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Moderators of Acculturative Stress and Internalizing Problems in Hispanic/Latino Youth

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UNIVERSITY OF MIAMI

MODERATORS OF ACCULTURATIVE STRESS AND INTERNALIZING PROBLEMS IN HISPANIC/LATINO YOUTH

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In the US, Hispanic/Latino youth are at especially high risk for experiencing anxiety and depression. Acculturative stress is one factor that has been linked to anxiety/depressive symptoms in Hispanic/Latino youth but few studies have explored factors that may influence this relationship. The current study examined (a) the relationship between acculturative stress and anxiety/depressive symptoms within a diverse sample of Hispanic/Latino youth, and (b) risk (age, gender, and parental SES) and protective (family function, friend support, and ethnic identity) factors that may moderate the relationship between acculturative stress and anxiety/depressive symptoms. Participants were 1,466 Hispanic/Latino youth, ages 8-16 years (M=11.85, SD=2.52), whose parents participated in a larger study. Children and adolescents completed measures of anxiety, depression, acculturation, acculturative stress, family functioning, friend support, and ethnic identity. Results from hierarchical linear regressions supported the relationship between acculturative stress and anxiety/depressive symptoms. For the entire sample, older age was associated with more anxiety symptoms from acculturative stress, and better family functioning was associated with lower depressive symptoms from acculturative stress. However, other interactions were not significant. Follow-up exploratory analyses indicated that when foreign-born youth were considered alone, older age continued to be associated with more anxiety symptoms from acculturative stress.

For first generation youth, parent education moderated the association between acculturative stress and depressive symptoms. Parents with less than or more than a high school education reported greater depression related to acculturative stress than those with a high school education. In addition, better family functioning and greater ethnic identity buffered the negative effects of acculturative stress on anxiety, but not depressive symptoms. Results of this study help to better understand mechanisms through which Hispanic/Latino youth may experience adverse mental health problems. Study limitations include self-report, low rates of internalizing symptoms, and exclusion of parent report. Future studies might focus on the long-term effects of acculturative stress on internalizing symptoms and further exploration of risk and resilience factors that may impact mental health in Hispanic/Latino children.

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Chapter 1: Introduction

Anxiety and depression are among the most prevalent mental health disorders affecting youth in the United States. In adolescents, the median lifetime prevalence is 25.1% for anxiety disorders and 14.0% for mood disorders (Merikangas et al., 2010). Among adolescents with anxiety, 50% meet criteria for an anxiety disorder by age 6 years, and among those with depression, 50% meet criteria for mood disorders by age 13 years (Merikangas et al., 2010). Research suggests that these rates are even higher among Hispanic/Latino youth as compared to non-Hispanic/Latino white, Asian, and black youth (McLaughlin, Hilt, & Nolen-Hoeksema, 2007). These data are particularly important considering the rapid growth of the Hispanic/Latino population across the United States. According to the 2010 US Census data, the Hispanic/Latino community has increased from 35.3 million to 50.5 million within the past ten years; Hispanics now make up 16% of the US population and 23% of the population under the age of 18 years (United States Department of Commerce, 2010). The largest percentage includes Mexicans followed by Puerto Ricans, Cubans, Dominicans, Central Americans (e.g., El Salvador, Nicaragua), and South Americans (e.g., Argentina, Colombia). The current study will focus on Hispanic youth who represent each Hispanic/Latino group.

Specifically, this study examined factors that may affect the relationship between acculturative stress and internalizing symptoms across Hispanic/Latino subgroups. In the sections below, the existing literature on rates of anxiety and depressive symptoms in Hispanic/Latino children will be outlined. The role of potential risk (i.e., age, gender, parental SES) and protective (i.e., family function, friend support, ethnic identity) factors will be discussed.

Prevalence of Anxiety and Depression in Hispanic/Latino Youth

Anxiety. Across studies conducted with community and clinical samples in the US, Hispanic/Latino youth have consistently reported higher rates of anxiety symptoms than youth from other ethnicities (Anderson & Mayes, 2010; McLaughlin et al., 2007). For example, McLaughlin et al. (2007) assessed rates of anxiety in an ethnically diverse sample of middle schoolers and found that Hispanic/Latino males reported higher levels of anxiety symptoms than white males; Hispanic/Latino females reported higher levels than females of all other ethnicities. Overall, Hispanic/Latino youth also reported higher levels of separation anxiety than white and black youth, as well as more worry than white participants. These results were based on reports from two well-validated measures: Multidimensional Anxiety Scale for Children (MASC) (March, Parker, Sullivan, Stallings, & Conners, 1997) and the Penn State Worry Questionnaire for Children (PSWQ-C) (Chorpita, Tracey, Brown, Collica, & Barlow, 1997). In another study, Varela et al. (2004) compared community samples of Mexican, Mexican-American, and European-American families (children ages 10-14 years old) on levels of anxiety symptoms using the Revised Children's Manifest Anxiety Scale (RCMAS) (Reynolds & Richmond, 1978). Both Mexican and Mexican-American youth reported higher levels of physiological anxiety symptoms and worry than European-American children.

In clinical samples, researchers have indicated that Hispanic/Latino youth with anxiety disorders experience higher rates of Separation Anxiety Disorder (SAD), higher anxiety sensitivity, and more worry as compared to non-Hispanic/Latino white youth (Anderson et al., 2010). In a study comparing clinically anxious Caucasian and

Hispanic/Latino youth, Ginsburg and Silverman (1996) conducted an in-depth structured interview, the Anxiety Disorders Interview Schedule for Children (Silverman & Nelles, 1988), and administered several measures of anxiety symptomology, including the State-Trait Anxiety Inventory for Children (Spielberger & Edwards, 1973), and the RCMAS (Reynolds & Richmond, 1978). The authors found that although Hispanic/Latino and Caucasian children reported similar rates of primary diagnosis, Hispanic/Latino youth and their parents reported higher rates of SAD than did Caucasian families. Hispanic/Latino parents also perceived their children as more fearful than did Caucasian parents. In another study, Hispanic/Latino youth reported more somatic symptoms and distress associated with anxiety than non-Hispanic/Latino whites (Pina & Silverman, 2004). These results on somatic symptoms are consistent with data from both community and clinical samples of adults with anxiety disorders, indicating that Hispanics tend to report more somatic symptoms that may be associated with anxiety across the lifespan (Canino, 2004).

Depression. Similar to findings on anxiety, several studies have indicated that Hispanic/Latino youth report higher rates of subclinical and clinical depression than youth from other ethnicities, including non-Hispanic/Latino white, Asian-American, and African American (Anderson & Mayes, 2010; Doi, Roberts, Takeuchi, & Suzuki, 2001; Mikolajczyk, Bredehorst, Khelaifat, Maier, & Maxwell, 2007; Roberts & Sobhan, 1992). Hispanic/Latino youth have reported higher rates of depressive symptoms across well-validated measures (e.g., Mikolajczyk et al., 2007; Twenge et al., 2002), including the Center for Epidemiological Studies Depression (CES-D) (Radloff, 1977) and Children's Depression Inventory (CDI) (Kovacs, 1984). Data from the 2003 California Health

Interview Survey showed that Hispanic/Latino youth, ages 12 to 17, were twice as likely to experience depressive symptoms than non-Hispanic/Latino white youth based on reports from the CES-D (Mikolajczyk et al., 2007). Roberts et al. (1995), who administered the CES-D to middle school students, found that Mexican-Americans were 1.7 times more likely to report elevated levels of depression than their non-Hispanic/Latino white counterparts. In this sample, Mexican-American youth also reported higher rates of suicidal ideation. In another study, Twenge et al. (2002) administered the CDI to children and adolescents, ages 8 to 16, and found that Hispanic/Latino youth also reported higher rates of depressive symptoms when compared to non-Hispanic/Latino white and African-American youth. Furthermore, rates of depressive symptoms in Hispanic/Latino children have been consistent, even when controlling for socioeconomic status (SES) (Anderson & Mayes, 2010).

Rates across Hispanic/Latino subgroups. Although anxiety and depression have been studied in Hispanics, less is known about their rates across different subgroups. In adults, data on the prevalence of anxiety disorders across Hispanic/Latino subgroups have shown some differences. For example, one study showed that Puerto Ricans reported higher risk for psychopathology, including anxiety disorders, than other groups (Cuban, Mexican, and all other); Puerto Rican women were also more likely to have had an anxiety disorder in the last year than Mexican women and women in the "other Latino" category (Alegría et al., 2007).

In youth, Pina et al. (2004) found that non-Cuban American Hispanic/Latino parents reported their children as experiencing more somatic symptoms than both European-American and Cuban-American children. Other studies in youth have

examined Hispanic/Latino subgroups independently. For example, Roberts et al. (2006) found rates of anxiety disorders to be especially high, and above national norms, among Mexican-American youth. However, data on these differences is scant and should be further explored.

For depression, more is known about differences in prevalence across subgroups than for anxiety. Mexican-American youth have consistently presented with more elevated rates of depression than other ethnicities, including other Hispanic/Latino subgroups. Roberts and Sobhan (1992) analyzed data from a national US survey of adolescents between ages 12 to 17 and found that Mexican-American adolescents reported greater depressive symptoms than youth from other Hispanic/Latino subgroups (e.g., Puerto Rican, Cuban). In another sample of ethnically diverse middle-school children (e.g., Chinese, African-American, Mexican-American, Central American), Roberts, Roberts, and Chen (1997) found that, in comparison to all other groups, the youth of Mexican origin were 1.7 times more likely to report depressive symptoms *and* to experience clinical levels of depression. Despite these consistent findings, most studies include pre-dominantly Mexican children and a small number of youth from other Hispanic/Latino subgroups (e.g., Central American, Cuban, South American). Thus, it is important to further assess differences across ethnic subgroups.

Taken together, these data clearly show that (a) Hispanic/Latino youth are reporting higher rates of both anxiety and depressive symptoms, (b) in comparison to other Hispanic/Latino subgroups, Mexican-American youth seem to be at higher risk for experiencing depressive symptoms, and may be at higher risk for anxiety, and (c) more research is needed on risk and protective factors for internalizing problems in

Hispanic/Latino youth. Thus, the present study focused on examining specific risk and protective factors that may influence these increased rates of anxiety and depressive symptoms across several Hispanic/Latino subgroups.

Risk Factors for Anxiety and Depression in Hispanic/Latino Youth

Level of acculturation (e.g., number of years in the US, familiarity with the English language) is one factor that has been linked to mental health outcomes in youth. Children and adolescents of Hispanic/Latino background tend to experience unique migration patterns, cultural values, socioeconomic status, and education that may affect their increased risk for developing internalizing disorders. However, it is unclear how acculturation impacts mental health.

One theory suggests that more time in the US can protect against the negative effects of the acculturation process (Potochnick & Perreira, 2010), whereas another theory suggests that more time in the US is associated with poorer mental health outcomes (Gonzales, Deardorff, Formoso, Barr, & Barrera, 2006; Lorenzo-Blanco, Unger, Baezconde-Garbanati, Ritt-Olson, & Soto, 2012). According to the first theory, as youth spend more time in the US, they become acclimated to their new environment, therefore decreasing their stress and risk for internalizing problems. In one study assessing internalizing problems in first generation Mexican youth, Potochnick and Perreira (2010) found that more time in the US was associated with lower levels of anxiety and depressive symptoms. The latter theory has been explained by increased experiences of discrimination, decreased family cohesion, loss of traditional family values, and vulnerability to negative peer relationships (Gonzales et al., 2006). Many individuals who migrate idealize the opportunities available in the US, and may be

protected against negative mental health problems initially. However, as they experience the realities and stressors of life in the US, that initial excitement may wear off, placing them at higher risk for experiencing adverse mental health outcomes. Due to the complexity of acculturation, observing it as a singular risk or protective factor for mental health outcomes is insufficient. Consistent with the latter theory, this study examined acculturative stress as a risk factor for internalizing problems.

Acculturative Stress. Acculturative stress refers to the stresses or conflicts that arise through the acculturation process. Examples include difficulties with a new language, trouble integrating new cultural ideas, parent-child disagreements associated with differing levels of acculturation, and ethnic discrimination. Widely-used measures of acculturative stress assess three main components: perceived discrimination, language conflicts, and acculturation conflicts (Gil, Vega, & Dimas, 1994). Studies that have examined all three components of acculturative stress together have found that higher levels are associated with increased internalizing symptoms (Sirin, Ryce, Gupta, & Rogers-Sirin, 2013). Other studies have examined the unique link between perceived discrimination and several outcomes. Results from one study assessing a sample of Mexican-American adolescents showed that perceived discrimination was associated with more depressive symptoms and lower self-esteem (Umaña-Taylor & Updegraff, 2007). Another study with a sample of mostly Cuban pre-adolescents found that acculturative stress, particularly perceived discrimination associated with acculturation, was linked to more somatic and "worrisome" anxiety symptoms (Suarez-Morales & Lopez, 2009). Furthermore, this relationship has been more strongly linked in first-generation than second-generation youth (Potochnick & Perreira, 2010).

Considering the migration stresses that first generation youth likely experience, it is not surprising that they may also experience greater levels of internalizing symptoms from acculturative stress while living in the US than do second or third generation youth. Taken together, these data suggest that higher acculturative stress is associated with greater internalizing symptoms in Hispanic/Latino youth, from pre-adolescents to adolescents, and this relationship may be highest for those born outside of the US (Hovey & King, 1996; McLaughlin et al., 2007). Despite the evidence to support this link between acculturative stress and internalizing problems, little is known about risk and resilience factors that may affect this relationship. The current study provided an opportunity to further examine this link in a large, ethnically diverse sample. Specifically, it was expected that higher acculturative stress would be associated with higher anxiety and depressive symptoms.

Demographic Indicators of Risk. In addition to acculturation variables, this study examined several demographic variables, including age, gender, parent socioeconomic status (SES), and cultural subgroup, that have consistently predicted increased risk for mental health problems in youth. Therefore, it is critical to consider the role that these demographic variables may play in placing youth at increased (or decreased) risk for experiencing the negative effects of acculturative stress.

For example, epidemiological data has shown that the prevalence of anxiety and depressive disorders increases with age (Merikangas et al., 2010). Specifically, Merikangas and colleagues (2010) noted increases in the prevalence of panic disorder, social anxiety disorder, and GAD; depressive disorders significantly increased across genders at age 13. In a meta-analysis of depression in youth, Twenge and Nolen-

Hoeksema (2002) found that although Hispanic/Latino youth had higher rates of depressive symptoms between studies, there was an age effect across cultures. Specifically, both girls' and boys' depressive symptoms seemed to increase at around age 12. This pattern has been supported in other studies as well (Cohen et al., 1993). Therefore, it is likely that the effects of acculturative stress on internalizing problems would be stronger for adolescents, ages 13 to 16, than for pre-adolescents, ages 8-12, and this was examined in the current study.

Gender differences may also be critical for the relationship between acculturative stress and internalizing symptoms, and were considered in the present study. Extensive research has demonstrated that rates of both anxiety and depression are higher for girls than boys in the US (Merikangas et al., 2010). Studies comparing white, black, and Hispanic/Latino youth have found the prevalence of depression and anxiety to be higher for Hispanic/Latino females than any other group, including Hispanic/Latino males (Anderson & Mayes, 2010; McLaughlin et al., 2007). Hispanic/Latino females have reported higher depressive symptoms than non-Hispanic/Latino white and African-American adolescents on both the CDI and CES-D (Brown, Meadows, & Elder Jr, 2007; McLaughlin et al., 2007). Previous literature has also demonstrated that adolescent girls tend to report higher levels of reactivity to stressful events and susceptibility to depressive symptoms (Leadbeater, Blatt, & Quinlan, 1995). Hankin et al. (2007) noted that girls tend to report more depressive symptoms and stressors within particular contexts, such as interpersonal relationships.

Within the Hispanic/Latino community, particular cultural norms may help explain why Hispanic/Latino females seem to experience higher rates of internalizing

problems. For example, Hispanic/Latino females are typically encouraged to adhere to traditional gender roles (e.g., being submissive), whereas adolescents in the US are encouraged to gain autonomy and independence (Umaña-Taylor et al., 2007). This dichotomy may result in greater conflict for Hispanic/Latino females than males, and cause females to be more vulnerable to internalizing problems. However, few studies have examined these gender differences within the context of acculturative stress and internalizing symptoms for Hispanic/Latino youth, which was the focus of the present study.

With respect to economic factors, lower family socioeconomic status (SES) has been associated with stress (Baum, Garofalo, & Yali, 1999; Romero, Carvajal, Valle, & Orduña, 2007) and several negative mental health outcomes across cultures, including Hispanic/Latino youth (Dawson & Williams, 2008; Roberts et al., 1997). In one study, Goodman (1999) found that education and income were robustly and negatively correlated with depression in US adolescents of various backgrounds. In another study, Roberts et al. (1997) found that middle school students who reported being "somewhat" or "much worse off" economically than their peers had significantly higher levels of depression than others. However, within this sample, no differences were found on perceived SES based on ethnic group (black, Hispanic/Latino, and non-Hispanic/Latino white). Although lower SES has been linked to poorer mental health across cultures, Hispanic/Latino youth represent a large proportion of disadvantaged minorities (National Center for Law and Economic Justice, 2012). Thus, it is important to consider the impact of SES on the relationship between acculturative stress and internalizing symptoms.

Finally, evidence also suggests that the relationship between acculturative stress and mental health may differ based on Hispanic/Latino subgroup. For example, in a comparison of the acculturation experience of Cuban and Nicaraguan adolescents, Gil and Vega (1996) found that Nicaraguan adolescents living in the US reported higher levels of acculturation conflict and discrimination than Cuban adolescents in the US consistently over time. Other research has shown that Mexican-American youth are at especially high risk of experiencing acculturative stress and negative mental health outcomes (Polo & Lopez, 2009). Based on data that suggests higher acculturative stress is associated with poorer mental health outcomes, it is likely that this relationship may differ based on youths' country of origin and the migration patterns of that country. However, these data should be interpreted with caution, as region of residence was not considered in these studies.

One might expect a Hispanic/Latino subgroup to experience more acculturative stress if their particular country of origin is the minority group in the community (e.g., Cuban in a pre-dominantly Mexican community) than if they are part of the majority group. Theoretically, the relationship between acculturative stress and mental health may also be different for youth from a country such as Puerto Rico, because they do not experience the same acculturation stressors as others (e.g., entering the country illegally, ability to travel to and from the US). In the current study, children from four regions in the US and the following Hispanic/Latino backgrounds were assessed: Mexican, Cuban, Dominican, South American, Central American, Puerto Rican, and mixed Hispanic. Based on existing data for Hispanic/Latino subgroup differences, it is probable that Mexican children within this sample reported more anxiety and/or depressive symptoms

from acculturative stress than other groups. However, due to the scarcity of prior research in this area, a comparison between groups on acculturative stress and internalizing problems was exploratory.

In summary, the above-mentioned demographic variables have been identified as indicators of risk for developing anxiety/depressive symptoms, and therefore may influence the impact of acculturative stress on mental health for youth. The present study assessed these demographic risk factors as moderators of acculturative stress and anxiety/depressive symptoms within a diverse sample of Hispanic/Latino youth.

Protective Factors: Family, Friends, and Ethnic Identity

Several factors may also protect adolescents who experience acculturative stress, and three such factors were considered in the present study: family support, friend support, and ethnic identity. With respect to family variables, previous research has shown that higher levels of acculturative stress are associated with less family cohesion (Gil & Vega, 1996) and more parent-adolescent conflict (Smokowski, Rose, & Bacallao, 2008). On the other hand, less acculturative stress has been linked to greater family support (Potochnick & Perreira, 2010) and, within the Hispanic/Latino community, *familismo* (Sabogal, Marín, Otero-Sabogal, Marín, & Perez-Stable, 1987). The term *familismo* is used to describe the strong family ties and "familial obligation" common to many Hispanic/Latino families (Sabogal et al., 1987). Hispanic/Latino families tend to be very supportive of one another and view family, including extended family, as a central priority. Sabogal, Marin, Otero-Sabogal, Marin, and Perez-Stable (1987) found that, compared to white non-Hispanic/Latino individuals, Mexican-, Central-, and Cuban-Americans reported high levels of perceived social support despite changes in

acculturation over time. In a study by Somokowski, Chapman, and Bacallao (2007) assessing mediation and moderation effects of internalizing disorders in Hispanic/Latino adolescents, *familismo* served a protective role—it was linked with decreases in internalizing problems for the adolescents based on responses on the Youth Self Report (YSR) (Achenbach, 1991).

In another key study with adolescents of pre-dominantly Mexican descent, Potochnick and Perreira (2010) showed that when stressors and social supports (family, teacher, and general social support) were analyzed within the same model of acculturative stress and internalizing symptoms, the effects of the stressors on mental health problems decreased; these findings indicated that support systems could serve as a buffer to the negative effects of acculturative stress. In a more recent study, Katsiaficas et al. (2013) compared first and second generation immigrant youth (e.g., Hispanic/Latino, Asian, African) and reported that, although first generation children reported more acculturative stress and internalizing symptoms than second generation, perceptions of social support mediated the relationship between acculturative stress and internalizing symptoms for first generation youth. Thus, it appears that positive family functioning may buffer the negative effects of acculturative stress.

Though the above-mentioned studies provide support for the protective role of social support in preventing or reducing internalizing symptoms, a few gaps remain in the literature. First, the adolescents in the former study (Potochnick & Perreira, 2010) were of Mexican descent and all were first-generation immigrants. The participants in the latter study (Katsiaficas et al., 2013) were of several different immigrant groups. Additionally, neither study assessed anxiety and depression alone. Although anxiety and depression are

often co-morbid, they are not one in the same and should be analyzed separately. Thus, more research is needed to better understand the interactive role of family functioning and acculturative stress as they relate to anxiety and depression across Hispanic/Latino subgroups.

Second, there is extensive support for the important role of peer relationships in youth development (La Greca, 2001). Difficulty with peer relationships has been linked to several poor mental health outcomes, including anxiety and depression (Hawker & Boulton, 2000). Because peer relationships become salient during late childhood and early adolescence, it is important to consider their contribution to the experience of youth who are at risk for anxiety and/or depressive disorders. Some studies have found that peer support moderates the relationship between acculturative stress and anxiety/depressive symptoms (Crockett et al., 2007; Oppedal, Røysamb, & Sam, 2004). Specifically, Crockett et al. (2007) found that peer support, as measured by the Network of Relationships Inventory (Furman & Buhrmester, 1992), served as a buffer for the relationship between acculturative stress and anxiety symptoms in a sample of Mexican and Mexican-American college students. Oppedal, Røysamb, and Sam et al. (2004) also found a similar moderation effect for distress symptoms in immigrant youth living in Norway. However, few data still exist on the unique contribution of peer support to the relationship between acculturative stress and anxiety or depression, especially for Hispanic/Latino youth.

Third, strength of ethnic identity, referring to the degree to which a person identifies with a particular ethnic group, may be an important factor to consider. The concept of ethnic identity is divided into different parts: ethnic affirmation and belonging,

and identity (Roberts et al., 1999). Ethnic affirmation and belonging refers to feelings of pride and attachment to the individual's ethnicity. Ethnic identity refers to the extent to which a person's sense of self is defined by being part of their particular ethnic group.

Several studies have found a beneficial effect of high ethnic identity on anxiety and depressive symptoms (Potochnick, Perreira, & Fuligni, 2012; Umaña-Taylor & Updegraff, 2007), as well as self-esteem (Romero, Edwards, Fryberg, & Orduña, 2014), and family functioning (Kiang & Fuligni, 2009). Evidence for the effects of ethnic identity on the link between acculturative stress and mental health is also positive. Furthermore, some studies have found that high ethnic identity may buffer the negative effects of acculturation-related stressors, particularly discrimination, on mental health (Greene et al., 2006; Romero et al., 2014). For example, in a longitudinal study, Greene and colleagues (2006) found that ethnic affirmation served a protective role on self-esteem for African-American and Puerto Rican high school students experiencing significant discrimination. Romero and colleagues (2014) found that high ethnic affirmation buffered the negative effects of acculturative stress on self-esteem and depressive symptoms in a sample of Mexican and Native-American adolescents. In this sample, ethnic identity was protective for self-esteem, not depressive symptoms.

Although promising, it is important to note that the majority of these studies included mostly Mexican youth and may not generalize to those of other Hispanic/Latino subgroups. Additionally, the moderation effect of ethnic identity for anxiety symptoms has not been assessed. Therefore, it would be beneficial to assess ethnic identity as a predictor of anxiety and depressive symptoms from acculturative stress in a diverse sample of Hispanic/Latino youth.

In summary, family functioning, friend support, and ethnic identity may each play an important role in helping protect youth against the negative effects of acculturative stress on mental health. The present study examined these potential protective factors as moderators of acculturative stress and anxiety/depressive symptoms for Hispanic/Latino children and adolescents.

Current Study

The main goal of this study was to extend the literature on acculturative stress and mental health outcomes, particularly anxiety and depressive symptoms, in Hispanic/Latino youth. The key study aim was to evaluate several potential variables that may moderate the association between acculturative stress and internalizing problems (anxiety, depression) among Hispanic/Latino children and adolescents. Specifically, the study first evaluated demographic variables, including age, gender, and parent SES (income and education), as moderators of the relationship between acculturative stress and internalizing symptoms. Then, potential protective factors, including family functioning, support from peers, and ethnic identity, were evaluated as moderators of acculturative stress and internalizing symptoms. Finally, Hispanic/Latino subgroup membership was assessed as an *exploratory* moderator of acculturative stress and internalizing symptoms. The specific aims and hypotheses of the study are described below.

Aim 1: Association between acculturative stress and anxiety/depressive symptoms

The relationship between acculturative stress and anxiety/depressive symptoms was evaluated to determine whether acculturative stress and anxiety/depressive symptoms were associated within this sample. It was hypothesized that higher acculturative stress

would be associated with more anxiety and depressive symptoms, even when controlling for level of acculturation.

Aim 2: The moderating role of demographic indicators of risk

Several demographic indicators of risk were assessed as moderators of the relationship between acculturative stress and anxiety/depressive symptoms: age, gender, and SES (indexed by measures of income and education). It was hypothesized that age, gender, and SES would moderate the association between acculturative stress and internalizing problems such that these associations would be stronger for: older youth more than younger youth, females more than males, and low SES compared with high SES.

Aim 3: The moderating role of protective factors

Several protective factors were assessed as moderators of the relationship between acculturative stress and anxiety/depressive symptoms: family functioning, peer support, and ethnic identity. It was hypothesized that youth with better family functioning, more peer support, and higher ethnic identity would experience fewer mental health problems associated with acculturative stress than youth with poorer family functioning, less peer support, and lower ethnic identity.

Aim 4: The moderating role of Hispanic/Latino subgroup

Finally, Hispanic/Latino subgroup membership was also assessed as a moderator of the relationship between acculturative stress and anxiety/depressive symptoms. It was hypothesized that acculturative stress would affect the mental health of Mexicans more than other groups combined. However, due to the limited research in this area, this was an exploratory analysis.

Chapter 2: Method

Participants

Participants were 1,466 Hispanic/Latino youth between the ages of 8-16 years whose parents participated in HCHS/SOL (Sorlie et al., 2010). Children and adolescents were, on average, 11.89 (SD=2.52) years old. Fifty-eight percent of children were between 8-12 years, 25% between 13-14, and 17% between 15-16 years of age. Fifty-one percent of participants were female. Youth were from the following Hispanic/Latino backgrounds: Mexican/Mexican-American/Chicano (47%), Dominican (12%), Mixed Hispanic (10%), Puerto Rican (9%), Central American (8%), Cuban (7%), South American (5%), or Other (2%). Approximately 3% of participants identified their race as black, 21% as white, 50% as Hispanic/Latino only, and 27% as other. Most youth were born in the US (78%) and preferred speaking English (80%). Of the 22% of youth born outside of the US, 50% migrated to the US between ages 0-5 years, 47% between ages 6-12, and 3% between ages 13-16.

Procedures

The current data was part of a large, epidemiologic study assessing the physical and mental health of Hispanic/Latino youth, entitled Study of Latino Youth (SOL Youth) (Isasi et al., 2014). SOL Youth was an ancillary project to a larger multi-site, epidemiologic study, The Hispanic/Latino Community Health Study/Study of Latinos (HCHS/SOL) (Sorlie et al., 2010). HCHS/SOL assessed protective and harmful factors associated with physical health outcomes in 16,000 individuals, ages 18-74, from various Hispanic/Latino subgroups. One of the primary purposes of HCHS/SOL was to assess the role of acculturation on the physical health (e.g., cardiometabolic risk, diabetes) of

Hispanics living in the US SOL Youth, the ancillary study, was the first national study to assess overweight, obesity, and cardiometabolic risk in Hispanic/Latino youth. The main purpose of the study was to evaluate the influence of youth acculturation, effects of intergenerational differences in acculturation between youth and parents, parenting practices, and psychosocial functioning on cardiometabolic risk in Hispanic/Latino youth. For the purposes of the present study, only psychosocial measures were utilized.

Adult participants of HCHS/SOL (Sorlie et al., 2010) were contacted via flyers and telephone if they reported having children during their participation in the study. Caregivers and their children who agreed to participate came into a university-based clinic for a three-hour evaluation (see Isasi et al., 2014 for details). Families were compensated for their participation. Parents received $30 for transportation and children received $50 in gift cards. Parents and children completed a series of psychosocial measures, available in both English and Spanish. The Spanish versions of the questionnaires were translated by a team of native Spanish speakers as well as a professional translator, and then back translated to ensure accuracy.

Youth were recruited from four different sites: Bronx (N=422), Chicago (N=372), San Diego (N=409), and Miami (N=263). Eligibility criteria for participation included the following: (1) lived at least 5 days/weeks and 9 months/year with the HCHS/SOL parent or legal guardian; (2) aged 8-16 years at the time of assessment; (3) no serious cognitive or physical comorbidities that would interfere with his/her ability to complete the clinic visit. Participants were also required to speak English or Spanish. If an HCHS/SOL participant had multiple eligible children, all qualified children were enrolled. Across the four sites, 17% of eligible participants refused to participate.

Measures

Demographic variables. Children reported on their gender, ethnicity, race, and language preference. Parents reported on their child's age, generation status (foreign-born 1st, US born 2nd, US born 3rd+ generation), and age at migration (if born outside of the US), as well as their own income, education, employment, and marital status. Participation site was also documented.

Anxiety (Appendix A). The *Multidimensional Anxiety Scale for Children-Short form (*MASC-10*;* March et al., 1997**)** was used to assess anxiety symptoms and was completed by the child. It consists of 10 questions, rated on a 3-point Likert scale from 1 *(never true for me)* to 3 *(often true for me)*. The measure assesses various aspects of anxiety symptoms, including separation anxiety, social anxiety, somatic symptoms, and harm avoidance. The MASC-10 has demonstrated adequate reliability, with mean Interclass Correlations (ICC) for anxiety subscale scores ranging from .64 to .89 in youth in a previous study (March et al., 1997). Sample questions include: *"I'm afraid other kids will make fun of me," "I try to stay near my mom or dad," and "I get dizzy or faint feelings."* T-scores were computed; higher T-scores indicated higher levels of anxiety symptoms. Internal consistency for this sample was .69.

Depression (Appendix B). The 10-item *Child Depression Inventory Short Form* (CDI:S) (Kovacs, 1984) was used to assess depressive symptoms. Each item is rated on a 3-point scale of severity, from 0 to 2; youth choose the statement that best represents them based on the past two weeks. Scores of 6 or higher for females and 7 or higher for males (T-score $\geq$ 65) across the 10 items reflect a clinically elevated risk of depression. The CDI:S has demonstrated adequate reliability in both English (α =.86) (Kovacs, 1984)

and Spanish (α=.75) (Davanzo et al., 2004). Sample questions include: *"I hate myself," "I feel like crying every day,"* and *"Things bother me all the time."* T-scores were computed; higher T-scores indicate higher levels of depressive symptoms. Internal consistency for this sample was .64.

Acculturation (Appendix C). The *Brief Acculturation Rating Scale for Mexican Americans-II* (ARSMA II Brief; Bauman, 2005) is a 12-item measure of acculturation. Six items represent the "Anglo Oriented Scale," or AOS and the six other items represent the "Mexican Oriented Scale," or MOS. Responses are rated on a 5-point Likert scale ranging from 1 *(not at all)* to 5 *(almost always)*. The measure has been found to have adequate internal consistency (α=.91 for MOS; α=.73 for AOS), split-half coefficient reliability (.92 for MOS; .81 for AOS), and concurrent validity with the original ARSMA (.89) for Hispanic/Latino youth between 12 to 19 years of age. Sample questions for the AOS scale include: *"I speak English," "I enjoy English language movies";* Sample questions for the MOS scale include: *"I speak Spanish"* and *"My thinking is done in the Spanish language."* A difference score between the AOS and MOS scales was calculated. Higher scores indicated more acculturation. Internal consistency for this sample was .84 for the MOS scale and .64 for the AOS scale.

Social desirability (Appendix D). The *What I Think and Feel Test* (Reynolds & Richmond, 1997) is an 8-item measure of social desirability adapted from the RCMAS. Responses are classified as 0 *(no)* or 1 *(yes)*. The measure has been found to have good reliability (KR_{20}= .85) in children and adolescents. Sample questions include: "*I like everyone I know," "I am always good,"* and *"I never get angry."* A total score composite was created for each individual based on responses. Composite scores ranged from 0-8.

Higher scores indicate greater social desirability. Internal consistency for this sample was .72.

Acculturative stress (Appendix E). The *Acculturative Stress Scale* (Gil et al., 1994) is a 9-item measure that assesses degree of acculturative stress; it includes subscales for language difficulties, disagreement between parent and child due to differences in acculturation, and ethnic discrimination. Responses are rated on a 5-point Likert scale, from 1 *(not at all)* to 5 *(almost always)*. Subscales have demonstrated adequate reliability in adolescents (α=.56-.63; Gil et al., 1994). Sample questions include: *"How often has it been hard for you to get along with others because you don't speak English well?", "How often have you had problems with your family because you prefer US customs?", "How often are you treated unfairly at school because you are Hispanic/Latino?"* A mean for each subscale score was computed and combined into one summary score. Higher scores indicated greater acculturative stress. Internal consistency for this sample was .73.

Family functioning (Appendix F). The 12-item General Functioning (GF) scale from the McMaster Family Assessment Device (FAD; Epstein et al., 1983) was used to assess family functioning. The subscale consists of 12 questions on a 4-point Likert scale, from 1 *(strongly agree)* to 4 *(strongly disagree)*. Six of the items reflect unhealthy family functioning and six items reflect healthy family functioning. Subscales include problem solving, communication, affective responsiveness, affective involvement, and general functioning. The GF subscale has demonstrated excellent internal consistency (α=.86) and split-half coefficient (.83) in children and families (Byles, Byrne, Boyle, & Offord, 1988). Sample questions include: *"In times of crisis we turn to each other for support,"*

"We avoid discussing our fears and concerns," and "Making decisions is a problem for our family." The mean of the scale was computed and higher scores indicated *poorer* family functioning. Internal consistency for this sample was .78.

General friend support (Appendix G). A subscale from the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) assessed peer support. It includes 4 questions rated on a Likert scale, from 1 *(strongly disagree)* to 4 *(strongly agree)*. This subscale of the measure has demonstrated excellent internal consistency in adolescents (α=.92) (Zimet, Powell, Farley, Werkman, & Berkoff, 1990). Sample questions include: *"My friends really try to help me" and "I can talk about my problems with my friends."* The mean of the scale was computed and higher scores indicated more support from friends. Internal consistency in this sample was .76.

Ethnic identity (Appendix H). The measure of *Ethnic Affirmation and Belonging* is an 8-item measure that combines subscales from two different measures to represent ethnic identity: The Multigroup Ethnic Identity Measure (MEIM; Roberts et al., 1999) and the Multidimensional Model of Racial Identity (MMRI; Sellers et al., 1998). Questions are rated on a 5-point Likert scale ranging from 1 *(strongly disagree)* to 5 *(strongly agree)*. Subscales include ethnic affirmation and belonging (sense of pride and belonging to ethnic group, from MEIM), ethnic centrality (how much a person defines themselves based on their ethnicity, from MMRI), and ethnic regard (positive and negative feelings about ethnicity, from MMRI). Both measures have independently demonstrated adequate reliability (MEIM α=.86; MMRI α=.77) (Ponterotto, Gretchen, Utsey, Stracuzzi, & Saya, 2003; Sellers et al., 1998). Sample questions include *"I feel good about my cultural or ethnic background," "I feel a strong attachment towards my*

own ethnic group." A mean for each subscale was computed and combined into one summary score to represent ethnic identity. Higher scores indicated higher ethnic identity. Internal consistency for this sample was .80.

Data Analytic Plan

Preliminary Analysis. This study included all available participants from the SOL Youth database, which is comprised of 1466 Hispanic/Latino youth between ages 8-16 years. The data were first examined for missing data, outliers and normality. Then, the following demographic variables were examined: child age, gender, race, ethnicity, language preference, generation status (i.e., 1st, 2nd, or 3rd generation), and years living in the US (age-age at migration), as well as parent income and education, employment status, marital status, and participation site.

Through descriptive statistics, mean values, standard deviations, and distribution of each predictor and outcome variable were assessed. Independent Samples T-tests and One-Way ANOVAs were used to determine whether anxiety and depressive symptoms differed by gender, generation status, Hispanic subgroup, parental income/education, and participation site. Furthermore, bivariate correlations were used to examine associations between other demographic and psychosocial variables. Demographic variables associated with anxiety or depressive symptoms were included as control variables in the models. All continuous predictors (acculturative stress, age, social desirability, family functioning, friend support, and ethnic identity) were centered and categorical variables (gender, parent education, parent income, and ethnic subgroup) were dummy coded.

Hierarchical linear regressions were used to examine the study aims presented below. Post-hoc analyses were conducted for significant interactions ($p < .05$) to better

understand the effects of moderating variables. For continuous moderators, the simple slope effect of the independent variable at each combination of +/- 1 Standard Deviation (SD) were tested. In the case of categorical moderators, simple slope effects were tested by manipulating reference groups. For each aim, separate regression analyses were conducted for anxiety and depressive symptoms as outcome variables.

Aim 1: Association between acculturative stress and anxiety/depressive symptoms

The relationship between acculturative stress with anxiety and depressive symptoms, controlling for relevant demographic and site variables, were assessed with hierarchical linear regressions. Based on preliminary analyses, age, gender, generation status, participation site, and social desirability were entered in block 1 when depressive symptoms was the outcome variable. Age, gender, and social desirability were entered in block 1 when anxiety symptoms was the outcome variable. In both cases, acculturative stress was entered in block 2.

Aim 2: The moderating role of demographic indicators of risk

Hierarchical linear regressions examined whether demographic indicators of risk, including age, gender, and parent SES (income and education), moderated the relationship between acculturative stress and anxiety and/or depressive symptoms. Blocks 1 and 2 remained the same as those in Aim 1. In block 3, the interaction term for acculturative stress and age was entered. Follow-up simple slope effect tests were conducted to see how the relationship between acculturative stress and anxiety/depressive symptoms changed as a function of age. The same procedure was used to test the interaction for acculturative stress with gender. For parent education and income, dummy coded variables were entered in block 3 and the interaction term was entered in block 4.

Aim 3: The moderating role of protective factors

Hierarchical linear regressions examined whether family functioning, friend support, and ethnic identity moderated the relationship between acculturative stress and anxiety and/or depressive symptoms. Block 1 to 2 were the same as those in Aim 1. Then, the variable for family functioning was entered in block 3, and the interaction term for acculturative stress and family functioning was entered in block 4. The same procedure was used to test the interaction for acculturative stress with friend support and ethnic identity. Once again, simple slope effects test were conducted when appropriate.

Aim 4: The moderating role of Hispanic/Latino subgroup

Based on preliminary analyses that showed Cuban youth reported lower levels of depressive symptoms than many other ethnic groups, a new variable was created to compare Cubans (0) to all other groups (1). Due to Puerto Rican youth reporting the highest levels of depressive symptoms, another variable was created to compare Puerto Ricans (0) to all other groups (1). A hierarchical linear regression then examined whether ethnic subgroup moderated the relationship between acculturative stress and depressive symptoms. Blocks 1 to 2 remained the same as those in Aim 1. For the first model comparing Cubans to others, the new dummy coded variable (Cubans=0) was entered in block 3. Then, in block 4, the interaction term for acculturative stress x ethnic group was included. The same procedure was conducted for the new variable comparing Puerto Ricans to other groups.

Exploratory Follow-up Analyses

Due to previous research indicating that the relationship between acculturative stress and internalizing problems may be stronger for first than second or third generation

youth living in the US, analyses for all aims were conducted for the first generation children separately.

Chapter 3: Results

Preliminary Analysis

Data was assessed for missingness, outliers, and normality. Missing data (<5%) was handled using listwise deletion. No outliers were found. Furthermore, the assumption of normality was met (Klein, 2010). No significant multicollinearity was identified among variables of interest.

Descriptive statistics. Means and standard deviations for child and parent demographic variables are included in Tables 1 and 2. Means and standard deviations for psychosocial variables are included in Table 3. The mean youth-reported acculturative stress was 1.63 (SD=.59). Youth reported relatively low levels of anxiety and depressive symptoms. Approximately 10% of the sample reported clinically significant levels of anxiety symptoms (T-score $\geq$ 65) and 5% reported clinically significant levels of depressive symptoms (T-score $\geq$ 65).

Demographic differences. In the current sample, differences in depressive symptoms were found by gender, age, generation status, and Hispanic subgroup membership. Females reported significantly higher levels of depressive symptoms than males, t (1393)=5.02, p<.01. No gender differences were found for anxiety symptoms.

As seen in Table 5, younger age was associated with higher reported depressive symptoms (r=-.10, p<.001) and lower anxiety symptoms (r=.07, p<.01).

As seen in Table 6, first generation youth reported significantly lower levels of depressive symptoms than third generation youth. No significant differences appeared for anxiety symptoms based on generation status. Further examination of whether children of younger age differed on variables that may impact depressive symptoms revealed that

US-born children tended to be younger than those who were foreign-born, $t(1452)=5.32$, $p<.001$.

As seen in Table 7, for Hispanic/Latino group membership, results from One-Way ANOVAs showed significant differences in depressive, but not anxiety, symptoms by Hispanic subgroup membership, $F(7,1372)=2.73$, $p<.01$. Dunnett's C post-hoc analyses revealed that Cuban children reported significantly lower levels of depressive symptoms than Puerto Rican, Central American, and Mexican youth. Puerto Rican children reported higher levels of depressive symptoms, but these symptoms were only significantly elevated when compared to Cuban youth. See Table 4 for means and standard deviations.

Differences were also found based upon parental income for anxiety, but not depressive symptoms, and are reported in Table 8. Follow-up analyses indicated children with parents with the lowest income (<$20,000) reported significantly lower levels of anxiety compared to those in the middle income group ($20,000-40,000), $F(2,933)=4.07$, $p<.05$. No other group differences were found by income. No differences were found based upon parental education ($p>.10$). Furthermore, level of acculturation, as measured by the ARSMA II Brief, was not associated with anxiety or depressive symptoms (p's>.10). Number of years in the US, another markers of acculturation, was not associated with anxiety or depressive symptoms.

Site differences. For participation site, results from a One-Way ANOVA showed a significant difference in depressive symptoms, $F(3, 1455)=4.05$, $p<.01$. Dunnett's C post-hoc analyses revealed that compared to youth living in Miami, youth from the Bronx and Chicago reported significantly higher levels of depressive symptoms. No significant

differences were found between reported depressive symptoms in San Diego vs. Miami. Furthermore, no participation site differences were found for anxiety symptoms. See Table 9.

Psychosocial Correlates. As seen in Table 10, several psychosocial variables were significantly related to one another. Primarily, higher reported anxiety and depressive symptoms were associated with more acculturative stress, lower social desirability, poorer family functioning, less friend support, and lower ethnic identity.

In summary, preliminary analyses revealed differences in depressive symptoms were found based upon age, gender, social desirability, ethnic subgroup membership, participation site, and generation status. Thus, these were selected as control variables, with the exception of ethnic subgroup membership, which was strongly linked with participation site. Differences in anxiety symptoms were found based upon age, social desirability, and parental income. Thus, these variables were selected as control variables, with the exception of parental income. Because the study included multiple sibling households, entering parental income as a control variable would drastically decrease power. In addition, gender was included as a control variable despite not being associated within this sample, because anxiety symptoms tend to differ by gender in the general population.

Aim 1: Association between acculturative stress and anxiety/depressive symptoms

Hierarchical linear regressions examined the relationship between acculturative stress and anxiety/depressive symptoms. See Table 11 for main effects. Results indicated that acculturative stress was associated with depressive symptoms, even when controlling for age, gender, social desirability, generation status, and participation site, F(9,

1394)=23.13, p<.001. Together, predictors accounted for 13% of the variance in depressive symptoms. Acculturative stress uniquely accounted for 6.6% of that variance.

In the second model, results indicated that acculturative stress was associated with anxiety symptoms, when controlling for age, gender, and social desirability, F(4, 1352)=20.66, p<.001, and accounted for 5.8% of the variance in anxiety symptoms. Acculturative stress uniquely accounted for 4.1% of that variance.

Aim 2: The moderating role of demographic indicators of risk (Age, gender, parental income and education)

Aim 2a. See Table 12 for interaction effects. Two hierarchical linear regressions evaluated the moderating role of age on depressive and anxiety symptoms. In the first model, where depressive symptoms was the outcome variable, the relationship between acculturative stress and depressive symptoms did not differ by age (p's>.10). In the second model, where anxiety symptoms was the outcome variable, the interaction between acculturative stress and age was significant, F-change (1, 1351)=10.59, p=.001, R^2 change=.007. Follow-up simple slopes tests indicated significant differences between younger (1 SD below), average age, and older (1 SD above) children. The relationship between acculturative stress and anxiety symptoms was stronger for older youth (β=5.87, SE=.81, t=7.285, p<.001) than for average age (β=4.30, SE=.52, t=8.31, p<.001) and younger youth (β=2.73, SE=.60, t=2.73, p<.001). See Figure A.

Aim 2b. For gender, interaction effects with acculturative stress did not significantly affect depressive or anxiety symptoms (p's>.10).

Aim 2c. For parental education and then parental income, interaction effects with acculturative stress did not significantly affect depressive or anxiety symptoms (p's>.10).

Aim 3: The moderating role of protective factors

Aim 3a. See Table 12 for interaction effects. For the moderating role of family functioning, regression analysis showed that the link between acculturative stress and depressive symptoms differed significantly by family functioning, F-change (1, 1381) = 4.63, p=.032, R^2 change=.003. Follow up analyses showed that the relationship between acculturative stress and depressive symptoms was significant across levels of family functioning, but somewhat buffered for those with better (β=1.80, SE=.63, t=2.84, p<.01) than average (β=2.57, SE=.42, t=6.14, p<.001) or poorer family functioning (β=3.35, SE=.46, t=7.28, p<.001). In the model, where anxiety symptoms was the outcome variable, the interaction between acculturative stress and family functioning was not significant. See Figure B.

Aim 3b. For friend support, the interaction between acculturative stress and friend support did not significantly affect depressive or anxiety symptoms (p's>.10).

Aim 3c. For ethnic identity, the interaction between acculturative stress and ethnic identity did not significantly affect depressive or anxiety symptoms (p's>.10).

Overall, consistent with study hypotheses, older age was associated with higher reported anxiety symptoms from acculturative stress than younger age, and better family functioning somewhat buffered the negative effects of acculturative stress on youths' depressive symptoms. However, no other moderation effects were significant.

Aim 4: The moderating role of Hispanic/Latino subgroup

Similar analyses explored whether the interaction between acculturative stress and anxiety/depressive symptoms differed for Cuban and Puerto Rican subgroups. No significant interactions were found for either depressive or anxiety symptoms (p's>.10).

The same procedure was used to assess differences for Puerto Ricans when compared to others, and no significant interactions were found for depressive or anxiety symptoms (*p*'s>.10).

Exploratory Follow-up Analyses with First Generation Youth

When first generation youth were considered alone, preliminary and main analyses yielded some different findings. For acculturative stress and language conflict, results from One Way ANOVAs revealed that foreign-born children reported higher overall levels than US-born youth, $t(1419)=-4.781$, $p<.001$. No between group differences were found for acculturation conflicts and discrimination (*p*'s>.10). For depressive symptoms, results of One-Way ANOVAs showed that depressive symptoms were associated with participation site, $F(3,299)=5.22$, $p<.01$. Consistent with the full sample, Dunnett's C post-hoc analyses revealed that youth living in Miami reported significantly lower levels of depressive symptoms than those in San Diego. No differences were found for anxiety symptoms by participation site.

For first generation youth, higher acculturative stress was also associated with more depressive symptoms, when controlling for participation site, age, gender, and social desirability, $F(6, 308)=6.08$, $p<.001$, $R^2=.16$. Acculturative stress accounted for 5.7% of the variance in depressive symptoms. Higher acculturative stress was also associated with more anxiety symptoms when controlling for age, gender, and social desirability, $F(4, 296)=4.64$, $p<.01$, $R^2=.06$. Acculturative stress accounted for 3.9% of the variance in anxiety symptoms. See Table 13.

Demographic risk factors. See Table 14 for moderation effects. Exploration of moderation effects revealed that acculturative stress x age continued to impact anxiety

symptoms and accounted for more variability when foreign-born children were examined alone, F-change (1,295)=5.06, p=.03, R^2 change=.016. Once again, under conditions of high acculturative stress, older youth reported experiencing more anxiety symptoms (β=6.47, SE=1.61, t=4.02, p<.001) than youth at the mean age (β=4.37, SE=1.09, t=4.01, p<.001). However, younger children did not report significantly more anxiety symptoms under conditions of high acculturative stress (β=2.27, SE=1.24, t=1.83 p>.05). See Figure C. Consistent with results for the full sample, acculturative stress x age did not significantly impact depressive symptoms for foreign-born children (p>.10). There was also no effect for acculturative stress x gender and acculturative stress x parent income. However, acculturative stress x education did significantly impact depressive symptoms for foreign-born children, F-change (2, 217) = 4.88, p<.01, R^2 change=.036. Follow up analyses showed that when compared to the middle education group (high school equivalent), children with parents who obtained the lowest education level (<high school) (β=5.56, SE=2.29, t=2.42, p<.05) *and* those with the highest education level (>high school) reported significantly more depressive symptoms (β=6.73, SE=2.20, t=3.05, p<.01). No significant differences were found between the lowest and highest education group. See Figure D.

In summary, consistent with results for the full sample, older age was associated with more anxiety symptoms from acculturative stress than younger age in foreign-born Hispanic/Latino youth. Additionally, children whose parents were in the lowest or highest education bracket reported significantly higher levels of depressive symptoms than those in the middle category.

Protective factors. See Table 14 for moderation results. With regard to potential protective factors in foreign-born youth, the interaction between acculturative stress and anxiety symptoms differed by family functioning, F(1, 293)=4.54, $p<.05$, R^2 change=.014. Follow up analyses indicated that those with poorer family functioning (β=5.33, *SE*=1.43, $t = 3.72$, $p <.001$), reported significantly more anxiety symptoms from acculturative stress than those with the mean level of family functioning (β=2.99, *SE*=1.13), $t = 2.65$, $p <.01$). Under conditions of higher acculturative stress, the relationship between acculturative stress and anxiety was not significant for those with better family functioning (β=.65, SE=1.71, $t = .38$, $p >.05$), suggesting a buffering effect for these children. See Figure E. Contrary to findings for the entire sample, there was no significant acculturative stress x family functioning effect on depressive symptoms (*p*'s>.10). Furthermore, acculturative stress x friend support did not significantly affect anxiety or depressive symptoms (*p*'s>.10). However, ethnic identity did significantly affect anxiety symptoms from acculturative stress (β=3.23, *SE*=1.09), F-change (1,294)=4.37, $p<.05$, R^2 change=.014. Follow-up analyses showed that under conditions of high acculturative stress, the relationship between acculturative stress and anxiety was buffered by higher ethnic identity (β=1.31, *SE*=1.54, $t = .85$, $p >.05$), whereas anxiety symptoms were exacerbated for those with lower ethnic identity (β=5.14, *SE*=1.29, $t = 3.98$, $p <.001$). See Figure F.

Taken together, results indicated that in first generation youth, better family functioning and higher ethnic identity served a protective role against the negative effects of acculturative stress on anxiety symptoms. Friend support did not significantly affect anxiety or depressive symptoms from acculturative stress. These findings highlight the

importance of examining risk and resilience factors that may influence mental health in foreign-born Hispanic/Latino youth specifically, as they may have different experiences with acculturative stress (or factors affecting acculturative stress) than children born in the US.

Chapter 4: Discussion

Anxiety and depression are highly prevalent and comorbid mental health disorders that have been found to be especially common in Hispanic/Latino youth living in the US (McLaughlin et al., 2007). Several variables have been linked to increased risk for anxiety and depression, such as older age, female gender, and low family SES (e.g., Merikangas et al., 2010; Twenge & Nolen-Hoeksema, 2002). However, these factors do not explain why Hispanic/Latino youth may be at higher risk for experiencing negative mental health outcomes. To answer this question, researchers have hypothesized about the effects of specific cultural factors, such as acculturation, acculturative stress, ethnic identity, and familismo, which may be unique to the experience of Hispanic/Latino youth. In particular, higher acculturative stress has been linked to higher rates of anxiety and depressive symptoms for Hispanic/Latino youth; this relationship has been shown to be strongest for first generation youth (Potochnick & Perreira, 2010, Sirin et al., 2013). Though this link between acculturative stress and mental health has been found in previous studies, these samples included predominantly Mexican youth, providing little information about the relationship for other Hispanic/Latino groups. Furthermore, it is unclear what factors moderate the relationship between acculturative stress and internalizing problems.

Results from the current study replicated previous findings, demonstrating that higher acculturative stress is associated with higher reported levels of anxiety and depressive symptoms. However, this study builds on the previous literature by utilizing a diverse sample of Hispanic/Latino youth (e.g., Potochnick & Perreira, 2010). This relationship held even when controlling for various demographic and psychosocial

variables, such as age, gender, social desirability, generation status, and region of residence. Findings for moderation effects and implications are discussed below.

Is the Relationship Between Acculturative Stress and Internalizing Symptoms Affected by Key Demographic Risk and Protective Factors?

For risk factors, age significantly impacted the relationship between acculturative stress and anxiety symptoms. Preliminary findings showed that younger children reported higher depressive symptoms than older children, contrary to previous research (Merikangas et al., 2010). Follow-up analyses revealed that even when accounting for gender, acculturative stress, or immigration status, age continued to uniquely predict depressive symptoms. Therefore, further study is necessary to understand what may be underlying that age difference. With regard to anxiety symptoms, results were consistent with previous findings that older children report higher levels of anxiety than younger children (Merikangas et al., 2010).

Moderation analyses for age were consistent with our hypothesis that associations between anxiety symptoms and acculturative stress were stronger for older compared to younger children. Although older youth within this sample reported more anxiety symptoms, they did not report more acculturative stress than younger children. Based on the theory that *extended* experiences of acculturation conflicts and discrimination over time may lead to poorer mental health outcomes (Gonzales et al., 2006), it is possible that the older youth in our sample who *did* report high acculturative stress may have experienced chronic acculturative stress over time. This chronicity may be due to longer time living in the US compared to younger children.

For depressive symptoms and acculturative stress, age was not a significant moderator. Although anxiety and depression often have overlapping symptomatology, an increase in stressful acculturation experiences may trigger unique aspects of anxiety (e.g., physiological hyperarousal, threat perceptions) rather than aspects of depression (e.g., anhedonia, hopelessness) (Clark & Watson, 1991) for older compared to younger adolescents. For example, an older adolescent who has experienced language difficulties over a longer period of time than a younger child may lose self-confidence in situations where they have to speak in English or be away from their parents, which may elicit a fear of negative evaluation from others.

For protective factors, as hypothesized, strong family functioning was associated with a weakened relationship between acculturative stress and depressive symptoms, consistent with previous research (Potochnick & Perreira, 2010). Although positive family functioning is important for all children, it may be even more essential in protecting against depression when youth experience high levels of acculturative stress. In contrast, the link between acculturative stress and anxiety symptoms was not moderated by family functioning. In line with differences noted above between anxiety and depression, a supportive family environment could be especially important in protecting against depression-specific features, such as sadness and hopelessness, in the face of adversity. Importantly, the variance explained by the interactions with age and family functioning was very small, suggesting the possibility that Type I error may have contributed to the significant findings. Further study of the role of family relationships is warranted.

With regard to other potential moderators, such as demographic (i.e., gender, parental income and education) and psychosocial (i.e., friend support, ethnic identity) factors, no significant interactions were found for anxiety or depressive symptoms. This was surprising. It was hypothesized that Hispanic/Latino females would report more acculturative stress associated with internalizing symptoms; however, it is possible that other kinds of stressors may be important for understanding females/internalizing problems. Previous research has demonstrated that females tend to respond negatively to particular stressors, such as interpersonal conflict (Hankin et al., 2007). Thus, higher rates of internalizing problems for females might be better explained by other stressors not assessed in this study, such as interpersonal conflict.

Methodological issues also may have contributed to null findings. For example, variability was low for measures of SES, social support, and ethnic identity, making it difficult to detect significant differences across individuals. For income in particular, it is important to consider several variables that impact SES, such as number of people supported by the income, employment status, financial assistance from the government, and legal status. A more complex measurement of SES could better explain the specific aspects of SES that result in poorer outcomes under conditions of high acculturative stress. Measurement issues may have also affected the assessment of friend support. The measure consisted of only four items, and thus may not have been sensitive to specific aspects of friend support or peer group functioning that may influence mental health.

For ethnic identity, younger children in particular may not consider their ethnicity to be central to their identity. In addition, highly acculturated second and third generation children may feel that being American is more central to their identity, an area not

assessed in this study. Despite these hypotheses, follow-up analyses revealed that when accounting for age, generation status, level of acculturation, or acculturative stress, stronger ethnic identity continued to uniquely predict fewer anxiety and depressive symptoms. Thus, further research is needed to understand what may be driving these associations with ethnic identity.

For Hispanic/Latino subgroup differences, no significant interaction was found. Although preliminary analyses showed differences in depressive symptoms across Hispanic subgroups when compared to Cubans or Puerto Ricans, group membership did not affect the relationship between acculturative stress and internalizing symptoms. Despite the diversity of the sample compared to previous studies, the number of Mexican children was disproportionately higher than other groups; this made it difficult to compare across groups. Rather than examining differences by subgroup, it may be more important to consider the factors that drive subgroup differences in internalizing symptoms. For example, Cubans living in Miami, where there is a large Cuban community, may report fewer internalizing symptoms because they do not encounter as many language or discrimination conflicts, whereas Cubans in Chicago, where there is a much smaller Cuban community, may have more difficulty because they are a minority group in that city.

In sum, moderation analyses revealed that for demographic risk factors, older age exacerbated the relationship between acculturative stress and anxiety symptoms. For protective factors, family functioning buffered the negative effects of acculturative stress on depressive symptoms. However, effect sizes were small so results should be interpreted with caution. Furthermore, no other variables significantly moderated the

relationship between acculturative stress and internalizing symptoms. Methodological issues (e.g., low variability in responses) may have contributed to null findings, but more research is needed to better understand the impact of these moderating variables.

Exploratory Follow-up Analyses with First Generation Youth

Due to research that has shown foreign-born youth may have a unique experience resulting in more acculturation stressors compared to US-born youth (Katsiaficas et al., 2013; Potochnick & Perreira, 2010), it was hypothesized that the demographic and protective factors of interest in this study would be more salient for foreign-born children. As expected, the effect of key moderating variables was stronger when first generation youth were considered alone than when children in the entire sample were considered together. Findings for moderation effects with first generation youth and implications are discussed below.

When demographic risk factors were considered in first generation youth alone, the link between acculturative stress and anxiety symptoms was stronger for older children, and accounted for greater variability in anxiety than when the entire sample was included. As discussed above, older youth who reported higher acculturative stress may have been experiencing acculturative stress for a longer period of time, increasing their anxiety symptoms. Thus, age seems to be most important to consider in the face of high levels of acculturative stress, and may be even more important to consider for foreign-born than US-born youth.

Interestingly, and contrary to findings for the entire sample, parent education moderated the relationship between acculturative stress and depressive symptoms in an unexpected direction. Specifically, when compared to parents of high school equivalent

education level, those with lower than high school *and* greater than high school education, had children who reported significantly higher depressive symptoms. The meaning of these differences is unclear and warrants further study. However, according to the Expectancy violation theory (EVT), the discrepancy between pre-migration expectations and post-migration experiences in the US is associated with higher acculturative stress in Hispanic adults (Negy, Schwartz, & Reig-Ferrer, 2009). Thus, it is possible that these differences could be explained by variations in expectation for "life in America" based on education level. In the US, between 21-27% of Hispanic/Latinos without a high school diploma are employed but living below the poverty line (US Bureau of Labor Statistics, 2013). Thus, the hardship associated with finding employment to support the family might result in loss of hope for the better life they expected. In contrast, Hispanic/Latinos in the highest education group might experience frustration due to a discrepancy between their actual level of education and the type of job they can attain in the US. For example, due to the rigorous process required to practice medicine in the US, a successful doctor from South America might have to gain the necessary experiences and training to be competitive for residency training or might need to choose a different career if they were to move to the US. Factors such as language barriers and legal status may also impede their ability to obtain a job that matches their education level (Ryu, 2010). For both parent and child, it is possible that the discrepancy between education level and actual income or lifestyle in the US could lead to significant stress and hopelessness about their future in America.

Regarding protective factors for first generation youth, better family functioning served a protective role in the relationship between acculturative stress and anxiety, but

not depressive symptoms. Although this result was inconsistent with findings for the full sample, the variance explained was larger, within a much smaller sample of children, and therefore may be a more reliable moderator for foreign-born children. The role of family support as a buffer for anxiety is also supported by previous research in first generation Mexican youth, suggesting that foreign-born youth may react to poor family functioning under conditions of high acculturative stress with more physiological symptoms, rather than hopelessness (Potochnick & Perreira, 2010). In addition, when the same interaction was tested for third generation children within this sample, family functioning did not significantly affect the relationship between acculturative stress and anxiety symptoms, suggesting that family may be especially important to consider for foreign-born youth experiencing acculturation stressors.

Furthermore, as hypothesized, higher ethnic identity in first generation youth was associated with lower reported anxiety symptoms from acculturative stress. Although ethnic identity has not been considered as a moderator in previous studies, these results are consistent with research that has highlighted the beneficial effects of high ethnic identity in Hispanic/Latino youths' mental health (Umaña-Taylor & Updegraff, 2007). The significance of these results indicates that ethnic identity may be most important to consider as a protective factor for children who are foreign-born and less acculturated.

Taken together, results showed that, as expected, demographic risk and psychosocial protective factors more strongly affected the relationship between acculturative stress and internalizing symptoms for foreign-born children than for multiple Hispanic/Latino generations combined. Due to their unique experiences, these

results suggest that it may be important to consider first generation youth alone when examining the moderating role of important risk and protective factors for mental health.

Limitations

Although the current study addressed gaps in the literature, some limitations should be noted. First, sample issues may have affected findings. Although the sample was more ethnically diverse than in most previous studies, almost half of the children were of Mexican origin, making it difficult to compare across ethnic groups. Most children in the sample (78%) were also born in the US, resulting in unequal sample sizes and decreased power for analyses assessing generational differences. Furthermore, rates of anxiety and depressive symptoms were low; therefore, there may not have been enough variability within the sample to see differences on important study variables.

Second, informant issues, which included primarily using child-reported data, may have impacted outcomes. Understanding the parent's perspective on their child's experience in the US or internalizing symptoms may have more clearly elucidated the relationship between acculturative stress and mental health for children across generations. In future studies, a combination of child and parent report should be considered. To better understand acculturation conflicts, the discrepancy between parent and child-reported acculturation levels should also be assessed.

Third, measurement issues may have also affected findings. Due to the cross-sectional design of the study, causality could not be inferred. In addition, questionnaires were administered via interview format or independently by pencil and paper, which may have resulted in biased responses. Internal consistency for key measures, such as the MASC-Short form, CDI-Short form, acculturation, and acculturative stress, was also

lower than expected. Finally, measuring level of acculturation continues to be a challenge. Reports on the measure in the current study (ARSMA II Brief) were not associated with anxiety, depressive symptoms or acculturative stress, suggesting that it may not be a direct measure of acculturation level. Of note, this measure was developed for use with adults. Therefore, it may be beneficial to use a measure developed specifically for children/adolescents.

Contributions and Implications for Future Research

Despite its limitations, this study shed light on important risk and protective factors that may be associated with negative mental health outcomes within a large sample of Hispanic/Latino youth. Although the sample was predominantly Mexican, the size of the sample allowed for the analysis of differences across and between Hispanic/Latino subgroups. In addition, results showed that foreign-born youth may be more strongly impacted by these factors than US-born children.

In future studies, these patterns should be assessed longitudinally to better understand how risk and protective factors function over time in the US. It is also important to identify factors that affect the course of acculturative stress (e.g., legal status, neighborhood, school, peer networks). Furthermore, researchers should assess how the moderators examined in this study may impact the relationship between acculturative stress and internalizing symptoms for children with (a) clinical levels of anxiety and/or depression, and (b) specific sub-types of anxiety and/or depressive disorders.

Although certain expected interactions with acculturative stress did not differentially impact anxiety and depressive symptoms (e.g., social support, gender), it is possible that three-way interactions would be more appropriate. For example, the

relationship between acculturative stress and anxiety/depressive symptoms may be buffered for those with poorer family functioning but higher ethnic identity *or* better family functioning but lower ethnic identity. Based upon previous research, there may also be interactions between gender and age, where older females are at highest risk for experiencing internalizing problems from acculturative stress. Furthermore, parent acculturation may be particularly important for understanding the experience of second generation children, due to the variability in their parents' level of acculturation. One second generation child could have parents who mostly speak Spanish and cook traditional Hispanic/Latino foods, whereas another second generation child might grow up in a household with more acculturated parents, who speak English and cook American foods. Finally, it may also be beneficial for clinical intervention studies to examine the effectiveness of adapted, community-based treatments that consider acculturation processes; these interventions should be tested across Hispanic/Latino subgroups.

Clinically, these data suggest that when assessing or treating Hispanic/Latino youth, clinicians should consider how specific demographic variables, such as age and parent education, differentially affect a child's reaction to stressors associated with acculturation. For example, based on these results, it is important to keep in mind that acculturative stress may have a greater impact on a teen's versus a younger child's anxiety symptoms. For depressive symptoms, discussing how parents' education and expectations for life in the US have impacted adjustment may be important for foreign-born children. In addition, for protective factors, considering that family functioning and ethnic identity seem to be important variables for foreign-born youth, clinicians should consider increasing family functioning and ethnic identity in treatment. Finally, raising a

child's awareness of acculturation processes and how to cope with acculturation conflicts may be important for treatment.

In conclusion, the results of this study replicated and extended findings from previous research linking higher acculturative stress with more internalizing symptoms within a large, diverse sample of Hispanic/Latino youth. Researchers and clinicians should continue exploring factors that may exacerbate or protect against the negative effects of acculturative stress to improve the mental well-being of Hispanic/Latino children and adolescents.

Table 1. Child demographics

	N	%
Gender		
Female	738	50.3%
Male	728	49.7%
Hispanic Subgroup:		
Cuban	103	7.4%
Mexican	648	46.8%
Dominican	167	12.0%
Puerto Rican	128	9.2%
Central American	112	8.1%
South American	68	4.9%
Mixed Hispanic	135	9.7%
Unknown/Other	25	1.8%
Immigration status		
First generation	305	21.4%
Second generation	913	64.0%
Third generation	208	14.6%
Language Preference		
English	1175	80.4%
Spanish	287	19.6%
Participation site		
Bronx	422	28.8%
Chicago	372	25.4%
Miami	263	17.9%
San Diego	409	27.9%

	Mean (SD)	Range of full sample
Age	11.85 (2.52)	8-16
Foreign-born	12.51 (2.37)	--
Number of years in US	6.98 (3.77)	0-16

Table 2. Parent Demographics

	N	%
Gender		
Female	882	59.7%
Male	143	34.6%
Household Income		
< $20K	520	52.3%
$20K-$40K	327	32.9%
> $40K	148	14.9%
Marital Status		
Single, Never married	290	28.1%
Married	553	53.5%
Separated	97	9.4%
Divorced	75	7.3%
Widow	18	1.7%
Education		
< high school	383	37.4%
high school	280	27.3%
> high school	362	35.3%
Employment Status		
Employed full-time	360	35%
Employed part-time	230	22.3%
Not employed but searching	217	21.1%
Not employed and searching	223	21.7%
Place of birth		
Foreign-born	877	85.7%
US mainland	146	14.3%
Language Preference		
English	212	79.9%
Spanish	845	20.1%

	Mean (SD)	**Range of full sample**
Age	42.68 (8.20)	24-75
Age of migration	24.30 (10.2)	0-60

Table 3. Means and standard deviations for demographic and psychosocial variables

Variable	Mean (SD) for Full Sample N=1466	Mean (SD) for First Generation Alone	Range for Full Sample
Acculturation (ARSMA II Brief)	.93 (1.32)	.45 (1.42)	-3.67-3.83
Acculturative stress	1.63 (.59)	.69 (.59)	1.00-4.67
Language conflict	1.59 (.86)	1.77 (.92)	1.00-5.00
Discrimination conflict	1.47 (.71)	1.47 (.70)	1.00-5.00
Acculturation conflict	1.77 (.78)	1.82 (.79)	1.00-5.00
Anxiety symptoms	51.34 (10.48)	50.65 (10.56)	25.91-85.36
Depressive symptoms	47.39 (8.56)	46.52 (7.93)	38.59-90.31
Friend support	3.17 (.58)	3.23 (.61)	1.00-4.00
Poor family function	1.94 (.44)	1.88 (.42)	1.00-4.00
Ethnic identity	4.30 (.63)	4.36 (.61)	1.00-5.00
Social desirability	4.93 (2.34)	5.21 (2.23)	1.00-8.00

Table 4. Gender differences in anxiety and depressive symptoms for full sample

	n	*M (SD)*	*t*	*p*
Depression				
Female	733	48.50 (9.39)	5.02	<.001
Male	726	46.27 (7.48)		
Anxiety				
Female	684	51.16 (10.48)	-.647	>.05
Male	691	51.52 (10.48)		

Table 5. Demographic Correlations

	1	2	3	4	5	6	7	8	9	10
1. Age	1									
2.Years in US	.33**	1								
3. ARSMA II	.02	.43**	1							
4. ACCSTR	-.26***	-.07	-.08**	1						
5. ACCSTR_L	-.25***	-.31***	-.27***	.66***	1					
6.ACCSTR_A	-.16***	.09	.03	.84***	.33***	1				
7. ACCSTR_D	-.22***	-.04	-.05	.73***	.34***	.38***	1			
8. Social desirability	-.21***	-.20***	-.15***	.031	.10***	-.03	.04	1		
9. Depression	-.10***	.03	.02	.26***	.10***	.22***	.26***	-.13	1	
10. Anxiety	.07**	.08	.02	.17***	.08**	.16***	.12***	-.12	.24***	1

Note: ARSMA II=Acculturation; ACCTR=Acculturative Stress Total; ACCSTR_L=Language Conflict; ACCSTR_A=Acculturation Conflict; ACCSTR_D=Discrimination Conflict; * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6. Multiple comparisons post-hoc for generation status on depressive symptoms in full sample

Generation Status	**Depressive Symptoms Mean (SD)**	**(I)**	**(J)**	**Mean Difference (I-J)**
1st	46.43 (7.91)	1	2	-1.00
			3	-1.95*
2nd	47.43 (8.74)	2	1	1.00
			3	-.95
3rd+	48.38 (8.65)	3	1	1.95*
			2	.95

Note: *p<.05

Table 7. Multiple comparisons post-hoc for Hispanic/Latino subgroup membership on depressive symptoms in full sample

Ethnic subgroup	**Depressive Symptoms Mean (SD)**	**(I)**	**(J)**	**Mean Difference (I-J)**
Puerto Rican	48.46 (8.26)	Puerto Rican	Dominican	2.00
			Cuban	4.16*
			Central American	.82
			Mexican	.82
			South American	1.64
			Mixed Hispanic	1.22
			Other	2.57
Cuban	44.30 (5.32)	Cuban	Dominican	-2.16
			Puerto Rican	-4.16*
			Central American	-3.34*
			Mexican	-3.34*
			South American	-2.52
			Mixed Hispanic	-2.94
			Other	-1.59

Note: *p<.05

Table 8. Multiple comparisons post-hoc for parent income on anxiety symptoms in full sample

Parental Income	**Anxiety Symptoms Mean (SD)**	**(I)**	**(J)**	**Mean Difference (I-J)**
<$20,000	50.69 (11.02)	1	2	-2.03*
			3	.26
$20,000-40,000	52.72 (10.03)	2	1	2.03*
			3	2.29
>$40,000	50.43 (10.06)	3	1	-.26
			2	-2.28

Note: 1=<$20,000, 2=$20,000-40,000, 3=>$40,000; *$p$<.05.

Table 9. Multiple comparisons post-hoc for participation site on depressive symptoms in full sample

Participation Site	**Depressive Symptoms Mean (SD)**	**(I)**	**(J)**	**Mean Difference (I-J)**
Bronx	47.98 (9.14)	Bronx	Chicago	-.01
			Miami	2.10*
			San Diego	.76
Chicago	47.99 (8.72)	Chicago	Bronx	.01
			Miami	-2.10*
			San Diego	.77
Miami	45.89 (7.54)	Miami	Bronx	-2.10*
			Chicago	-2.10*
			San Diego	-1.33
San Diego	47.22 (8.33)	San Diego	Bronx	-.76
			Chicago	-.77
			Miami	1.33

Note: *p<.05.

Table 10. Psychosocial Correlations

	1	2	3	4	5	6	7	8	9	10	11
1. ARSMA II	1										
2. Poor family function	.05*	1									
3. Friend support	-.05	-.25***	1								
4. Ethnic identity	-.15***	-.28***	.25***	1							
5. ACCSTR	-.08**	.32***	-.14***	-.18***	1						
6. ACCSTR_L	-.27***	.20***	-.11***	-.07**	.66***	1					
7. ACCSTR_A	.03	.26***	-.11***	-.19***	.84***	.33***	1				
8. ACCSTR_D	-.05	.26***	-.12***	-.12***	.73***	.34***	.38***	1			
9. Depression	.02	.31***	-.13***	-.23***	.26***	.10***	.22***	.26***	1		
10. Anxiety	.02	.16**	-.11***	-.08**	.17***	.08**	.16***	.12***	.24***	1	
11. Social desirability	-.15***	-.12***	.05	.07**	.03	.10***	-.03	.04	-.13***	-.12***	1

Note: ARSMA II=Acculturation; ACCTR=Acculturative Stress Total; ACCSTR_L=Language Conflict; ACCSTR_A=Acculturation Conflict; ACCSTR_D=Discrimination Conflict; * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 11. Main effect of acculturative stress on anxiety and depressive symptoms for full sample

	Anxiety Symptoms		**Depressive Symptoms**	
	Δ R^2	**Final β**	**Δ R^2**	**Final β**
Step 1				
Age	.005**	.43	.009***	-.17
Gender (males = 1)	.000	.21	.019***	-2.60
Chicago site	--	--	.008**	2.68
Bronx site	--	--	--	1.71
San Diego site	--	--	--	1.62
Second generation	--	--	.001	.79
Third generation	--	--	--	.93
Social Desirability	.011***	-.47	.027***	-.58
Step 2				
Acculturative Stress	.041***	3.80	.066***	3.94

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

Table 12. Moderation effects for full sample

	Anxiety symptoms		Depressive symptoms	
	Δ R^2	**Final β**	**Δ R^2**	**Final β**
Step 3				
Age	.007**	.62	.000	-.02
Step 3				
Gender	.001	1.37	.001	.83
Step 3				
Parent education (middle)	.002	-1.28	.001	-.53
Parent education (high)	--	-.17	--	-.53
Step 4				
Education (middle) interaction	.000	-.40	.004	-2.08
Parent education (high) interaction	--	-.18	--	.91
Step 3				
Parent income (middle)	.007*	1.78	.000	.05
Parent income (high)	--	-.49	--	.27
Step 4				
Parent income (middle) interaction	.001	1.14	.001	-.59
Parent income (high) interaction	--	.02	--	1.06
Step 3				
Poor family functioning	.008**	2.25	.039***	4.28
Step 4				
Poor family functioning interaction	.000	.15	.003*	1.78
Step 3				
Friend support	.008**	-1.60	.007**	-1.30
Step 4				
Friend support interaction	.000	.48	.000	-.09
Step 3				
Ethnic identity	.002	-.79	.024***	-2.14
Step 4				
Ethnic identity interaction	.001	.78	.000	-.21

Note: *p<.05. ** p < .01. *** p < .001.

Table 13. Main effect of acculturative stress on anxiety and depressive symptoms for first generation youth

	Anxiety Symptoms		**Depressive Symptoms**	
	Δ R^2	**Final β**	**Δ R^2**	**Final β**
Step 1				
Age	.009	.53	.002	-.14
Gender (males = 0)	.000	-.40	.006	-1.36
Chicago site	--	--	.054***	-.74
Bronx site	--	--	--	2.81
San Diego site	--	--	--	3.65
Social Desirability	.011	-.49	.044**	4.26
Step 2				
Acculturative Stress	.039***	3.73	.057***	3.25

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

Table 14. Moderation effects for first generation youth

	Anxiety symptoms		**Depressive symptoms**	
	Δ R^2	**Final β**	**Δ R^2**	**Final β**
Step 3				
Age	.016*	.89	.000	-.11
Step 3				
Gender	.003	2.01	.000	.26
Step 3				
Parent education (middle)	.012	-1.27	.017	-2.43
Parent education (high)	--	1.60	--	-2.27
Step 4				
Education (middle) interaction	.011	-4.89	.036**	-5.56
Parent education (high) interaction	--	-3.60	--	1.17
Step 3				
Parent income (middle)	.005	-1.47	.004	-.22
Parent income (high)	--	-1.28	--	1.67
Step 4				
Parent income (middle) interaction	.013	5.08	.016	2.91
Parent income (high) interaction	--	.37	--	5.19
Step 3				
Poor family functioning	.003	2.05	.039***	3.78
Step 4				
Poor family functioning interaction	.014*	5.52	.000	-.53
Step 3				
Friend support	.025**	-2.73	.011*	-1.40
Step 4				
Friend support interaction	.006	-2.14	.001	.55
Step 3				
Ethnic identity	.001	-.43	.057***	-3.07
Step 4				
Ethnic identity interaction	.014*	-3.13	.003	-1.01

Note: *p<.05. ** p < .01. *** p < .001.

Figure A. Acculturative Stress x Age on Anxiety Symptoms for Full Sample

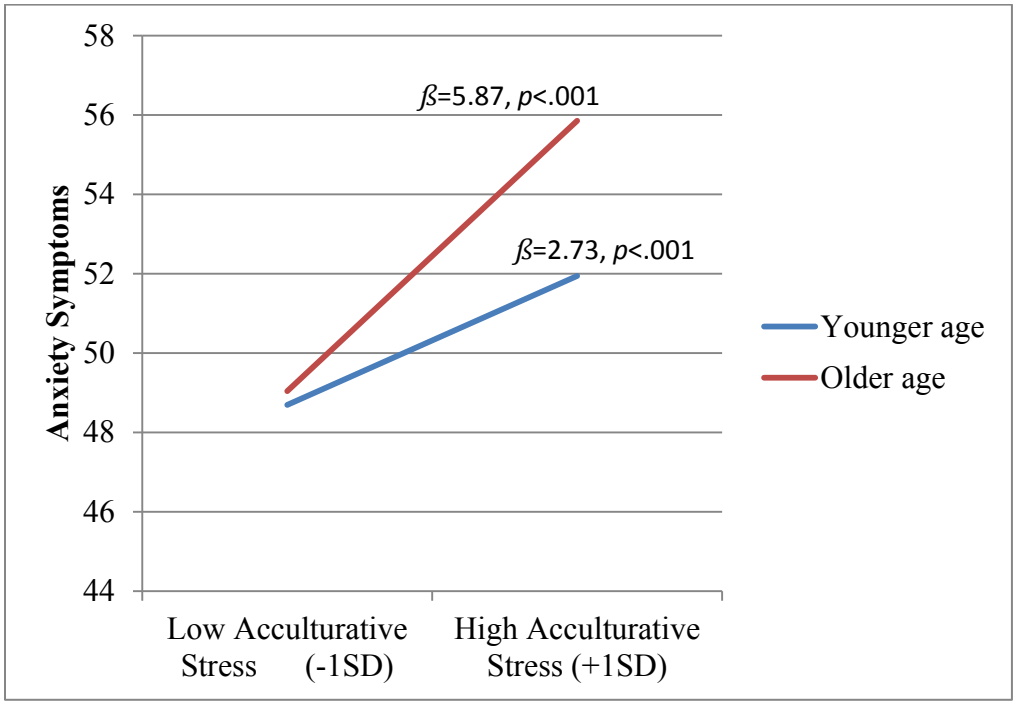


Figure B. Acculturative Stress x Family Functioning on Depressive Symptoms for Full Sample

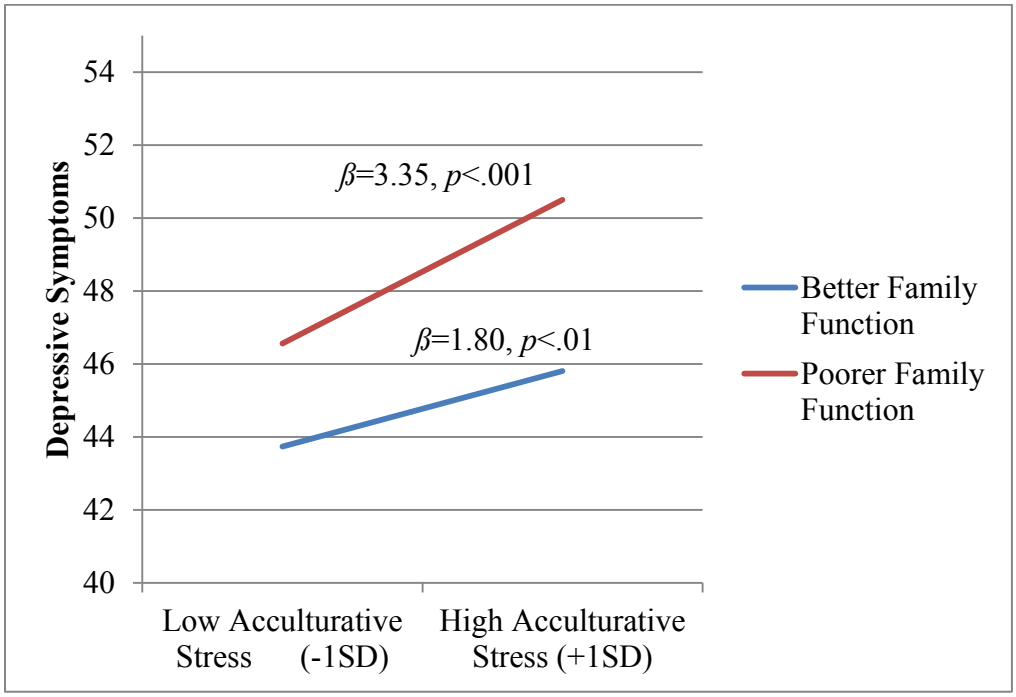


Figure C. Acculturative Stress x Age on Anxiety Symptoms for First Generation Youth

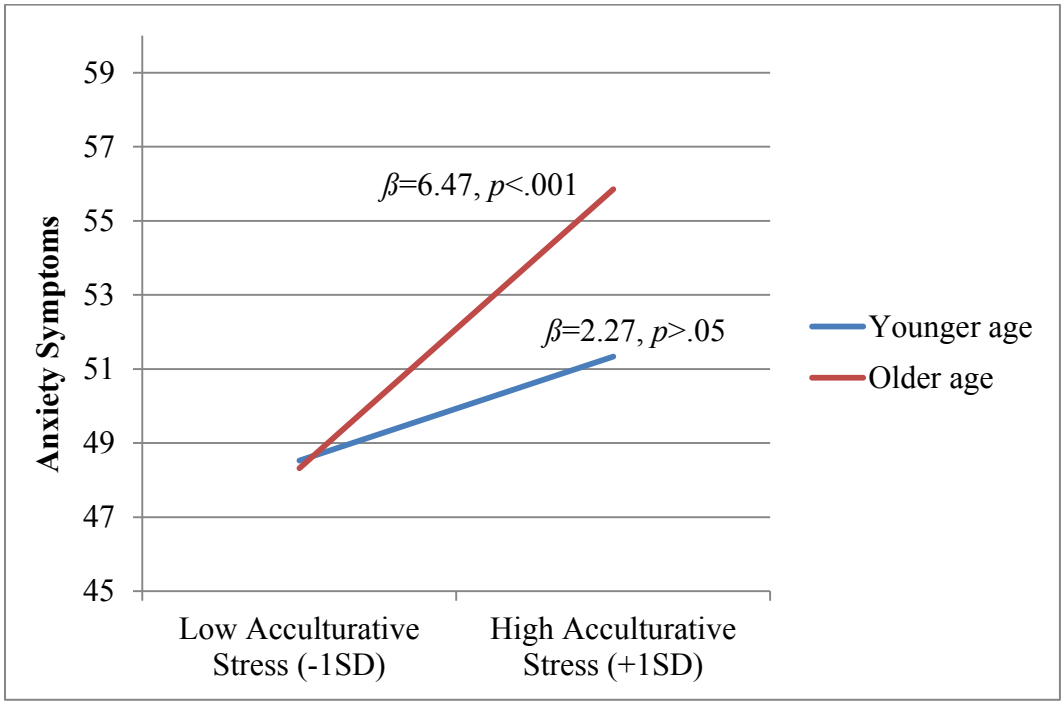


Figure D. Acculturative Stress x Parent Education (middle income vs. low and high income) on Depressive Symptoms for First Generation Youth

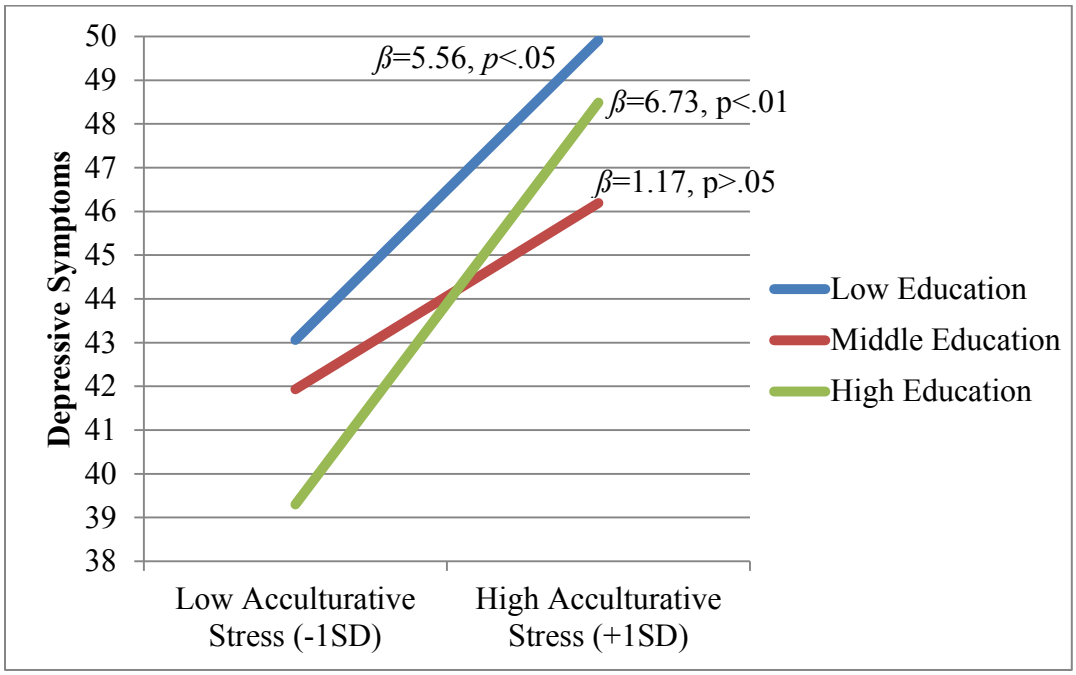


Figure E. Acculturative Stress x Family Functioning on Anxiety Symptoms for First Generation Youth

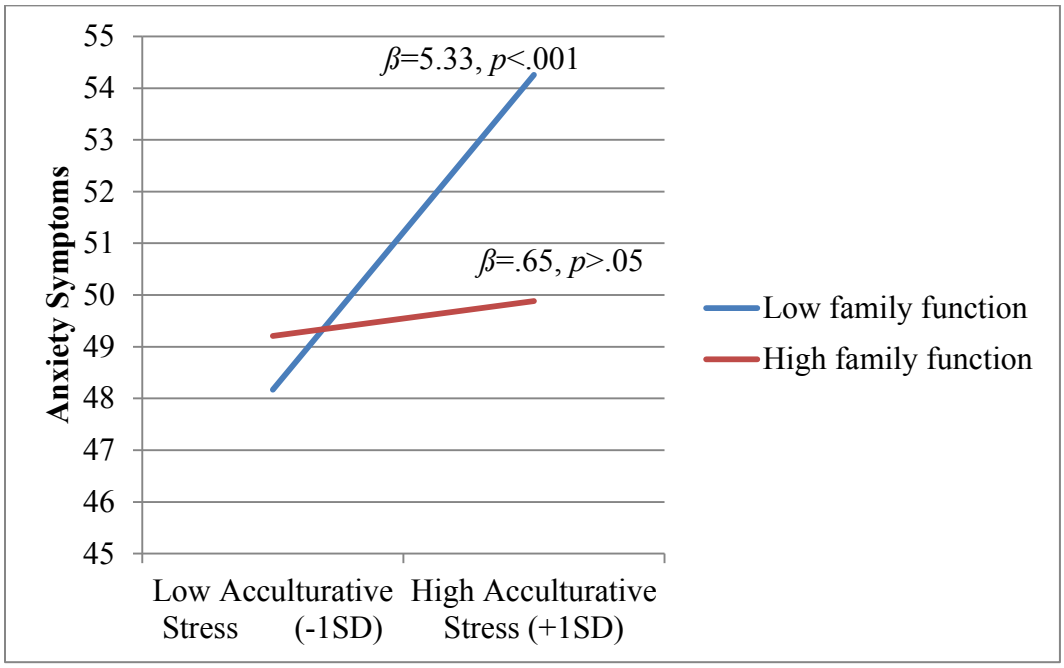
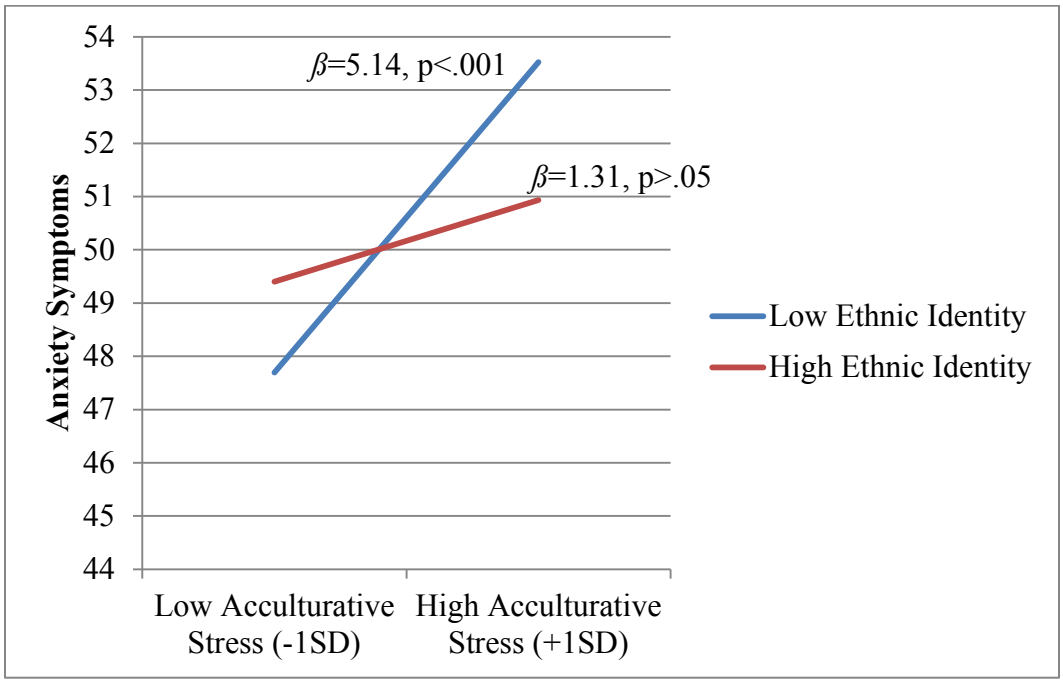


Figure F. Acculturative Stress x Ethnic Identity on Anxiety Symptoms for First Generation Youth



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Appendix A: MASC-10

These questions ask how you have been thinking, feeling, or acting recently. For each item, please circle the answer that shows how often the statement has been true for you. There are no right or wrong answers.
Estas preguntas te preguntan como has estado pensando, sintiendo, o actuando recientemente. Para cada pregunta, encierra en un circulo el numero que muestra que tan a menudo esta declaracion ha sido cierta para ti. No hay respuestas correctas o incorrectas. Solo contesta como te has sentido recientemente.

0=Never true about me/*Nunca es cierto en mi caso*
1=Rarely true about me/*Rara vez es cierto en mi caso*
2=Sometimes true about me/*A veces es cierto en mi caso*
3=Often true about me/*A menudo es cierto en mi caso*
Q=I don't know/refuse to answer/*No se/rehuse a contestar*

1. The idea of going away to camp scares me. *La idea de irme de campamento me asusta.*	0	1	2	3	Q
2. I'm afraid other kids will make fun of me. *Tengo miedo de que otros ninos se vayan a burlar de mi.*	0	1	2	3	Q
3. I try to stay near my mom or dad. *Yo trato de quedarme cerca de mi mama o de mi papa.*	0	1	2	3	Q
4. I get dizzy or faint feelings. *Me mareo o siento que me desmayo.*	0	1	2	3	Q
5. I feel restless and on edge. *Me siento inquieto e impaciente.*	0	1	2	3	Q
6. I feel sick to my stomach. *Me siento enfermo del estómago.*	0	1	2	3	Q
7. I get nervous if I have to perform in public. *Me pongo nervioso/a si tengo que actuar en público.*	0	1	2	3	Q
8. Bad weather, the dark, heights, animals, or bugs scare me./*Me asusta el mal clima, la oscuridad, las alturas,los animals, o insectos.*	0	1	2	3	Q
9. I check to make sure things are safe. *Me aseguro de que las cosas son seguras.*	0	1	2	3	Q

10. I feel shy. *Me siento timido.*	0	1	2	3	Q

Appendix B: CDI

Kids sometimes have different feelings and ideas. This form lists the feelings and ideas in groups. From each group of three sentences, pick one sentence that describes you **best** in the past 2 weeks. After you pick a sentence from the first group, go on to the next group. Remember, pick out the sentence that describes you best in the **PAST TWO WEEKS.**

*Los jóvenes algunas veces tienen distintos sentimientos e ideas. Este formulario agrupa algunos sentimientos e ideas acerca de ti mismo. De cada grupo de tres oraciones, escoge una que te describa mejor durante las **ÚLTIMAS DOS SEMANAS**.*

1. I am sad once in a while/*Estoy triste de vez en cuando*……..…..……0
   I am sad many times/*Estoy triste muchas veces*…..…….……1
   I am sad all the time/*Estoy triste todo el tiempo*……..…….....2

2. Nothing will ever work out for me/*Nada nunca me saldrá bien*…….…..2
   I am not sure if things will work out for me/*No estoy seguro si las cosas me van a salir bien*…….....…….…….....1
   Things will work out for me okay/*Las cosas me van a salir bien (okey)*……..0

3. I do most things OK/*Hago bien la mayoría de las cosas*…….……0
   I do many things wrong/*Hago muchas cosas mal*…….……1
   I do everything wrong/*Todo lo hago mal*…….…….2

4. I hate myself/*Me odio a mí mismo*…….……2
   I do not like myself/*No me quiero a mí mismo*…….……1
   I like myself/*Me quiero a mí mismo*…….……0

5. I feel like crying every day/*Siento ganas de llorar todos los días*…….……2
   I feel like crying many days/ *Siento ganas de llorar muchos días*……1
   I feel like crying once in a while/*A veces tengo ganas de llorar*…….……..0

6. Things bother me all the time/*Las cosas me molestan todo el tiempo*…….……..2
   Things bother me many times/ *Las cosas me molestan muchas veces*……..1
   Things bother me once in a while/*Las cosas me molestan de vez en cuando*……..…0

7. I look OK/*Me veo bien (okey)*...……...…0
   There are some bad things about my looks/*Hay algunas cosas de mi apariencia que no me gustan*……..……1
   I look ugly/*Me veo feo(a)*……...…….……...2

8. I do not feel alone/*Nunca me siento solo*..……...……..0
   I feel alone many times/*Muchas veces me siento solo*…….……..1
   I feel alone all the time/*Todo el tiempo me siento solo*……..……...…….2

9. I have plenty of friends/*Tengo bastantes amigos*…….……..……..0
   I have some friends but I wish I had more/*Tengo algunos amigos pero me gustaría tener más*…….…….……...…..1
   I do not have any friends/*No tengo ningunos amigos*….……..……2

10. Nobody really loves me/*No hay nadie que realmente me quiera*……...…….2
    I am not sure if anybody loves me/*No estoy seguro si alguien me quiere*……...…..1
    I am sure that somebody loves me/*Estoy seguro de que alguien me quiere*.....0

Appendix C: 12-Item Brief ARSMA II

For the next set of questions, please think about your experiences in the US over the past year.
Para la siguiente serie de preguntas, por favor piense acerca de sus experiencias en los Estados Unidos durante el último año.

1=Not at all/*Nunca*
2=Very little/*Muy poco*
3=Moderately/*Moderadamente*
4=Very often/*Muy a menudo*
5=Almost always/*Casi siempre*

1.	I speak Spanish. *Yo hablo español.*	1	2	3	4	5
2.	I speak English. *Yo hablo inglés.*	1	2	3	4	5
3.	I enjoy speaking Spanish. *Me gusta hablar español.*	1	2	3	4	5
4.	I associate with non-Hispanic Americans. *Me asocio con americanos que no son hispanos.*	1	2	3	4	5
5.	I enjoy English language movies. *Me gusta ver películas en inglés.*	1	2	3	4	5
6.	I enjoy Spanish language TV. *Me gusta ver programas en la televisión que sean en español.*	1	2	3	4	5
7.	I enjoy Spanish language movies. *Me gusta ver películas en español.*	1	2	3	4	5
8.	I enjoy reading books in Spanish. *Me gusta leer libros en español.*	1	2	3	4	5
9.	I write letters in English. *Escribo cartas en inglés.*	1	2	3	4	5
10.	My thinking is done in the English language. *Mis pensamientos ocurren en el idioma inglés.*	1	2	3	4	5

11. My thinking is done in the Spanish language. *Mis pensamientos ocurren en el idioma español.*	1	2	3	4	5
12. My friends are of "non-Hispanic" origin. *Mis amigos no son de orígen hispano.*	1	2	3	4	5

Appendix D: How I Think and Feel Scale

1. I like everyone I know. *Me caen bien todas las personas que conozco.*	Yes	No
2. I am always kind. *Siempre soy bondadoso.*	Yes	No
3. I always have good manners. *Siempre tengo buenos modales.*	Yes	No
4. I am always good. *Siempre me porto bien.*	Yes	No
5. I am always nice to everyone. *Siempre soy amable con los demas.*	Yes	No
6. I tell the truth every single time. *Siempre digo la verdad.*	Yes	No
7. I never get angry. *Nunca me enojo.*	Yes	No
8. I never say things I shouldn't. *Nunca digo cosas que no deberia.*	Yes	No
9. I never lie. *Nunca digo mentiras.*	Yes	No

Appendix E: Acculturative Stress

For the next set of questions, please think about your experiences in the US over the past year.
Para la siguiente serie de preguntas, porfavor piense acerca de sus experiencias en los Estados Unidos durante el último año.

1=Not at all/*Nunca*
2=Very little/*Muy poco*
3=Moderately/*Moderadamente*
4=Very often/*Muy a menudo*
5=Almost always/*Casi siempre*

1. How often has it been hard for you to get along with others because you don't speak English well? *¿Con qué frecuencia ha sido difícil para usted llevarse bien con los demás porque no habla buen ingles?*	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
2. How often has it been hard to get good grades because of problems in understanding English? *¿Con qué frecuencia ha sido difícil para usted obtener buenas notas debido a problemas para comprender el inglés?*	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3. How often have you had problems with your family because you prefer U.S. customs? *¿Con qué frecuencia ha tenido problemas con su familia porque prefiere costumbres de los Estados Unidos?*	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
4. How often do you feel that you would rather be more American if you had a choice? *¿Con qué frecuencia siente que preferiría ser más americano/a si pudiera elegir?*	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
5. How often do you get upset at your parents Because they don't know U.S. ways? *¿Con qué frecuencia se enoja con sus padres porque no conocen el modo de vivir en los Estados Unidos?*	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

6. How often do you feel uncomfortable having to choose between non-Hispanic/Latino and Hispanic/Latino ways of doing things? *¿Con qué frecuencia se siente incómodo/a al tener que elegir entre el modo de hacer las cosas de los hispanos/latinos y los no-hispanos/latinos?*	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
7. How often do people dislike you because you are Hispanic/Latino? *¿Con qué frecuencia usted no le agrada a la gente por ser hispano/latino?*	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
8. How often are you treated unfairly at [SCHOOL/WORK] because you are Hispanic/Latino? *¿Con qué frecuencia es tratado/a injustamente en [LA ESCUELA/EL TRABAJO] por ser hispano/latino?*	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
9. How often do you see friends treated badly because they are Hispanic/Latino? *¿Con qué frecuencia ve que sus amigos son tratados mal por ser hispanos/latinos?*	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Appendix F: Family Functioning

1=Strongly agree/*Muy de acuerdo*
2=Disagree/*En desacuerdo*
3=Agree/*De acuerdo*
4=Strongly Agree/*Muy en desacuerdo*

1. Planning family activities is difficult because we misunderstand each other. *Planificar actividades de familia es difícil porque nos malentendemos el uno al otro.*	1	2	3	4
2. In times of crisis we turn to each other for support. *En tiempos de crisis nos apoyamos los unos a los otros.*	1	2	3	4
3. We cannot talk to each other about the sadness we feel. *No podemos hablar entre nosotros sobre la tristeza que sentimos.*	1	2	3	4
4. Individuals are accepted for what they are. *Las personas son aceptadas por lo que son.*	1	2	3	4
5. We avoid discussing our fears and concerns. *Evitamos discusiones sobre nuestros temores y preocupaciones.*	1	2	3	4
6. We express feelings to each other. *Expresamos sentimientos el uno al otro.*	1	2	3	4
7. There are lots of bad feelings in our family. *Hay bastantes sentimientos negativos en nuestra familia.*	1	2	3	4
8. We feel accepted for what we are. *Nos sentimos aceptados por lo que somos.*	1	2	3	4
9. Making decisions is a problem for our family. *Tomar decisiones es un problema en nuestra familia.*	1	2	3	4
10. We are able to make decisions about how to solve Problems. *Somos capaces de tomar decisiones sobre cómo resolver problemas.*	1	2	3	4

11. We don't get along well together. *No nos llevamos bien cuando estamos juntos.*	1	2	3	4
12. We confide in each other. *Confiamos el uno del otro.*	1	2	3	4

Appendix G: Social Support from Friends

How strongly do you agree or disagree with these sentences?
Que tan de acuerdo o en desacuerdo estas con estas oraciones?

1=Strongly disagree/*Muy en desacuerdo*
2=Disagree/*En desacuerdo*
3=Agree/*De acuerdo*
4=Strongly Agree/*Muy de acuerdo*

1. My friends really try to help me. *Mis amigos realmente tratan de ayudarme.*	1 ☐	2 ☐	3 ☐	4 ☐
2. I can count on my friends when things go wrong. *Puedo contar con mis amigos cuando las cosas van mal.*	1 ☐	2 ☐	3 ☐	4 ☐
3. I have friends with whom I can share my joys and sorrows. *Tengo amigos con los que puedo compartir mis alegrias y tristezas.*	1 ☐	2 ☐	3 ☐	4 ☐
4. I can talk about my problems with my friends. *Puedo hablar de mis problemas con mis amigos.*	1 ☐	2 ☐	3 ☐	4 ☐

Appendix H: Ethnic Affirmation and Belonging

Here in the United States there are many groups of people from many different backgrounds or ethnic groups. Now, I am going to read you some statements about your feelings about the ethnic group that you belong to. Please let me know how much you disagree or agree with each statement.
Aquí en los Estados Unidos, hay muchos grupos de personas de muchos orígenes o grupos étnicos diferentes. Ahora, voy a leerle algunas declaraciones sobre sus sentimientos hacia el grupo étnico al que usted pertenece. Por favor dígame que tan de acuerdo o en desacuerdo esta con cada una de ellas.

1=Strongly disagree/*Muy en desacuerdo*
2=Somewhat disagree/*Algo en desacuerdo*
3=Neither disagree or agree/*No estoy ni de acuerdo ni en desacuerdo*
4=Somewhat agree/*Algo de acuerdo*
5=Strongly agree/*Muy de acuerdo*

1. I have a strong sense of belonging to my own ethnic group. /*Tengo un fuerte sentido de pertenencia a mi grupo étnico.*	1	2	3	4	5
2. I feel good about my cultural or ethnic background. *Me siento bien sobre mi origen cultural o étnico.*	1	2	3	4	5
3. I am happy that I am a member of the group I belong to. *Estoy feliz de ser parte del grupo al que pertenezco.*	1	2	3	4	5
4. I feel a strong attachment towards my own ethnic group. *Siento un fuerte apego a mi propio grupo étnico.*	1	2	3	4	5
5. In general, being a member of my ethnic group is an important part of my self-image. *Por lo general, ser miembro de mi grupo étnico es una parte importante de mi imagen personal.*	1	2	3	4	5
6. Being a part of my ethnic group is an important reflection of who I am. *Ser parte de mi grupo étnico es un reflejo importante de la persona que soy.*	1	2	3	4	5

7. I feel that the people in my ethnic group have made major accomplishments and advancements. *Siento que las personas de mi grupo étnico han hecho grandes logros y avances.*	1	2	3	4	5
8. I have a lot of pride in my ethnic group. *Tengo mucho orgullo en mi grupo étnico.*	1	2	3	4	5