correlated with anxiety symptoms (i.e., concentration, physiological, and worrisome symptoms).

We focus on acculturative stress as it may be particularly relevant to adolescent populations. Numerous studies indicate that adolescence marks a period of elevated risk to develop anxiety and depression (Hankin, 2009; Merikangas et al., 2010). However, few studies focus on specific pathways that link this particular period of youth development to an elevated risk. During adolescence, individuals may experience a heightened pressure to identify and belong to a cultural group (Phinney, 1993; Sirin & Fine, 2007; Helms, 1990). This heightened perception of identity and belongingness is typically accompanied by experiences of novel, and potentially conflicting, cultural perspectives, ideas, and values. For Latinx youth, the experience of ethnic discrimination may disrupt their development of a strong cultural identity, exacerbating the risk to develop anxiety and depression. Developing elevated levels of anxiety and depression during such a formative period of development carries significant public health implications. Left untreated, adolescent anxiety and depression can persist and precede substance abuse problems (Lopez, Turner, & Saavedra, 2005; Colder et al., 2013), suicidality (O'Neil et al. 2012), and adult mood disorders (Weissman et al., 1999).

Despite the dearth of research specific to acculturative stress and internalizing problems (anxiety and depression) in Latinx youth, the findings reviewed above suggest that experiencing acculturative stress may be deleterious to the well-being of youth. In practice, recently immigrated Latinx youth in the U.S. may be made fun of because of their limited English proficiency. In turn, these youth may internalize the negative feedback, contributing to the onset of various psychological problems. Non-immigrant Latinx youth in the U.S. are also subject to experiencing acculturative stress, which may be incited by differing cultural traditions and

customs from the dominant culture and experiences of ethnic and linguistic discrimination. Such experiences may interact with an individual's sense of self and identity within the family and in larger society, potentially shaping future interactions with the environment. However, it is important to acknowledge that not every individual who experiences acculturative stress reports psychological impairment (Rumbaut 2005; Spencer et al. 2006), suggesting the potential interplay of proximal factors with the experience of acculturative stress.

Acculturative Stress, Individual Factors, Anxiety, and Depression

Garcia Coll and colleagues (1996) proposed an integrative model of ethnic minority youth development. The model highlights the interaction of culture and socioeconomic contexts that influence the development of minority youth and explain variation in their outcomes. The model includes eight constructs that are hypothesized to interact and influence the developmental processes and competencies for children of color. Garcia Coll and colleagues (1996) suggest that broad social position variables (e.g., race, segregation, social class, ethnicity, and gender) exert their influence by shaping the local environment and impacting daily experiences of youth. In the current study, we conceptualize acculturative stress as a key example of the ways that broad social variables present repeatedly in the daily lives of some youth.

The model aims to further explain the developmental competencies in youth. In this study, we focus on explaining risk for anxiety and depression, specifically, and draw from this integrative model due to its inclusion of constructs that help explain unique variance for youth of color. Importantly, the model places considerable emphasis on the interaction of particular environments and contexts with more proximal factors for understanding youth outcomes. For the purposes of the current study, we focus on child characteristics and adaptive culture, two constructs proposed in the model. The interaction of child characteristics, such as age,

temperament, and coping, with daily life experiences leads to possibility of differential outcomes from a shared experience, such as acculturative stress. Similarly, differences in adaptive culture, which includes traditions, migration, and cultural legacies, may result in varying experiences of a stressor – youth with a strong adaptive culture may be less vulnerable to the negative impact of stressful daily life experiences.

Behavioral Inhibition

Behavioral inhibition is a child characteristic that may provide insight into the role of temperament in shaping youth development. Behavioral inhibition is defined as a stable temperamental trait characterized by high levels of restraint, avoidance, and withdrawal (Kagan, Reznick, Clarke, Snidman, & Garcia-Coll, 1984) and is associated with social withdrawal from and distress to novel environments, people, and situations (Fox, Henderson, Marshall, Nichols, & Ghera, 2005; Kagan et al., 1984; Smillie, Pickering, & Jackson, 2006). Research suggests that childhood behavioral inhibition is positively associated with youth internalizing problems (Kagan & Snidman, 1999; Reeb-Sutherland et al., 2009; Chronis-Tuscano et al., 2009; Jaffee et al., 2005; Shatz, 2005). Biederman and colleagues (1990) examined psychiatric correlates of behavioral inhibition and found that 22.2% of the youth in the sample with elevated levels of behavioral inhibition had two or more anxiety disorders compared to 0% of the youth with lower levels of behavioral inhibition. It is important to distinguish behavioral inhibition from experienced anxiety – the former considered a measure of an individual's temperamental predisposition to learned cues of punishment, loss of reward, and novelty that impacts behavior (Carver & White, 1994; Jorm et al., 1999). In a birth cohort study across 26 years, Jaffee and colleagues (2002) identified youth with elevated levels of behavioral inhibition to be at an increased risk to develop juvenile depression (i.e., onset by 16). This finding suggests that

childhood behavioral inhibition shares common vulnerability across internalizing problems that may persist across youth development.

Latinx culture is traditionally conceptualized as a collectivistic culture that values respect, obedience, and proper demeanor in public contexts (Leyendecker, Harwood, Lamb, & Scholmerich, 2002; Gudiño and Lau, 2010). Youth who learn to value self-restraint and social inhibition may display elevated levels of inhibited behavior. However, research on behavioral inhibition with Latinx populations is limited. The few studies that exist indicate that cultural values are positively associated with behavioral inhibition (Schneider & Gudiño, 2018). To our knowledge, no study has examined behavioral inhibition in the context of acculturative stress, a common experience for many Latinx youth. It would make sense, however, that repeated exposure to acculturative stress would further condition the temperamental differences to punishment, reward, and novelty for youth with high levels of behavioral inhibition, and potentially lead to anxiety and depression. However, this connection may not be as strong for individuals with lower levels of behavioral inhibition.

Cultural Values

Maintaining cultural values may serve as a mechanism to counter the deleterious effects of acculturative stress on the well-being of Latinx youth. Cultural values include *familismo* (familism), *respeto* (respect), spirituality and faith in a higher power, and traditional gender roles (Marin & Gamba, 2003). *Familismo* includes the emphasis of close relationships, obligation to family, and behavioral alignment with family expectations (Sabogal, Marin, Otero-Sabogal, Marin, & Perez-Stable, 1987; Vega, 1990; Calzada, Tamis-LeMonda, & Yoshikawa, 2013). *Respeto* highlights a different dimension of Latinx culture – the notion that youth should be reverent to adults (Gonzales-Ramos, Zayas, & Cohen, 1998; Delgado-Gaitan, 1994) and a

failure to do may disrupt the social harmony (Marin & Marin, 1991). Spirituality and faith in a higher power stems from the collectivistic nature of Latinx culture and is typically nested within the family and local community (Campesino, Belyea, & Schwartz, 2009). Finally, traditional gender roles reflect societal beliefs about role expectations for males and females in the private and public spheres.

Research suggests that Latinx cultural values serve as a protective agent against acculturative stress (Phinney, 2003; Crocker & Major, 1989). Cruz and colleagues (2019) concluded that the maintenance of heritage cultural values may serve as a protective coping mechanism against the disadvantaged position that individual social position factors may elicit. In addition, cultural values are typically considered protective against numerous internalizing problems, including anxiety and depression (Cupito, Stein, Gonzalez, & Supple, 2016; Stein, Gonzalez, Cupito, Kiang, & Supple, 2015; Telzer, Gonzales, Tsai, & Fuligni, 2015; Torres & Santiago, 2018; Smokowski & Bacallao, 2007; Lorenzo-Blanco, Unger, Baezconde-Garbanati, Ritt-Olson, & Soto, 2012). For example, Cupito and colleagues (2016) found that *familismo* was negatively associated with depressive symptoms in a sample of Latinx adolescents. In another study, Stein and colleagues (2015) investigated the moderating role of *familismo* between acculturative stress and depressive symptoms but found no significant interaction; however, *familismo* was found predict fewer depressive symptom. The two studies referenced only measured one dimension of cultural values, *familismo*. This is consistent across most literature that measures cultural values. In order to provide a more comprehensive interpretation of cultural values, we rely on a measure of cultural values that assesses multiple domains.

While most research posits that cultural values buffer the effects of acculturative stress, findings on the association between cultural values and internalizing problems are less

straightforward. Martinez, Polo, and Carter (2012) identified a value in family orientation and language proficiency to be positively associated with separation anxiety/panic symptoms in Latinx youth. Additional research found perceived family obligation to be associated with elevated levels of stress among adolescents (Flook & Fuligni, 2008). Moreover, while some research finds that stronger attitudes about traditional gender roles predicts fewer internalizing problems (Lorenzo-Blanco, Unger, Baezconde-Garbanati, Ritt-Olson, & Soto, 2012), other research does not find any relationship (Updegraff, Umaña-Taylor, McHale, Wheeler, & Perez-Brena, 2012). Interestingly, Schneider and Gudiño (2018) examined the moderation effect of cultural values on the relation between behavioral inhibition and post-traumatic stress disorder avoidance symptoms and found that this relationship was stronger as cultural values increased. However, no significant main effect of cultural values on avoidance symptoms was found, which confirms that cultural values themselves are not deleterious to the well-being of Latinx individuals and that associations between culture and youth mental health are likely more complex.

Active Coping

The Garcia Coll and colleagues (1996) model focuses on explaining the developmental competencies of youth. Coping is one such developmental competency that is proximal to youth mental health outcomes and is directly relevant to understanding the impact of stress. Specifically, coping encompasses aspects of resilience and competence that influence an individual's response to stressful events and cultural interactions (Torres, 2010; Bowleg, Craig, & Burkholder, 2004). Relatedly, Folkman and Lazarus's Transactional Model of Stress and Coping (1984) suggests that stress emerges from a perceived disproportion between demands and coping resources. When an individual perceives the demand as threatening or beyond their

coping resources, negative affect may develop (Barlow, 2002; Cohen & Wills, 1985; Folkman & Lazarus, 1984). In the context of acculturative stress, active coping, traditionally defined as an assortment of purposeful and volitional efforts that promote action-based, problem-solving behaviors and assistance-seeking, warrants particular attention due to its potential to buffer the harmful effects of stressors (Compas et al., 2001). In fact, research generally finds that active coping is associated with fewer internalizing problems (Crockett et al., 2007; Torres & Rollock, 2007; Wadsworth & Compas, 2002; Torres, 2010; Gonzales, Tein, Sandler, & Friedman, 2001; Noh & Kaspar, 2003).

However, most of the literature that investigates individual coping styles and internalizing problems traditionally focuses on depressive symptoms. For example, Torres and Rollock (2007) identified coping behaviors as the strongest and most reliable predictor of depressive symptomatology. In another study, Crockett and colleagues (2007) aimed to characterize the protective nature of active coping on the relationship between acculturative stress and various internalizing problems (anxiety and depression) in a sample of Latinx college students. Findings from this study revealed a significant moderation effect of active coping only when depression was the outcome. The dearth of information on the relationship between acculturative stress, active coping, and anxiety presents an opportunity to expand the literature on behavioral pathways associated with the relationship between acculturative stress and various internalizing problems. Elucidating such pathways may help explain the high level of comorbidity shared between anxiety and depression, overlapping as much as 62% (Brady & Kendall, 1992). Another area of research that is limited is the impact that culture has on youth coping styles – even fewer studies have explored this in relation to the well-being of Latinx youth.

The limited research that exists on the interplay between culture and coping styles suggests that Latinx populations are more likely to employ avoidant coping relative to other ethnic populations (Constantine, Alleyne, Caldwell, McRae, & Suzuki, 2005; Diaz-Guerrero, 1979). In addition, findings on the protective nature of active coping are mixed (Vaughn & Roesch, 2003; Cobb, Xie, & Sanders, 2016). Gonzales, Tein, Sandler, and Friedman (2001) examined the association between active coping and family stress on depression and interestingly found that active coping only buffered the harmful effect of family stress when the stress was low. In a different study, Gudiño, Stiles, and Diaz (2017) found that while active coping buffered the impact of violence exposure on internalizing symptoms, active coping was associated with increased posttraumatic stress symptoms when violence exposure was high. Thus, while the coping style is important, the context and type of stressor must also be considered.

Current Study

In an effort to increase our understanding of the relationship between acculturative stress and the development of anxiety and depression in Latinx youth, the current study aims to examine the cross-sectional and longitudinal relationship between acculturative stress, anxiety, and depression. In addition, we aim to examine individual and cultural factors that may moderate the association between acculturative stress, anxiety, and depression. Specifically, we will test whether behavioral inhibition serves as a risk factor for anxiety and depression in the context of acculturative stress and whether cultural values and active coping serve as protective factors against acculturative stress and the onset of youth anxiety and depression. The longitudinal nature of this study and the focus on theoretically relevant moderator variables will contribute to our understanding of the processes that impact the development of internalizing problems in Latinx youth following acculturative stress.

With respect to exploring the cross-sectional and longitudinal relationship between acculturative stress and internalizing problems (anxiety and depression), we hypothesize that acculturative stress will have a positive relationship with anxiety and depression at Time 1 and Time 2.

The main analyses of the current study will investigate the potential impact of temperamental (behavioral inhibition), cultural (cultural values), and behavioral (active coping) characteristics on the cross-sectional (Time 1) and longitudinal (Time 2) relationship between acculturative stress and internalizing problems (anxiety and depression), separately. For behavioral inhibition, we hypothesize that the relationship between acculturative stress and internalizing problems (anxiety and depression) will be exacerbated as behavioral inhibition increases. Adolescents with elevated levels of behavioral inhibition who experience acculturative stress will receive confirmation that their environment is dangerous and will report a greater amount of subsequent anxiety and depression, compared to adolescents with lower levels of behavioral inhibition. In addition, we hypothesize that the relationship between acculturative stress and internalizing problems (anxiety and depression) will be attenuated as cultural values increase. Individuals with strong cultural values will draw from their perceived heritage resources, including family support and spiritual protection, to adaptively address experiences that lead to acculturative stress. Finally, we hypothesize that the relationship between acculturative stress and internalizing problems (anxiety and depression) will be attenuated as reliance on active coping increases. We predict that individuals who employ greater levels of active coping will be more likely to respond to experiences associated with acculturative stress more adaptively, decreasing their likelihood to develop anxiety and depression relative to youth with lower levels of active coping.

Method

Participants

Participants in the current study were 161 Latinx adolescents between the ages of 11 to 13 ($M = 11.35$, $SD = .54$) and were recruited from an urban public middle school in Southern California (Gudiño, Nadeem, Kataoka, & Lau, 2011). While most adolescent participants were in the sixth grade, seven students (4.3%) were in the seventh grade, and three (1.9%) students were in the eighth grade. Additionally, the sample included slightly more girls than boys ($n = 89$; 55.3%). Fifty-six (34.8%) students indicated being born outside of the U.S. and had resided in the U.S. for an average of 4.01 years ($SD = 2.93$). The majority of students who were born outside of the U.S. were born in Mexico ($n = 36$; 65.5%), followed by El Salvador ($n = 13$; 23.6%); about 9% ($n = 5$) of students were born in other Latin American countries including Honduras, Ecuador, Columbia, and Guatemala. Almost all of the students' mothers (95.6%) and students' fathers (96.1%) were born outside of the U.S.

At the time of the study, 2,135 students were enrolled in the school and 1,951 (91.4%) of these students were Latinx. In addition, 912 of the total students were classified as English Learners (96.71% Spanish-speaking). In order to sample a high proportion of immigrant individuals, 10 sixth grade classrooms and two mixed-grade homeroom classrooms with the highest proportion of English Learners were targeted ($n = 331$). Two-hundred and seventy-three (82.48%) parents returned a signed consent form; of those parents, 170 (62.27%) parents gave permission for their child to participate in the research study. Two students withdrew from the school prior to the beginning of the study; therefore, the final sample included 168 participants at Time 1. At Time 2, 161 of the same students provided data to the research team; the retention

rate for the study was 95.83% ($n = 161$). The current study relies on secondary analyses of these data, including all students who provided relevant data at Time 1 and Time 2.

Measures

Demographic Information. Youth participants completed a questionnaire at Time 1 that collected information about age, gender, current grade in school, racial/ethnic background, and place of birth of youth and caregiver. Those participants who indicated being born outside of the U.S. were asked to provide the time (in years and months) spent since arrival in the U.S.

Acculturative Stress. Stress that results from the acculturation process was assessed by an abbreviated eight-item version of the Bicultural Stressors Scale (BSS; Romero & Roberts, 2003). The original 20-item scale is comprised of items that assessed family stressors, discrimination stressors, language stressors, and peer stressors, and has demonstrated strong internal consistency ($\alpha = .92$) with Mexican origin middle-school students (Romero & Roberts, 2003). An abbreviated version was developed for this study to include items that apply to immigrant and non-immigrant populations. This abbreviated version of the BSS assessed discrimination stressors (5 items; “I feel uncomfortable when others make jokes about or put down people of my ethnic background”), relevant language stressors (2 items inquiring about difficulties with English; “I have had problems at school because of my poor English”), and a relevant peer stressor (1 item; “I have felt that others do not accept me because of my ethnic group”). Participants responded to each item on a 5-point scale that inquired about the intensity of the stressor (1 “not stressful at all” to 4 “very stressful”) and had the option of selecting “does not apply” if the stressor did not apply to the participant. A mean acculturative stress score was generated for each participant by averaging the ratings for the eight items. Participants completed this measure at Time 1. The abbreviated version of the BSS demonstrates adequate internal

consistency (English $\alpha = .66$; Spanish $\alpha = .70$; Overall $\alpha = .68$) in the current sample. While these internal consistency coefficients are lower than conventional guidelines, these values may actually reflect the diverse experiences that youth have with discrimination and language and peer stressors. Additionally, items ask about level of stress associated with exposure to specific events. Much like a checklist, there may be events that youth have not been exposed to and this would impact reliability estimates because the item does not apply.

Internalizing Problems. Youth symptoms of internalizing problems (anxiety and depression) were assessed with the relevant *DSM-IV* oriented scales from the well-established Youth Self Report (YSR; Achenbach, 1991). Participants read a series of statements and were asked to report, in the last six months, the extent that the statement was true for them, on a 3-point scale (0 “not true” to 2 “very true”). The current study used the Anxiety Problems scale of the YSR which has six items (e.g., “I am afraid of certain animals, situations, or places”) and assesses for symptoms of separation anxiety, generalized anxiety, and specific phobia. The Anxiety Problems scale demonstrates adequate internal consistency (Time 1: English $\alpha = .63$; Spanish $\alpha = .63$; Overall $\alpha = .63$; Time 2: English $\alpha = .66$; Spanish $\alpha = .67$; Overall $\alpha = .66$) in the current sample. In addition, the Affective Problems scale of the YSR was used, which is comprised of 11 items (e.g., “I feel worthless or inferior”) that assess for symptoms of major depression and dysthymia. In the current sample, the Affective Problems scale demonstrates adequate internal consistency (Time 1: English $\alpha = .77$; Spanish $\alpha = .73$; Overall $\alpha = .75$; Time 2: English $\alpha = .79$; Spanish $\alpha = .79$; Overall $\alpha = .79$). Participants completed this measure at Time 1 and Time 2. A composite score for each scale was calculated by adding the rating of each item together.

Behavioral Inhibition. The 20-item Behavioral Inhibition System/Behavioral Approach System Scales (BIS/BAS; Muris, Meesters, de Kanter, & Timmerman, 2005) was used to measure behavioral inhibition. The BIS/BAS Scales include one seven-item scale that measures behavioral inhibition (“I worry about making mistakes”) and three scales that measure behavioral activation. Individuals rated the extent to which they agree with the statement on a four-point scale (1 “strongly agree” to 4 “strongly disagree”). The present study only used the BIS scale due to the scope of the research question. Gudiño et al. (2011) found that the wording of an item on the BIS scale negatively impacted the internal consistency; therefore, this item was omitted (final $n = 6$ items). The BIS scale demonstrates adequate internal consistency (English $\alpha = .76$; Spanish $\alpha = .82$; Overall $\alpha = .79$) in the current sample. Participants completed this measure at Time 1.

Cultural Values. The 50-item Mexican American Cultural Values Scale (MACVS; Knight et al., 2010) was used to assess cultural values. The cultural values domain (36 items) is comprised of six subscales (i.e., Familism Support, Familism Obligations, Familism Referents, Respect, Religion, and Traditional Gender Roles) and the mainstream American values domain (14 items) is comprised of three subscales (i.e., Material Success, Independence & Self-Reliance, Competition & Personal Achievement). This measure has been administered to Mexican adolescents and demonstrates adequate reliability ($\alpha = .89$; Knight et al., 2010). Given the specific interest in the protective value of cultural values, the current study only included the subscales that comprise the cultural values domain (36 items). Using a five-point scale (1 “Not at all” to 5 “Completely”), participants rated the extent to which they agree with the statement. A composite score for the cultural values domain was generated by averaging the respondent’s ratings. The cultural values domain demonstrates strong internal consistency (English $\alpha = .93$;

Spanish $\alpha = .93$; Overall $\alpha = .93$) in the current sample. Participants completed this measure at Time 2.

Coping Style. Coping style was assessed by the 44-item Children's Coping Strategies Checklist (CCSC; Ayers, Sandier, West, & Roosa, 1996), which assesses the respondent's problem-solving strategy or response on a four-point scale from 1 ("never") to 4 ("most of the time"). The CCSC is comprised of 10 subscales that load onto four coping style factors (i.e., active coping, avoidance, distraction, and support seeking). Gonzales, Tein, Sandler, and Friedman (2001) administered the CCSC to a sample of inner-city adolescents (ages 12 to 15) and reported acceptable psychometric properties. In the parent study (Gudiño et al., 2011), students were only administered the subscales that loaded onto the higher-order factors of Active coping (16 items) and Avoidance coping (8 items) The Active coping factor included the Decision Making (4 items; $\alpha = .81$), Positive Cognitive Restructuring (4 items), Direct Problem Solving (4 items), and Seeking Understanding (4 items) subscales, and the Avoidance coping factor included the Avoidant Actions (4 items) and Cognitive Avoidance (4 items) subscales. The current study only used participant data from the Active coping subscales (16 items). A composite score for Active coping was developed by first calculating a standardized score (z -score) for each subscale and then averaging the standardized scores to create a composite. The Active coping domain demonstrates strong internal consistency (English $\alpha = .93$; Spanish $\alpha = .93$; Overall $\alpha = .93$) in the current sample. Participants completed this measure at Time 1.

Procedures

Researchers made recruitment announcements in English and Spanish to 10 sixth grade homerooms with the largest proportion of English language learners and two mixed-grade

homerooms conducted in Spanish because they included students with the lowest levels of English language proficiency. Students were provided a recruitment letter and a consent form (in English and Spanish) to bring home to their parent or legal guardian. The letter described the research study and provided contact information for the research team. The consent form included an option for parents to state whether or not they agreed for the youth to participate. Youth were incentivized to return the consent forms (regardless of decision to participate) through small prizes. In addition, students whose entire classrooms returned at least 95% of the completed consent form, regardless of decision to participate, had the opportunity to earn a classroom party.

Given the high proportion of Spanish-speaking students at the middle school, the researchers ensured that all study materials were available in English and Spanish. The translations team included the principal investigator, two undergraduate research assistants, and a bilingual elementary school teacher. Material that was not already available in Spanish was translated and back-translated. This approach is consistent with the recommendations from Marin and Marin (1991).

Questionnaire administration occurred in small groups of students at a time. Prior to administration, the research assistants read the assent form aloud to students who received parental consent to participate and emphasized the voluntary nature of their participation. After youth assent was collected, the researchers administered the questionnaire by reading items aloud to groups of students. Research staff were available to offer individual assistance during the questionnaire administration. The questionnaire lasted about 45 minutes. Upon completion of the questionnaire at Time 1, students received one \$10 merchandise gift card.

Six months after the questionnaire at Time 1, the researchers returned to the middle school and administered a similar questionnaire to the students who participated at Time 1. Student assent was again collected to give the students the option of not participating at Time 2. Similar to Time 1, the researchers administered the questionnaire by reading items aloud to groups of students. In order to maximize retention of the original sample, the researchers increased their incentive to one \$15 merchandise gift card.

Data Analytic Plan

Data were analyzed using the statistical software package Statistical Package for the Social Sciences (SPSS; IBM Corp., 2019). Data points for univariate continuous variables were converted into z-scores to identify univariate outliers; those with an absolute value greater than 3.29 were omitted. In addition, we examined the variance inflation factor (VIF) to identify potential issues of multicollinearity. Missing data were addressed using listwise deletion during analyses and the sample size needed to have appropriate power was considered. Aiken and West (1991) recommend a minimum sample size of 155 to detect moderate effect sizes ($f^2 > 0.15$; power = .80; $\alpha = .05$), assuming a reliability of .70, interpredictor correlation (r) of .50, and an r^2 of .20 for the main effects model. Given the current study's sample size ($n = 161$), this study has the power to detect moderate to large effect sizes. However, it was not powered to detect small effect sizes ($f^2 > 0.02$; power = .80; $\alpha = .05$).

Data Analysis

Descriptive statistics, including means, standard deviations, and bivariate correlations, were calculated to characterize the study variables. We calculated a Pearson correlation coefficient to examine the strength of the relationship between acculturative stress and internalizing problems (anxiety and depression) at Time 1 and Time 2. Interpretations focused on

describing the strength and statistical significance of the cross-sectional and longitudinal association between acculturative stress, anxiety, and depression.

To examine the potential main and moderating effects of behavioral inhibition, cultural values, and active coping strategies on youth anxiety and depression at Time 1 and Time 2, we ran a separate hierarchical linear regression for each potential moderating variable with Time 1 and Time 2 anxiety and depression as the outcome variable. To minimize potential multicollinearity, continuous variables were centered prior to creating the interaction terms (Aiken et al., 1991). In the first step of each model, we included the covariates of sex and age. Step 2 included the main effect of acculturative stress and one of the potential moderating variables – (a) Behavioral Inhibition, (b) Cultural Values, or (c) Active Coping. Finally, in Step 3, the respective interaction term – (a) Acculturative Stress X Behavioral Inhibition, (b) Acculturative Stress X Cultural Values, or (c) Acculturative Stress X Active Coping – was included. Results were interpreted by examining the statistical significance of the predictor variables and the variance (R^2) accounted for in each step of the model. Testing for moderation effects specifically focused on whether the interaction term was statistically significant and whether inclusion of interaction terms in Step 3 of the model significantly increased the variance in anxiety and depression symptoms accounted for. To interpret the nature of statistically significant interaction effects, we conducted post hoc probing following guidelines provided in Holmbeck (2002). Significance level for all analyses was set at $p < .05$.

Results

Preliminary Analyses

Data were first examined to identify potential outliers. We converted continuous variables into z-scores and identified four youth between the ages of 14 and 15 as outliers due to

age (z -score ± 3.29 or greater). In addition, we omitted three youth from the final sample based on outlying data in the anxiety and depression outcome variables (z -score ± 3.29 or greater). Mahalanobis distances revealed no multivariate outliers using the criterion of $p < .001$, and no issues of multicollinearity presented among the study variables. Therefore, the subsequent analyses were limited to 161 youth.

Descriptive statistics and bivariate correlations among study variables are presented in Table 1. Girls were more likely to report behavioral inhibition ($r = .23, p < .01$), active coping ($r = .20, p = .01$), Time 1 (T1) anxiety ($r = .24, p < .01$), Time 2 (T2) anxiety ($r = .19, p = .02$), and T2 depression ($r = .16, p = .05$). Contrastingly, youth age was negatively associated with active coping ($r = -.19, p = .01$). With respect to the main independent variable, acculturative stress was positively associated with behavioral inhibition ($r = .44, p < .001$), T1 anxiety ($r = .45, p < .001$), T2 anxiety ($r = .33, p < .001$), T1 depression ($r = .51, p < .001$), and T2 depression ($r = .40, p < .001$). Finally, preliminary analyses revealed a significant association between behavioral inhibition and T1 anxiety ($r = .53, p < .001$), T2 anxiety ($r = .38, p < .001$), T1 depression ($r = .39, p < .001$), and T2 depression ($r = .37, p < .001$).

In order to further understand the relationships among study variables, we ran bivariate correlations separately for U.S.- and foreign-born youth (Table 2). We found female youth more likely to report behavioral inhibition across the U.S.- ($r = .20, p = .04$) and foreign-born ($r = .31, p = .02$) groups. Interestingly, female youth were more likely to report T1 anxiety ($r = .24, p = .02$) and active coping ($r = .21, p = .03$), but only among U.S.-born and not foreign-born youth. While not significant in the entire sample, the relationship between cultural values and T2 anxiety emerged as significant among foreign-born ($r = .34, p = .01$), but not for U.S.-born youth. We employed Fisher's r -to- z transformation to determine whether the strength of the

correlations between U.S.- and foreign-born youth were statistically different. Results from the Fisher's *r*-to-*z* transformation revealed a significant difference for the association between cultural values and T2 anxiety ($r = -.02$ for U.S.-born vs. $r = .34$ for foreign-born; $z = 2.16$, $p = .03$). In addition, Fisher's *r*-to-*z* transformation indicated a significant difference in the relationship between acculturative stress and T2 anxiety ($r = .22$ for U.S.-born vs. $r = .52$ for foreign-born; $z = 2.02$, $p = .04$) and acculturative stress and T2 depression ($r = .28$ for U.S.-born vs. $r = .61$ for foreign-born; $z = 2.42$, $p = .02$).

We also conducted independent samples *t*-tests to identify significant mean differences across grouping variables. Including the entire youth sample, significant differences between U.S.-born and foreign-born youth were found, such that foreign-born youth were more likely to be older ($t(159) = 3.54$, $p < .01$) and report higher levels of acculturative stress ($t(156) = 2.98$, $p < .01$) and behavioral inhibition ($t(157) = 2.23$, $p = .03$), than U.S.-born youth.

Primary Analyses

Anxiety

To test the cross-sectional and short-term longitudinal impact of the moderating variables (i.e., behavioral inhibition, cultural values, active coping) on the relationship between acculturative stress and anxiety, we ran three separate hierarchical linear regressions at Time 1 and Time 2, controlling for youth sex and age (Table 3).

With respect to the behavioral inhibition model, there was a significant main effect of youth sex (female as referent; $\beta = .15$, $p = .03$), acculturative stress ($\beta = .27$, $p < .001$), and behavioral inhibition ($\beta = .35$, $p < .001$) on T1 anxiety. At Time 2, the main effect of acculturative stress ($\beta = .22$, $p = .01$) and behavioral inhibition ($\beta = .26$, $p < .01$) on anxiety

remained significant. We did not find a significant interaction effect of behavioral inhibition at Time 1 ($\beta = .07, p = .33$) or Time 2 ($\beta = .01, p = .93$).

Regarding the cultural values model, we found a significant main effect of youth sex ($\beta = .25, p < .01$), acculturative stress ($\beta = .43, p < .001$), and cultural values ($\beta = -.16, p = .03$) on T1 anxiety. At Time 2, the effect of youth sex ($\beta = .17, p = .03$) and acculturative stress ($\beta = .32, p < .001$) on anxiety remained significant. Cultural values did not moderate the relationship between acculturative stress and anxiety at Time 1 ($\beta = .03, p = .67$) or Time 2 ($\beta = .03, p = .73$).

Finally, the active coping model yielded a significant main effect of youth sex ($\beta = .23, p < .01$) and acculturative stress ($\beta = .42, p < .001$) on T1 anxiety. Similarly, the main effects of youth sex ($\beta = .18, p = .03$) and acculturative stress ($\beta = .31, p < .001$) on anxiety remained significant at Time 2. However, we did not find a significant moderation effect of active coping at Time 1 ($\beta = .06, p = .39$) or Time 2 ($\beta = .05, p = .55$).

Depression

Next, we included depression as an outcome variable to investigate the relationship between the study variables (i.e., behavioral inhibition, cultural values, active coping) and acculturative stress; as in the previous models, we controlled for youth sex and age (Table 4). In the behavioral inhibition model, acculturative stress ($\beta = .40, p < .001$) and behavioral inhibition ($\beta = .17, p = .03$) had a significant main effect on T1 depression. In addition, analyses indicated that behavioral inhibition moderated the relationship between acculturative stress and T1 depression (Figure 1; $\beta = .19, p = .01$). We followed the recommendations by Holmbeck (2002) and conducted post hoc probing to further elucidate the interaction. Simple slope analyses indicated that the relationship between acculturative stress and T1 depression was stronger for youth with high behavioral inhibition ($b=2.53, p < .001$) than youth with low behavioral

inhibition ($b=.99, p = .05$). Regression analyses at Time 2 indicated persisting main effects of acculturative stress ($\beta = .29, p < .01$) and behavioral inhibition ($\beta = .22, p = .01$) on depression; however, behavioral inhibition did not moderate the relationship between acculturative stress and depression ($\beta = .08, p = .29$) at Time 2.

The cultural values model resulted in a significant main effect of acculturative stress ($\beta = .49, p < .001$) on T1 depression. At Time 2, youth sex ($\beta = .16, p = .04$) and acculturative stress ($\beta = .40, p < .001$) resulted in a significant main effect on depression; cultural values did not moderate the relationship between acculturative stress and depression at Time 1 ($\beta = .07, p = .37$) or Time 2 ($\beta = -.01, p = .95$).

Lastly, the active coping model yielded a significant main effect of acculturative stress on T1 depression ($\beta = .48, p < .001$) and T2 depression ($\beta = .35, p < .001$); youth sex was only significant at Time 2 ($\beta = .16, p = .04$). We also identified a significant interaction between acculturative stress and active coping on T1 depression (Figure 2; $\beta = .17, p = .01$) and T2 depression (Figure 3; $\beta = .17, p = .03$). Simple slope analyses indicated that the relationship between acculturative stress and both T1 and T2 depression was stronger at high levels of active coping (Time 1: $b= 2.97, p < .001$; Time 2: $b=2.59, p < .001$) than at low levels of active coping (Time 1: $b=1.37, p = .01$; Time 2: $b=1.03, p = .10$). These findings indicate that the cross-sectional and longitudinal relationship between acculturative stress and depression is especially strong for youth who report high levels of active coping.

Discussion

The present study aimed to clarify the cross-sectional (Time 1) and longitudinal (Time 2) relationship between acculturative stress, a byproduct of the acculturation process, and internalizing problems (anxiety and depression) in Latinx youth. Specifically, we investigated

the main effect of acculturative stress and moderating effects of individual temperamental (behavioral inhibition), cultural (Latinx values), and behavioral (active coping) factors on anxiety and depression.

Consistent with previous literature (Constantine et al., 2004; Cruz et al., 2019; Crockett et al., 2007; Hovey & Magaña, 2000; Hovey, 2000; Salgado de Snyder, 1987; Glover et al. 1999; Suarez-Morales & Lopez, 2009) and hypotheses, acculturative stress was positively associated with anxiety and depression at Time 1 and Time 2. This finding suggests that anxiety and depression may share similar risk pathways, aligning with the high comorbidity rate typically found in community samples (Brady & Kendall, 1992). Despite the shared symptomology (e.g., negative affectivity, impaired cognitive processes) and comorbidity between anxiety and depression, research alludes to unique differences in the etiology of the problems (Eysenck & Fajkowska, 2018) – anxiety is considered to stem from the anticipation of a threat or harm while depression emerges from goal loss (Johnson-Laird & Oatley, 1989). In the current study, we investigated anxiety and depression, separately, to contribute to a more robust understanding of temperamental, cultural, and behavioral factors associated with various internalizing problems.

Behavioral Inhibition

Behavioral inhibition is found to be positively associated with anxiety and depression (Kagan & Snidman, 1999; Reeb-Sutherland et al., 2009; Chronis-Tuscano et al., 2009; Jaffee et al., 2005; Shatz, 2005). Findings from the current study replicate existing literature – behavioral inhibition was positively associated with anxiety and depression at Time 1 and Time 2.

Behavioral inhibition is traditionally characterized by a heightened predisposition to punishment avoidance (Kagan et al., 1984) and selective attention towards potential danger (Heym et al. 2008). Thus, it is likely that behavioral inhibition facilitates and reinforces thoughts, moods, and

behaviors (e.g., rumination, avoidance of normal familial and social contacts, and restlessness) associated with the onset of anxiety and depression.

We were interested in understanding the impact of behavioral inhibition on the relationship between acculturative stress and internalizing problems (anxiety and depression). Contrary to expectations, behavioral inhibition did not moderate the relationship between acculturative stress and anxiety at Time 1 or Time 2. Interestingly, we found behavioral inhibition to moderate the relationship between acculturative stress and T1 depression. Specifically, behavior inhibition appeared to strengthen the relationship between acculturative stress and depression. It appears that youth with a heightened sensitivity to punishment and harm avoidance are particularly vulnerable to increases in perceived threat – in this case, acculturative stress. To our knowledge, these are the first findings to relate behavioral inhibition to acculturative stress and any resulting psychological impact.

Cultural Values

While most research finds cultural values protective against the onset of anxiety and depression (Cupito et al., 2016; Stein et al., 2015; Telzer et al., 2015), findings from the current study did not replicate this; we did not identify a significant relationship between cultural values, anxiety, and depression. Our lack of a significant finding may be explained by our choice of measurement of cultural values. The current study measured cultural values with a comprehensive measure that sampled across several domains of culture, including *familismo*, *respeto*, and religion. This measurement approach deviates from most of the existing cultural literature (Cupito et al., 2016; Stein et al., 2015), which often only assesses *familismo* to draw conclusions related to cultural values.

We predicted that strong cultural values would attenuate the relationship between acculturative stress, anxiety, and depression. Contrary to expected findings, cultural values did not moderate the relationship between acculturative stress, anxiety, and depression at Time 1 or Time 2. Stein and colleagues (2015) similarly did not find a significant moderation effect of *familismo* on the relationship between acculturative stress and depression. To our knowledge, the present study was the first to investigate the moderating effect of cultural values on the experience of acculturative stress with anxiety as the outcome variable.

Active Coping

The current study did not find a significant relationship between active coping, anxiety, and depression at Time 1 or Time 2. This finding deviates from existing literature that finds active coping to be negatively associated with anxiety and depression (Crockett et al., 2007; Torres & Rollock, 2007; Wadsworth & Compas, 2002; Torres, 2010; Gonzales et al., 2001; Noh & Kaspar, 2003). While our findings did not replicate existing research, we followed the recommendations by the coping literature (Pascoe & Smart Richman, 2009; Cheng et al. 2014; Ojeda and Liang, 2014), which encourage researchers to consider the specific stressor when investigating the adaptiveness of a coping. We focused on acculturative stress, a stressor experienced by many Latinx youth (Cervantes & Cordova, 2011; Williams & Berry, 1991; Gil et al., 1994; Berry, 2003; Berry et al., 1992; Cervantes et al., 2012; Marsiglia et al., 2013), to further understand the protective nature of active coping and the onset of anxiety and depression. By focusing on acculturative stress, we make advancements towards clarifying the bidirectional relationship between culture and youth coping behaviors and importantly, relate the interaction between culture and youth coping to youth mental health.

We predicted that a reliance on active coping would buffer the positive relationship between acculturative stress, anxiety, and depression. Contrary to hypothesis, active coping did not moderate the relationship between acculturative stress and anxiety at Time 1 or Time 2. Interestingly, findings revealed that active coping moderated the relationship between acculturative stress and depression at Time 1 and Time 2. Specifically, active coping strengthened the relationship between acculturative stress and depression. In other words, the relationship between acculturative stress and depression was stronger for youth with elevated levels of active coping than youth with lower levels of active coping. While the directionality of the finding was contrary to expectations, this finding importantly suggests that the nature, intensity, and controllability of a stressor may impact which behavioral responses are adaptive. Active coping strategies do not appear to be appropriate or effective in buffering against acculturative stress – a chronic stressor largely outside of an individual’s locus of control. Future research should investigate the personalization and tailoring of coping strategies while considering the controllability and persistence of stressors.

We provide evidence that suggests that acculturative stress poses as a significant risk pathway to anxiety and depression for Latinx youth. While anxiety and depression share considerable overlap in symptomatology and comorbidity (Eysenck & Fajkowska, 2017; Choi, Kim, & Jeon, 2020), we offer an explanation that considers the cognitive and behavioral etiology of each problem. Anxiety is considered to emerge from a persistent abnormal worry state that emerges from a dysregulation between one’s ability to regulate stress and respond to fear (Mineka and Zinbarg, 1996; Rosen and Schulkin, 1998). In the context of repeated exposure to acculturative stress, an individual’s cognitive appraisal of the cultural stressor may shape future interactions and reinforce maladaptive cognitions and behaviors. For example, a youth who is

made fun of because of their Spanish accent may be more likely to ruminate on previous experiences during future interactions with their environment, simultaneously reinforcing anxious thoughts and behaviors. While the obsessive worrying and hypervigilance may be effective in reducing the anxiety in the short-term, these behaviors will likely reinforce maladaptive responses that will maintain and exacerbate the anxiety across time.

We draw from the hopelessness theory of depression (Abramson, Metalsky, & Alloy, 1989) to understand the relationship between acculturative stress and depression. The hopelessness theory of depression posits that repeated exposure to an aversive and seemingly uncontrollable environment or situation will gradually lead to the belief that the aversive environment or situation is inescapable. In turn, this feeling of inescapability will promote a sense of hopelessness, resulting in depression (Abramson et al., 1989). Acculturative stress is traditionally conceptualized as a stressor that is beyond an individual's locus of control. We expect that a repeated exposure to acculturative stress may signal to youth that the stressor is inescapable and inherent, increasing their risk to experience depression. This is especially relevant for youth who experience acculturative stress at school, as the repeated experience may teach youth that school is an aversive environment that should be avoided. In line with the hopelessness theory of depression, we expect that youth with repeated experiences to acculturative stress will be more likely to experience depression than youth who seldom experience acculturative stress.

In the present study, elevated levels of behavioral inhibition exacerbated the relationship between acculturative stress and depression. Youth who report elevated levels of behavioral inhibition may have a predisposition to fear avoidance and elevated social withdrawal. Moreover, repeated exposure to acculturative stress may place these youth at an elevated risk to

develop anxiety, which may in turn promote and reinforce avoidance and withdrawal behaviors associated with depression. While anxiety and depression frequently co-occur (Brady & Kendall, 1992), anxiety traditionally precedes depression (Essau, 2003; Cummings, Caporino, & Kendall, 2014; Starr and Davila, 2012). Combining such relationships, elevated levels of behavioral inhibition may compound the main effect of acculturative stress on depression by reinforcing avoidance behaviors intended to reduce physiological responses to stress.

We also found active coping to be a maladaptive behavioral response to address acculturative stress and depression. Active coping is characterized by volitional and active efforts to confront a stressor and acculturative stress is traditionally conceptualized as a cultural stressor that is beyond an individual's locus of control and a byproduct of one's immediate and distal environment. Therefore, employing action-based and volitional efforts to address the cultural stressor may not yield the intended outcome and instead, lead to frustrated efforts and promote behaviors and feelings associated with depression, including decreases in self-esteem, feeling of hopelessness, and a loss of energy.

The current study expanded the current literature on acculturative stress by investigating the cross-sectional and longitudinal impact of acculturative stress on youth internalizing problems (anxiety and depression). Specifically, the longitudinal nature of the current study allowed us to observe the impact of potential adverse cultural experiences (acculturative stress) on anxiety and depression across time. Moreover, we present several temperamental, cultural, and behavioral characteristics that may impact the relationship between acculturative stress, anxiety, and depression. While the current study investigated the individual impact of each characteristic, future research would benefit from exploring the combined effect of varying levels of various temperamental, cultural, and behavioral characteristics on the relationship

between acculturative stress and youth well-being. Lastly, to our knowledge, this was the first study to relate behavioral inhibition, a temperamental characteristic characterized by a predisposition to avoid punishment and pain, to acculturative stress as it relates to mental health.

While the current study had many strengths, we acknowledge several limitations that can be improved upon in future studies. First, participants in the overall study were restricted to middle school students from Latinx descent and a majority of the sample were Mexican origin (62.9%); however, the sample also included non-Mexican Latinx students. For that reason, the results presented may not be generalized to specific Latin American populations. This limitation may in part explain the lack of finding of a significant moderation effect of cultural values on the relationship between acculturative stress, anxiety, and depression. Future research should consider investigating the interplay between cultural processes and the onset of internalizing problems (anxiety and depression) with specific Latin-American populations in the U.S. Second, the overall study used an abbreviated 8-item measure of acculturative stress to include items that applied to both immigrant and non-immigrant students. While the abbreviated version of the measure demonstrated adequate internal consistency in the current sample, future research should consider assessing acculturative stress using a more robust measure that samples across different domains, including social, attitudinal, familial and environmental acculturative stress (Mena, Padilla, & Maldonado, 1987). Collecting information on specific domains of acculturative stress will contribute to a more robust understanding between acculturative stress and youth well-being. Third, the current study utilized a short-term longitudinal (i.e., six months) design, which does not permit sufficient time to examine the long-term impact of acculturative stress on anxiety and depression. Future research should consider employing a longer timeframe with multiple datapoints to observe the long-term associations between culture and mental

health. Finally, all analyses in the current study relied on self-report data provided by the middle-school students, which increases the probability of obtaining significant relationships through shared-method variance. Subsequent studies on acculturative stress and youth well-being would benefit from employing a multi-informant and multi-assessment approach to reduce the likelihood of shared-method variance and increase validity.

Despite the limitations acknowledged above, the current study expands the literature by clarifying pathways through which acculturative stress leads to anxiety and depression and how temperamental, cultural, and behavioral factors can shape development. Findings highlight the importance of considering the controllability and persistence of a stressor to determine the adaptiveness of a mechanism against the stressor. We present evidence to suggest that certain temperamental characteristics may interact with the experience of a stressor to influence youth well-being. Moreover, we offer evidence to suggest that active coping strategies, while traditionally considered adaptive, may in fact be harmful in the context of certain stressors. Finally, results from the current study highlight the importance of considering risk for anxiety and depression within a cultural context and can inform personalized adaptations to address mental health of Latinx youth.

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Appendix: Tables and Figures

Table 1.
Bivariate correlations between study variables

Construct	1	2	3	4	5	6	7	8	9	10
1. Youth Sex (Female)										
2. Youth Age	-.10									
3. Acculturative Stress	.00	.15								
4. Behavioral Inhibition	.23**	.04	.44**							
5. Cultural Values	.14	.00	.10	.24**						
6. Active Coping	.20*	-.19*	.09	.42**	.24**					
7. T1 Anxiety	.24**	.07	.45**	.53**	-.07	.13				
8. T1 Depression	.13	.01	.51**	.39**	-.04	.04	.67**			
9. T2 Anxiety	.19**	.06	.33**	.38**	.12	.08	.47**	.42**		
10. T2 Depression	.16*	.04	.40**	.37**	.00	.06	.44**	.58**	.68**	
<i>M (SD)</i>	55.3%	11.35	1.07	13.01	3.87	2.70	2.93	4.14	2.75	4.49
		(.54)	(.73)	(3.99)	(.62)	(.70)	(2.16)	(3.42)	(2.21)	(3.73)

Note. Bold font indicates a significant correlation.

* $p < .05$. ** $p < .01$.

Table 2.
Bivariate correlations between study variables for foreign-born and U.S.-born youth

Construct	1	2	3	4	5	6	7	8	9	10
1. Youth Sex (Female)		-.10	-.08	.31*	.24	.18	.25	.10	.22	.15
2. Youth Age	-.11		.07	.03	-.11	-.33*	.22	.00	.21	.21
3. Acculturative Stress	.04	.11		.47**	.25	.08	.41**	.60**	.52**	.61**
4. Behavioral Inhibition	.20*	-.03	.39**		.38**	.35**	.59**	.36**	.34*	.35**
5. Cultural Values	.08	.06	-.00	.14		.14	.03	.09	.34*	.18
6. Active Coping	.21*	-.14	.07	.46**	.29**		.12	.09	.02	.10
7. T1 Anxiety	.24*	-.04	.47**	.50**	-.14	.13		.55**	.59**	.55**
8. T1 Depression	.14	.02	.49**	.42**	-.10	.02	.72**		.41**	.64**
9. T2 Anxiety	.18	-.06	.22*	.40**	-.02	.11	.40**	.42**		.65**
10. T2 Depression	.17	-.09	.28**	.38**	-.11	.03	.38**	.55**	.69**	
<i>M (SD)</i> U.S.-born youth	56.2%	11.25 (.48)	.95 (.72)	12.5 (3.87)	3.84 (.60)	2.66 (.69)	2.85 (2.22)	4.16 (3.60)	2.67 (2.23)	4.36 (3.79)
<i>M (SD)</i> Foreign-born youth	53.6%	11.56 (.50)	1.31 (.70)	13.96 (4.06)	3.92 (.67)	2.76 (.73)	3.07 (2.06)	4.09 (3.06)	2.90 (2.20)	4.72 (3.65)

Note. Correlations coefficients for foreign-born youth are above the diagonal, correlations for U.S.-born youth are below the diagonal.

Bold font indicates a significant correlation.

^a Correlations significantly different from one another, $p < .05$.

* $p < .05$. ** $p < .01$.

Table 3.
Final hierarchical regression results for acculturative stress predicting youth anxiety at Time 1 and Time 2

Construct	Time 1				Time 2			
	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>B</i>	<i>SE</i>	β	<i>t</i>
<i>Model 1</i>								
Youth sex	.66	.29	.15*	2.26	.56	.34	.13	1.65
Youth age	.11	.26	.03	.42	.19	.31	.05	.63
Acculturative stress (AS)	.80	.22	.27***	3.61	.66	.26	.22**	2.59
Behavioral inhibition (BI)	.19	.04	.35***	4.72	.14	.05	.26**	3.02
Interaction (AS X BI)	.04	.04	.07	.98	.01	.06	.01	.09
<i>Model 2</i>								
Youth sex	1.06	.31	.25**	3.42	.75	.34	.17*	2.19
Youth age	.09	.28	.02	.33	.19	.32	.05	.59
Acculturative stress (AS)	1.26	.22	.43***	5.85	.96	.24	.32***	3.98
Cultural Values (CV)	-.52	.25	-.16*	-2.14	.24	.27	.07	.90
Interaction (AS X CV)	.16	.36	.03	.43	.14	.40	.03	.34
<i>Model 3</i>								
Youth sex	1.01	.31	.23**	3.27	.78	.35	.18*	2.26
Youth age	.18	.29	.05	.62	.24	.32	.06	.74
Acculturative stress (AS)	1.24	.22	.42***	5.76	.94	.24	.31***	3.87
Active Coping (AC)	.15	.22	.05	.66	.14	.25	.04	.55
Interaction (AS X AC)	.26	.30	.06	.86	.20	.33	.05	.60

Note. Bold font indicates a significant interaction. SE = standard error.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4.
Final hierarchical regression results for acculturative stress predicting youth depression at Time 1 and Time 2

Construct	Time 1				Time 2			
	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>B</i>	<i>SE</i>	β	<i>t</i>
<i>Model 1</i>								
Youth sex	.47	.48	.07	.98	.73	.57	.10	1.29
Youth age	-.43	.43	-.07	-1.00	.08	.51	.01	.15
Acculturative stress (AS)	1.85	.36	.40***	5.16	1.46	.43	.29**	3.44
Behavioral inhibition (BI)	.14	.07	.17*	2.15	.21	.08	.22**	2.63
Interaction (AS X BI)	.19	.07	.19**	2.67	.10	.09	.08	1.06
<i>Model 2</i>								
Youth sex	.68	.48	.10	1.40	1.19	.57	.16*	2.08
Youth age	-.54	.44	-.09	-1.22	.09	.52	.01	.17
Acculturative stress (AS)	2.24	.34	.49***	6.62	2.06	.40	.40***	5.15
Cultural Values (CV)	-.51	.38	-.10	-1.34	-.33	.45	-.06	-.74
Interaction (AS X CV)	.50	.56	.07	.90	-.05	.66	-.01	-.07
<i>Model 3</i>								
Youth sex	.93	.48	.14 ^{ms}	1.95	1.17	.57	.16*	2.07
Youth age	-.37	.45	-.06	-.82	.14	.53	.02	.27
Acculturative stress (AS)	2.22	.33	.48***	6.68	1.80	.40	.35***	4.50
Active Coping (AC)	-.15	.35	-.03	-.44	.07	.41	.01	.17
Interaction (AS X AC)	1.16	.47	.17*	2.49	1.18	.55	.17*	2.16

Note. Bold font indicates a significant interaction. SE = standard error. MS = marginally significant.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 1.
Mean estimates of significant regression interaction for the effect of behavioral inhibition on the relationship between acculturative stress and depression at Time 1

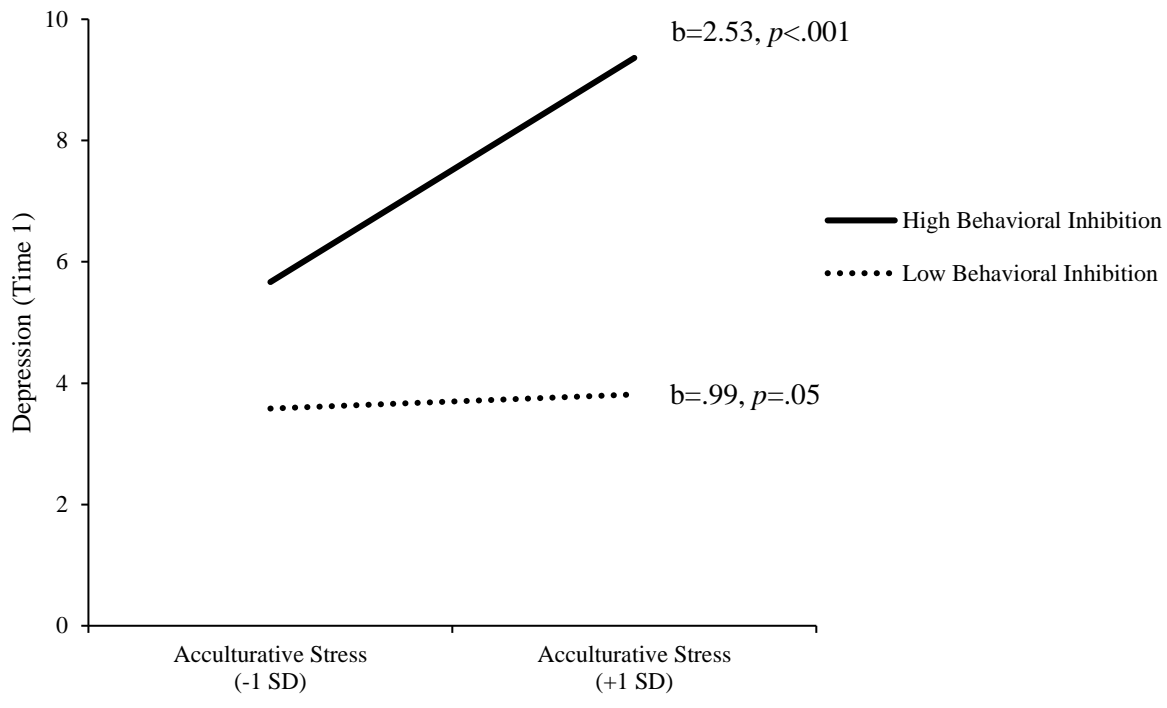


Figure 2.
Mean estimates of significant regression interaction for the effect of active coping on the relationship between acculturative stress and depression at Time 1

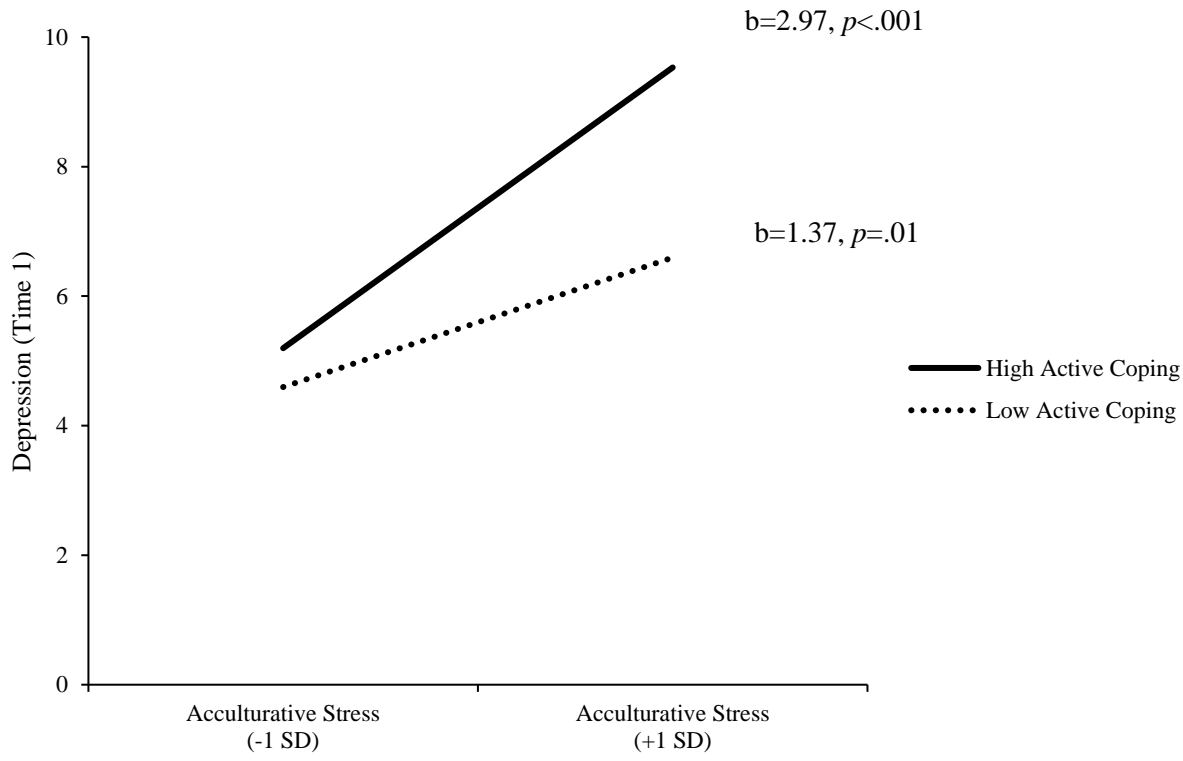


Figure 3.
Mean estimates of significant regression interaction for the effect of active coping on the relationship between acculturative stress and depression at Time 2

