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## **Acculturative Stress and Depression among Latinos/As: Investigating the Role of Neighborhood Context**

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ACCULTURATIVE STRESS AND DEPRESSION AMONG LATINOS/AS:  
INVESTIGATING THE ROLE OF NEIGHBORHOOD CONTEXT

by

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Bachelor of Psychology  
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## DEDICATION

To my mom, my dad, and my siblings for your unwavering support, and for always encouraging me to pursue my goals. Thank you for serving as role models, for your kind and loving words and gestures, and for always telling me I can do whatever I put my mind to. None of this would have been possible without you.

Para mi mamá, mi papá y mis hermanos por su apoyo incondicional y por siempre animarme a seguir mis metas. Gracias por ser mis modelos a seguir, por sus palabras y gestos llenos de amor, y por siempre decirme que puedo hacer lo que me propongo. Nada de esto habría sido posible sin ustedes.

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## ABSTRACT

Latinos/as are the fastest growing demographic in the United States (U.S. Census Bureau, 2015). As they encounter U.S. society, Latino/as may experience acculturative stress (Berry, 1997). Empirical evidence suggests that Latinos/as in the U.S. report high rates of depression symptoms (Wassertheil-Smoller et al 2014). Acculturative stress has been strongly associated with depression (Driscoll & Torres, 2013) and research suggests that Latino/as may experience acculturative stress differently depending on their generational status (i.e., how recently they or their parents immigrated to the U.S). There is evidence to suggest that contextual factors such as neighborhood context may influence both acculturative stress processes and mental health outcomes (Vega et al, 2011). The current study examined how two aspects of neighborhood context -neighborhood safety and social cohesion- interacted with acculturative stress and depression among first generation Latino/a immigrants. We utilized secondary data from the National Latino Asian Study (NLAAS). It was found that acculturative stress and neighborhood safety significantly predicted depression symptoms. In addition to assessing the relation between acculturative stress and depressive symptoms with the whole sample, we sought to determine whether acculturative stress was associated with depression symptom severity among a subset of the sample that endorsed at least one symptom of depression. We found that the association did not hold with this subset of the sample. Differences in findings suggest that first generation Latino/a immigrants with high levels of acculturative stress may be at-risk of experiencing depression symptoms. However, once

depression symptoms are reported, acculturative stress may not be as influential in determining depression severity (Hovey, 2000). Moreover, the interaction of acculturative stress, neighborhood safety, and social cohesion did not predict depression symptoms. This may have occurred because other factors that were controlled for, such as SES, race, gender and citizenship status, explained more variance in the model than acculturative stress, neighborhood safety, and social cohesion. Finally, we present implications for research and practice that may be drawn from this study.

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## CHAPTER 1

### INTRODUCTION

Latinos/as currently account for 17% of the U.S. population, and it is expected that by 2060 they will make up more than one quarter of the total U.S. population (U.S. Census Bureau, 2015). They are the fastest growing sociodemographic group in the United States. According to data from the U.S. Census Bureau (2015), by 2060 the Hispanic population is expected to increase by 115%. Moreover, there is a record 42.2 million immigrants living in the U.S., making up 13.2% of the nation's population. This represents a fourfold increase since 1960, when only 9.7 million immigrants lived in the U.S., accounting for just 5.4% of the total U.S. population (Pew Research Center, 2016). By force of numbers alone, research that focuses on the needs, strengths and factors contributing to the mental health and well-being of first generation Latinos/as in the U.S. is crucial.

Supporting this research need, empirical evidence suggests that Latinos/as in the U.S. report high rates of depression symptoms (Bromberger, Harlow, Avis, Kravitz & Cordal, 2004; Wassertheil-Smoller et al., 2014). Research suggests that depression symptoms among Latinos/as may be associated with factors such as socioeconomic status, education, time of immigration, neighborhood characteristics, acculturation and acculturative stress (Cuellar & Roberts, 1997; Mair, Roux & Galea, 2008; Romero, Ortiz, Finley, Wayne & Lindeman, 2005; Torres, 2010). Although some studies point to

resilience and protective factors among the Latino/a community, much of the research on Latinos/as focuses on risk factors associated with well-being. For example, studies have pointed out Latino/as are at elevated risk for using alcohol, tobacco, or other drugs on a weekly basis, and reporting depressive mood (Costello, Sewndsen, Rose & Dierker, 2008; Hovey & King, 1996; Perez-Stable, Marín & Marin, 1994; Umaña-Taylor & Updegraff, 2007).

Traditionally, minority populations, such as Latinos/as in the U.S., have been subjects of research under a cultural deficit model (Akerlund & Cheung, 2000; Harry & Klingner, 2007; Yosso, 2005). Stemming from the field of education, research under the deficit model tends to highlight the differences of minority groups and states that these groups are different from the majority culture in important ways (Harry & Klingner, 2007). Literature that focuses on risk factors and deficits can be stigmatizing and contribute to negative stereotypes (Dixon & Rosenbaum, 2004). Additionally, the cultural deficit model overlooks the strengths of Latinos/as. Focusing solely on risk factors may represent a missed opportunity to incorporate important information into the conceptualization of factors associated with depression among Latinos/as. One factor that may influence depression symptoms is neighborhood context. There is evidence to suggest that neighborhood factors, such as social cohesion and neighborhood safety may buffer the relation between acculturative stress and depression (Kim, 2008).

Questions remain regarding the experiences and issues faced by Latinas/os as they encounter American culture, especially first generation immigrants. Moreover, more evidence is needed around factors that might be protective of Latino/a well-being and that highlights their strengths. Thus, we conducted a study that explores the relations among

acculturative stress, neighborhood context and depression among Latino/a adults.

Specifically, examined neighborhood context as a moderator between acculturative stress and depression.

### **1.1 Depression among Latinos/as in the U.S.**

Given that rates of depression contribute to the global burden of disease and that it affects people of all communities across the world, the World Health Organization has categorized depression as a global public health concern (Marcus, Yasamy, Ommeren, Chisholm & Saxena, 2012). Depression is a serious disorder that affects individuals of all backgrounds. Symptoms of depression include anhedonia (i.e., loss of pleasure), sadness, irritability, sleep disturbances, and difficulty engaging in ordinary tasks, among others (American Psychiatric Association, 2013). It is reported that one in ten people in the U.S. experiences depression. Moreover, over 80% of people that have symptoms of clinical depression are not receiving any specific treatment. The rate of individuals diagnosed with depression increases by 20% every year (Pratt & Brody, 2014).

It has been documented that Latinos/as in the U.S. report high rates of depression (Alegría, Mulvaney-Day, Torres, Polo, Cao & Canino, 2007). The Hispanic Community Health Study/Study of Latinos is the most thorough study of Latinos/Hispanics to date. It consists of a probability sample of 161,415 Latino/a persons aged 18 to 74 (Wasserheil-Smoller et al., 2014). These authors found that prevalence of depression among Latinos/as is 27% compared to 7.6% in the overall population (Pratt & Brody, 2014; Wasserheil-Smoller et al., 2014). This rate is influenced by several factors like gender and country of origin. For example, it was lowest among participants of Mexican origin (22.3%) and highest among Puerto Ricans (38%), even after controlling for demographic,

lifestyle and comorbid conditions. Similar to rates in the general population, women were more likely than men to report high symptoms of depression (32.8% vs. 20.7%) (Wassertheil-Smoller et al., 2014).

These findings are in line with the Study of Women's Health Across the Nation (SWAN) that looked at the prevalence of depression among women in the U.S. (Bromberger et al., 2004). The Study of Women's Health Across the Nation evaluated 3302 women aged 42 to 52 from multiple ethnic backgrounds and locations across the U.S. Findings revealed that Hispanic women had the highest odds of reporting high scores of depressive symptomatology, even after controlling for socioeconomic status, level of education, and age. Additionally, Liang, Xu, Quiñones, Bennet and Ye (2011) found that Hispanics have different trajectories across time when it comes to depressive symptoms. In their study, Liang et al. (2011) identified six major trajectories for depression: (1) minimal depressive symptoms, (2) low depressive symptoms, (3) moderate and stable depressive symptoms, (4) high but decreasing depressive symptoms, (5) moderate but increasing depressive symptoms, and (6) persistently high depressive symptoms. Overall, they found that Hispanics were more likely to belong in trajectories with elevated depressive symptoms when compared to non-Latino whites (Liang et al., 2011).

In brief, Latino/as report high rates of depression and there is evidence to suggest significant disparities when comparing this population to other groups. Some studies suggest that Latinos/as are less than half as likely as whites to receive treatment for depression (Lagomasino, Dwight-Johnson, Miranda, Zhang, Liao, Duan & Wells, 2005). Thus, it is critical to explore the factors associated with depression among these

individuals to inform treatment and intervention. Scholars suggest that acculturative stress is an important contributing factor for depression among Latinos/as.

## **1.2 Acculturation and Acculturative Stress**

Acculturation is often associated with the study of the Latino/a population. Acculturation was originally conceptualized by Gordon (1964) as a “unidimensional process in which retention of the heritage culture and acquisition of the receiving culture were cast as opposing ends of a single continuum” (Schwartz et al., 2010, p. 239). The study of acculturation has greatly evolved and can now be understood as the process of adapting and navigating cultures as an individual encounters a new society (Organista, Organista & Kurasaki, 2003). Acculturation has also been associated with acculturative stress (Torres, 2010; Torres, Driscoll & Voell, 2012). Some authors suggest that acculturative stress is the pressure to adapt to the majority culture that is not one’s own, or the stress that comes from the process of acculturation (Berry, 1997). However, these early explanations don’t account for some of the nuances that occur within the phenomenon of acculturative stress. Moreover, they only focused on the acquisition of behaviors and cognitions from the host culture and not maintaining practices from one’s heritage culture (Rodriguez, Myers, Mira, Flores & Garcia-Hernandez, 2002; Sarmiento & Cardemil, 2009).

Given the limitations of previous conceptualizations, several authors have more recently proposed that acculturative stress stems from pressures individuals may face when navigating two cultures (Driscoll & Torres, 2013; Rodriguez, Flores, Flores, Myers, & Vriesema, 2015; Rodriguez et al., 2002). As Latinos/as encounter U.S. culture, they may face different challenges, such as acquiring a new language, navigating a different

system, and building sources of support (Rodriguez et al., 2015). These events shape a way of living for Latinos/as. In daily interactions, Latinos/as may feel pressured to adapt. This pressure to adapt can be shown in demands to learn English, adapt to the American way of doing things, or difficulty fitting in with the majority group. On the other hand, Latinos/as may also face demands from their heritage culture to maintain certain behaviors, like speaking Spanish or practicing Hispanic/Latino customs (Driscoll & Torres, 2013; Rodriguez et al., 2002).

The study of acculturative stress has revealed evidence to suggest its relation to depression and many other mental health outcomes; for the purposes of this study we focused only on depression.

### **1.3 Acculturative Stress and Depression**

There is a strong body of literature that associates acculturative stress with depression (D'Anna-Hernandez, Aleman & Flores, 2015; Driscoll & Torres 2013; Sarmiento & Cardemil, 2009; Torres, 2010; Torres, Driscoll & Voell, 2012; Zeiders, Umaña-Taylor, Updegraff & Jahromi, 2015). Among pregnant Mexican women, depressive symptoms have been associated with acculturative stress; specifically, women who experienced greater acculturative stress reported significantly elevated depressive symptoms during pregnancy (D'Anna-Hernandez, Aleman & Flores, 2015). Moreover, authors have found that adherence to Mexican values, such as familism, respect, religion, and traditional gender roles, protected against the negative effects of acculturative stress on maternal depression. The opposite was true for mainstream or American values such as material success, independence, self-reliance, competition and personal achievement (D'Anna-Hernandez, Aleman & Flores, 2015).



Driscoll and Torres (2013) also found a relation between acculturative stress and depression among Midwestern Latino/a adults. The authors utilized a stress and coping framework in which active coping is defined as applying one's own resources to deal with a stressful situation (Zeidner & Endler, 1996). Driscoll and Torres (2013) found that active coping partially mediates the relation between acculturative stress and depression. Their findings suggest that lowered active coping significantly contributes to the relation between acculturative stress and depression among Latino/as (Driscoll & Torres, 2013).

Few studies have explored the association between acculturative stress and depression among Latino/a families. Sarmiento and Cardemil (2009) studied Latino/a heterosexual couples living in Massachusetts. Their sample consisted of 80 first-generation immigrants from 11 different Latin American countries. The authors found that, among women, acculturative stress and poor family functioning (e.g., difficulties making decisions as a family, few displays of affection, unclear family boundaries) contribute to higher depression symptoms. These findings suggest that family dynamics contribute to Latino/a well-being. However, the authors acknowledge that there may have been instrumental or external factors (e.g., language barriers, lack of insurance, lack of services) that contributed to these findings (Sarmiento & Cardemil, 2009).

Taken together, these findings suggest that there is a relation between depression and acculturative stress for Latino/as of different backgrounds (D'Anna-Hernandez, Aleman & Flores, 2015; Driscoll & Torres, 2013). Most studies have been carried out with youth, but few with adults (Sarmiento & Cardemil, 2009; Zeiders, Umaña-Taylor, Updegraff & Jahromi, 2015). Additionally, the factors that contribute to this relation are still unclear, and external factors such as neighborhood context remain unexplored.

Specifically, studies often fail to include factors that may explain the relation between acculturative stress and depression. Evidence suggests that one important factor to consider is neighborhood context.

#### **1.4 Neighborhood Context as a Protective Factor**

Authors suggest that if we wish to understand why some groups are healthier than others, we must consider social factors for explanations (Kawachi & Berkman, 2003). Research in the ecological tradition that shifts away from focusing on individual characteristics suggests that there may be a link between health issues, such as depression, and external factors, such as neighborhoods (Duncan, Duncan, Okut, Strycker, Hix-Small, 2003; Haines, Beggs, Hurlbert, 2011; Mair, Diez-Roux & Galea, 2015). There are numerous ways of defining a neighborhood. One way can be characterized by physical markers, such as a group of blocks or buildings, a group of houses guarded by a gate, or sign or the name of a street. Morenoff, Sampson and Raudenbush (2001) reflect on how the modern notion of a neighborhood goes well beyond physical borders or markers. Networks are likely to surpass traditional physical markers and thus social interactions may not always be neatly contained within said boundaries (Ansari, 2013). Two features of the neighborhood context, namely neighborhood social cohesion and neighborhood safety, have recently gained attention in the literature.

The sociology field has studied social cohesion within neighborhoods as a key factor to understand how neighborhoods affect mental and physical health (Rios, Aiken & Zautra, 2012). Social cohesion refers to the degree of connectedness and trust among neighbors; some authors have also used the term “sense of community” to conceptualize

social cohesion (Alegria et al., 2007; Kawachi & Berkman, 2014; Kim et al., 2013).

Social cohesion also refers to social bonds among people that contribute to continuous participation and group formation (Rios, Aiken & Zautra, 2012).

Social cohesion is closely related to social capital, which refers to features of social structures (e.g., levels of interpersonal trust and norms of reciprocity and mutual aid) which act as resources for individuals and facilitate collective action (Kawachi & Berkman, 2014). While economic capital may be in people's bank accounts or properties, social capital resides in social networks that allow people to build relationships. Social capital also works as a form of social control (Ansari, 2013; Sampson, Raudenbush & Earls, 1997; Sampson, 2003). Broadly, social control allows the members of a community to accomplish shared goals and to regulate behavior according to desired and established communal norms to ensure the general well-being of its members (Ansari, 2013).

Evidence suggests that neighborhoods characterized by trust, mutual aid, and support among residents might promote pathways for positive health outcomes (Cattell, 2001; Echeverría et al., 2008; Gee and Payne-Sturges, 2004; Hong, Zhang & Walton, 2014; Kawachi and Berkman, 2000; Mulvaney-Day, Alegria & Sribney, 2007; O'Campo, Salmon & Burke, 2009). Some studies suggest that social cohesion may provide emotional support and a climate that encourages enhanced mental health via positive psychosocial processes (Kawachi & Berkman, 2000). Social cohesion may also promote healthy norms of living, such as encourage physical activity, and a healthy diet (Hong et al, 2014; Kawachi & Berkman, 2000). The theoretical importance of social cohesion is supported by an emerging literature that empirically examines its relation to various

mental health outcomes, including anxiety, depression, general mental health status, and self-rated mental health (Cutrona et al., 2000; Mair et al., 2010; McCulloch, 2001; Mulvaney-Day et al., 2007).

Assessing neighborhood safety is also important in the study of neighborhood context. Kaplan and Kaplan (2003) suggest that individuals who don't perceive their neighborhoods as safe may be less likely to engage with their neighbors and utilize physical resources available to them (e.g., parks, sidewalks). For example, the Broken Windows Theory postulates that small indicators of public disorder (e.g., graffiti, gang presence) may lead to negative health outcomes and overall urban decay. If a window is broken in a neighborhood house, and it isn't promptly fixed, this may be a symptom of disorganization, lack of resources, and poor social cohesion. This theory also suggests that one marker of disorder will lead to others (Sampson & Raudenbush, 2004).

Research also suggests that neighborhood problems may be a source of chronic stress that can contribute to poor mental health outcomes (Kim, 2008). Similarly, a poor perception of neighborhood safety may limit the extent to which individuals can be physically active in their area of residence, and thus decrease physical activity levels necessary to maintain health (Macera, 2003). For example, authors suggest that individuals who fear being robbed, attacked, or physically injured are less likely to report walking for pleasure, exercise, or transportation (Ross, 2000).

However, little is known about how these neighborhood-level variables operate for Latinos. This is also particularly complex given the broad experiences of community influences for this diverse group. For example, for recent immigrants, help-seeking and health care patterns may be primarily influenced by experiences in their country of origin

and not their current social context (Alegria et al., 2007; Portes, Kyle, & Eaton, 1992). Moreover, little is known about how neighborhood context influences health outcomes in latter generations. The current study addresses these gaps in the literature by exploring how neighborhood context, specifically social cohesion and neighborhood safety, may influence the wellbeing of Latino/a immigrants.

### **1.5 The Current Study**

As the Latino/a population grows in the U.S. (U.S. Census Bureau, 2015), they may experience acculturative stress which may in turn be a predictor for depression symptoms (Driscoll & Torres, 2013; Torres, 2010). A factor that may be associated with this relation is neighborhood context; there is evidence to suggest that neighborhood context may be a buffer between acculturative stress and depression. However, little is known about neighborhood context as a protective factor for depression among first generation Latino/as.

Given that acculturative stress is strongly associated with depression among the Latino/a population, the current study aimed to confirm whether the association between acculturative stress and depression that has been reflected in the literature holds for this sample. We also explored the relations among neighborhood social cohesion, neighborhood safety, and depression. Moreover, this study explored whether neighborhood social cohesion, and neighborhood safety act as a buffer between acculturative stress and depression among first generation Latinos/as. Findings from the present study are expected to contribute to the literature on depression among first generation Latino/as. Results could also elucidate some factors that might protect Latino/as from higher levels of depression, like neighborhood social cohesion and

neighborhood safety. Understanding these factors might inform systematic forms of intervention, such as working with Latino/a communities to promote cohesiveness and social support.

Specific research questions and hypotheses for this study are as follows:

**Research Question 1a:** Is acculturative stress associated with depression among first generation Latino/a adults in the U.S.?

**Hypothesis 1a:** Higher levels of acculturative stress will be related to higher levels of depression among first generation Latino/a adults in the U.S.

**Research Question 1b:** Is social cohesion associated with depression among first generation Latino/a adults in the U.S.?

**Hypothesis 1b:** Higher levels of social cohesion will be related to lower levels of depression among first generation Latino/a adults in the U.S.

**Research Question 1c:** Is neighborhood safety associated with depression among first generation Latino/a adults in the U.S.?

**Hypothesis 1c:** Higher levels of neighborhood safety will be related to lower levels of depression among first generation Latino/a adults in the U.S.

**Research Question 2a:** Does neighborhood social cohesion moderate the relation between acculturative stress and depression among first generation Latino/a adults in the U.S.?

**Hypothesis 2a:** Higher levels of social cohesion will buffer the impacts of acculturative stress on depression among first generation Latino/a adults in the U.S.

**Research Question 2b:** Does neighborhood safety moderate the relation between acculturative stress and depression among first generation Latino/a adults in the U.S.?

**Hypothesis 2b:** Higher levels of neighborhood safety will buffer the impacts of acculturative stress on depression.

**Exploratory Question 3:** Do neighborhood social cohesion and neighborhood safety interact to moderate the relation between acculturative stress and depression among first generation Latino/a adults in the U.S.?

**Hypothesis 3:** An interaction between higher levels of neighborhood safety and higher levels of social cohesion will buffer the impacts of acculturative stress on depression.

## CHAPTER 2

### METHODS

#### 2.1 Overview

Analyses were conducted using data from the National Latino Asian American Study (NLAAS). Data is publicly available through the Inter-University Consortium for Political and Social Research (ICPSR). The NLAAS sought to better understand the intra and inter group ethnic and racial differences linked to psychiatric disorders and service use. The NLAAS collected cross-sectional data from both Latino and Asian American populations. For the current study, we conducted analysis using only the data collected from Latino/a respondents. Data collection took place between May 2002 and December 2003.

The NLAAS utilized a sample of Latinos/as 18 years and older residing in the United States (Alegría et al., 2007). Latino/a participants consisted of 2,554 respondents; first generation participants consisted of 1,630 respondents. A stratified probability design was implemented to attain a nationally representative sample of Latino/as. The weighted sample was similar in terms of gender, age, educational level, marital status, and geographic distribution to the 2000 U.S. census. However, the NLAAS sample included more U.S. immigrants and more individuals with low income; this was in part due to increased access to undocumented Latino/a populations (Alegría et al., 2007). Detailed information on the NLAAS protocol for data collection has been documented by Alegría et al. (2004) and Heeringa et al. (2004)



## **2.2 Participants**

We utilized data from 1,630 first generation immigrants not born in the U.S. mainland. Participants in the current study were 724 females and 906 males (55.6%); mean age was 43 years old ( $SD=15.83$ ). In terms of ancestry/racial identification, 217 were Puerto Rican, 501 Cuban, 488 Mexican, and 424 were classified in the Other Hispanic/Latino subcategory. Respondents in the Other Hispanic/Latino subcategory include participants whose ancestry or origin was from Colombia, the Dominican Republic, El Salvador, Ecuador, Guatemala, Honduras, Peru, and Nicaragua. Median annual household income was \$27,000 ( $M=\$40,647$ ;  $SD=43,244$ ). More information about participants' demographic characteristics can be found in Table 3.1.

## **2.3 Procedure**

The sample frame or sample universe for the NLAAS were Latino/a American, Asian American, and non-Latino/a, non-Asian White American adults aged 18 and older residing in households located in the United States and the state of Hawaii. A 4-stage probability sample design was implemented, which included: (1) U.S. metropolitan statistical areas and counties; these are areas with high population density, (2) area segments; these are census blocks or combinations of census blocks with a minimum number of households, (3) housing units, selected by field staff, in area segments, and (4) screening interview to classify persons by domain (Heeringa et al., 2004). The overall response rate was 75.5%. The sample is distributed with 25.6% participants from the Northeast region, 6.4% from the Midwest region, 40.8% from the South region, and 27.2% from the West region.

Potential participants were first provided with a brochure and letter of

introduction in Spanish and English. Following consent procedures, trained professionals screened and interviewed participants about mental health and mental health-related matters (Lueck et al., 2011; Heeringa et al., 2004). Interviewers were of similar cultural and linguistic backgrounds as participants. During the data collection phase, respondents were asked whether they spoke English, some English, or no English. Participants who spoke some English or no English were interviewed in Spanish. Individuals who were fluent in English and Spanish, thus considered bilingual, were randomly interviewed in either language (Alegría et al., 2007). All measures were administered via face-to-face interviews carried out with computer-assisted software. Each interview lasted an average of 2.4 hours. Written consent was obtained from all participants in their language of choice. All recruitment, consent and interview procedures were approved by the Institutional Review Boards of the Cambridge Health Alliance, the University of Washington, and the University of Michigan. Data was later analyzed utilizing SPSS, Version 24 (IBM Corp., 2013).

## **2.4 Measures**

**2.4.1 Measure adaptation.** The NLAAS instruments were available in English and Spanish. All measures were translated from English into Spanish with standard translation and back-translation techniques. This was accomplished by translating the measures from English to Spanish, then having them translated back into English to check for equivalency in the domains of content, semantic structure, criterion and conceptual equivalence, and technical equivalence. Translation procedures included the use of cultural idioms in Spanish that applied to the different ethnic groups under study. This included using words that were understood by different Latino/a subgroups under

study. Interviewers used a list of equivalent words as a tool to adapt certain language nuances to each subgroup. This procedure ensured that the same theoretical concept was being measured across groups (Alegría et al., 2009; Lueck & Wilson, 2011).

**2.4.2 Acculturative Stress.** Acculturative Stress was assessed using a 10-item scale that measures cultural change as a result of immigrating to the United States (Gee et al., 2007; Cervantes et al., 1990). The measure was adapted from the Mexican American Prevalence and Services Survey (Vega et al., 1998) and the Hispanic Stress Inventory (Cervantes et al., 1990). Items include “Do you feel guilty for leaving family or friends in your country of origin?”; “Do you avoid seeking health services due to fear of immigration officials?”. This scale has been mainly used to operationalize acculturative stress with Mexican American populations (Alegría et al., 2004; Finch, Hummer, Kolody & Vega, 2001). The scale had dichotomous response categories of yes (1) or no (5). Previous studies have found Cronbach’s alphas of 0.61 when the scale was administered in English, and of 0.70 when the scale was administered in Spanish (Alegría et al., 2004). High scores in this scale depict higher levels of acculturative stress, while low scores imply the opposite. The internal consistency reliability coefficient for the current study was  $\alpha = 0.61$ .

**2.4.3 Neighborhood Context.** Neighborhood Context was measured using the Social Cohesion Scale and the Neighborhood Safety Scale. The Social Cohesion scale is a 4-item scale and asks whether people in the neighborhood can be trusted and get along with each other (Sampson, Raudenbush & Earls, 1997). The 4 response categories ranged from very true (1) to not at all true (4). Minimum and maximum scores are 4 and 16 respectively. Items included “People in this neighborhood can be trusted”, “People in this

neighborhood generally get along with each other”, “I have neighbors who would help me if I had an emergency”, and “People in my neighborhood look out for each other”. Simple additive scores were calculated for this measure. In the original scale, higher scores indicated a lesser degree of social cohesion than lower scores. For clarity and ease of interpretation, we reversed scores to reflect higher scores to higher levels of social cohesion. Previous studies have found Cronbach’s alphas of 0.81, both when the scale was administered in English, and in Spanish (Alegria et al., 2004). The internal consistency reliability coefficient for the current study is  $\alpha = 0.81$ .

The Neighborhood Safety scale is a 3-item measure that evaluates the respondent’s perceived level of neighborhood safety and neighborhood violence (Alegria et al., 2004). Response categories also ranged from very true (1) to not at all true (4). Items were modified from the National Longitudinal Study of Adolescent Health (Resnick et al., 1997). Items included “I feel safe being out alone in my neighborhood during the night”, “People often get mugged, robbed or attacked in my neighborhood”, and “People sell or use drugs in my neighborhood”. The latter two items were reverse scored. High scores in this scale depict higher levels of neighborhood safety, while low scores imply the opposite. Previous studies have found Cronbach’s alphas of 0.75 when the scale was administered in English, and of 0.70 when the scale was administered in Spanish (Alegria et al., 2004). Simple additive scores were calculated for this measure. The internal consistency reliability coefficient for the current study is  $\alpha = 0.75$ .

**2.4.4 Depression.** Depression was measured using the World Health Organization Composite International Diagnostic Interview (WMH-CIDI). The CIDI was designed to be used by trained interviewers who are not clinicians (Kessler, Andrews, Mroczek,

Ustun, Hans-Ulrich, 1998). The CIDI can generate diagnoses according to definitions from eight DSM-IV syndromes (American Psychiatric Association, 1994). These include: major depressive episodes (MD), generalized anxiety disorder (GAD), simple phobia (SiP), social phobia (SoP), agoraphobia with or without panic (AG), panic attacks (PA), alcohol dependence (AD), and drug dependence (DD) (American Psychiatric Association, 1994). Studies suggest that there may be cultural differences in the diagnosis and classification of depression; however, it has also been suggested that cultural equivalence was reached on this measure (Nicklet & Burgard, 2009).

Section A (questions A1 through A9) of the CIDI measure for Major Depression (MD) is designed to classify respondents according to the criteria of a DSM-IV major depressive episode (American Psychiatric Association, 1994). This section consists of six main questions, and 14 secondary questions. There are two ways to meet the diagnostic stem requirement for MD: either to endorse all questions about having two weeks of dysphoric mood or to endorse all questions about having two weeks of anhedonia. Each series requires the respondent to report two weeks of this symptom lasting at least most of the day, at least almost every day. Either denying the existence of the symptom or denying persistence leads to a skip-out and the respondent receives a probability of caseness equal to zero. If the respondent endorses either the dysphoric or the anhedonia stem series, an additional fourteen symptom questions are asked regarding: losing interest, feeling tired, change in weight, trouble with sleep, trouble concentrating, feeling down, psychomotor agitation or retardation, feelings of worthlessness, and thoughts about death. The respondent's depression symptom count is then calculated as the sum of positive responses to each of these fourteen symptom questions. Some symptoms include

two questions regarding changes in behavior, these are counted as one point in the final symptom count which ranges from 0 to 9 (American Psychiatric Association, 1994; Nelson, Kessler & Mroczek, 2002); we used this symptom count as a continuous variable for depression symptoms. Higher scores indicate higher probability of an individual being diagnosed with MD.

The validity of the CIDI diagnostic assessment in the current study was consistent with those obtained independently in other studies by trained clinical interviewers (Wittchen, 1994). Internal consistency reliability coefficient analyses were not appropriate to carry out given that this is considered a symptom count. Moreover, previous studies that compare the CIDI MDD subscale to the Center for Epidemiologic Studies Depression Scale (CESD), suggest that the CIDI may be a more sensitive measure when determining a Major Depression Disorder diagnosis than the CESD. The CESD may be a broader, more heterogeneous measure of negative mood or emotional distress than a measure of depressive affect alone (Fisher et al, 2007).

## CHAPTER 3

### RESULTS

#### **3.1 Power Analysis**

Post-hoc power analysis was conducted to determine whether analyses were adequately powered to identify the effects of interest. The power analysis was conducted with the software G\*Power (release 3.1.9.2; Faul, Erdfelder, Lang, & Buchner, 2009). These analyses were conducted in relation to the interaction term associated with the multiple linear regression of research question 3A. This was used as an estimate of the lower bound of power requirements given that this model required the most power to detect an effect. Given a sample size of 1,630 participants, alpha of 0.05, and assuming  $d=0.8$ , adequate power was achieved to detect large effect sizes. Power to detect a large effect size was also adequate for analyses carried out with a subset of the sample that consisted of 349 participants.

#### **3.2 Missing Data**

Less than 20% of the final sample contained missing data. Some cases were deleted due to missing data; the number of such cases was six. We utilized standard listwise deletion in cases with missing data. The PROCESS for SPSS macro automatically performs listwise deletion when missing values are found (Hayes, 2013). These procedures for handling missing data are consistent with current best practices and have been shown to decrease the potential impact of bias on results (Enders, 2010; Graham, 2009; Schafer & Graham, 2002).

### 3.3 Descriptive Statistics and Correlations Among Study Variables

Frequencies and distributions for all categorical demographic characteristics are presented in Table 3.1. Demographic characteristics, means and standard deviations for all continuous demographic variables are presented in Table 3.2. Mean scores for acculturative stress were 2.58 (SD=1.78); scores ranged from 0 to 9. Scores for neighborhood social cohesion ranged from 1 to 16; mean score for this scale was 11.86 (SD=3.17). Neighborhood safety scores ranged from 1 to 12, mean score for this scale was 8.99 (SD=2.74). Finally, 21.5% of respondents reported at least one depression symptom; the overall depression symptom count showed an average of 1.41 (SD=2.84, range: 0-9).

There were several predictor variables that were significantly correlated with the outcome variable as well as the moderator variables (see Table 3.2). As expected, acculturative stress was positively correlated with depression symptoms; as acculturative stress increased so did depression symptoms ( $r=.09$ ;  $p<.05$ ). Another correlation that provided expected outcomes was the negative correlation between acculturative stress and neighborhood social cohesion ( $r=-.13$ ;  $p<.05$ ); that is, as acculturative stress increased, social cohesion decreased. Acculturative stress was also negatively associated with neighborhood safety ( $r=-.14$ ;  $p<.05$ ), which means that as acculturative stress increased, perception of neighborhood safety decreased; this was also the expected result for this analysis. Neighborhood safety was negatively correlated with depression symptoms ( $r=-.11$ ;  $p<.05$ ); in this case, as neighborhood safety decreased, depression symptoms increased. This was also an expected outcome. One finding that was not expected was the non-significant correlation among neighborhood social cohesion and



depression symptoms ( $r=-.20$ ;  $p>.05$ ); we expected that lower neighborhood social cohesion would be related to higher levels of depression symptoms. Finally, moderator variables neighborhood social cohesion and neighborhood safety were positively correlated ( $r=.47$ ;  $p<.05$ ); as social cohesion increased so did neighborhood safety. We expected this finding.

### **3.4 Covariates**

Pearson correlations were conducted to explore the relation between the continuous variables age and household income and all study variables. Significant correlations were found among all study variables, age, and household income. One-way ANOVA was also conducted to explore the effects of the categorical variables of age at immigration, sex, citizenship status, and race/ancestry on study variables and determine whether these should be used as covariates. Results yielded from these analyses led us to utilize age, household income, sex, race/ancestry, and citizen status as control variables. Results from these analyses can be found in Tables 3.2 and 3.3.

### **3.5 Assumptions of Regression**

The assumptions of multiple regression—linearity, homoscedasticity and multicollinearity—were assessed. Partial regression plots showed an approximately linear relation between the continuous predictor variables and the outcome variable. Homoscedasticity of residuals was indicated for all variables, as assessed by equally spread residuals across the scatter plots of studentized residuals and (unstandardized) predicted values. Examination of bivariate correlations were examined and Tolerance/VIF values indicated absence of multicollinearity in all variables. Moreover, absence of significant outliers was examined by inspecting each case's standardized

residual as well as the studentized deleted residual. Cases that were greater than  $\pm 3$  standard deviations were considered “outliers” and were deleted from the dataset.

Outliers that were removed included three cases of the neighborhood social cohesion variable and four cases from the acculturative stress variable; we only removed cases within each variable.

Finally, examination of histograms, P-P Plots, Q-Q Plots, as well as skewness and kurtosis values indicated normal distribution of errors (residuals) for all variables except for the depression symptoms outcome variable. Given that skewness in this variable is consistent with depression rates among the overall population, we carried out analyses without transforming the data. To assess possible biases in result interpretation, we also carried out analyses with a subset of the data that consisted of 349 participants that reported at least one depression symptom.

### **3.6 Main Analyses**

We present results guided by research questions 1 through 3. Regression analyses were conducted to address research question 1a (Is acculturative stress associated with depression among first generation Latino/a adults in the U.S.), 1b (Is social cohesion associated with depression among first generation Latino/a adults in the U.S.?) and 1c (Is neighborhood safety associated with depression among first generation Latino/a adults in the U.S.?). Moderation analyses were conducted to address research questions 2a, 2b and 3. A moderation analysis was conducted to examine research question 2a (Does neighborhood social cohesion moderate the relation between acculturative stress and depression?). A second moderation analysis was to examine research question 2b (Does neighborhood safety moderate the relation between acculturative stress and depression?).

To examine exploratory research question 3 (Do neighborhood safety and neighborhood social cohesion interact to moderate the relation between acculturative stress and depression?), we carried out a moderated moderation analysis. We utilized the PROCESS macro for SPSS (Hayes, 2013) to carry out all moderation analyses.

**3.6.1 Acculturative stress and depression symptoms.** Results yielded from regression analyses utilizing the full sample (N=1,624) indicated that acculturative stress significantly predicted depression symptoms ( $\beta=.20$ ,  $p<.001$ ). The results of the regression indicated that acculturative stress explained 5% of the variance while controlling for race/ancestry, age, gender, citizen status, and household income ( $R^2=0.05$ ,  $F(6,1613)=13.55$ ). Results yielded from regression analyses utilizing a subset of the sample reporting at least one depression symptom (N=349) indicated that acculturative stress did not predict depression symptoms ( $\beta=.07$ ,  $R^2=0.06$ ,  $F(6,341)=3.37$ ,  $p>.05$ ); see Table 3.4.

**3.6.2 Social cohesion and depression symptoms.** Results yielded from regression analyses utilizing the full sample (N=1,624) indicated that social cohesion did not predict depression symptoms ( $\beta=-.03$ ,  $R^2=0.04$ ,  $F(6,1595)=10.3$ ,  $p>.05$ ). Results yielded from regression analyses utilizing a subset of the sample reporting at least one depression symptom (N=349) also indicated that social cohesion did not predict depression symptoms ( $\beta=-.02$ ,  $R^2=0.05$ ,  $F(6,339)=3.16$ ,  $p>.05$ ); see Table 3.5.

**3.6.3 Neighborhood safety and depression symptoms.** Results yielded from regression analyses utilizing the full sample (N=1,624) indicated that neighborhood safety significantly predicted depression symptoms ( $\beta=-.11$ ,  $p<.001$ ). Neighborhood Safety explained 5% of the variance while controlling for race/ancestry, age, gender,

citizen status, and household income ( $R^2=0.05$ ,  $F(6, 1608)=13.6$ ). Results yielded from regression analyses utilizing a subset of the sample reporting at least one depression symptom ( $N=349$ ) indicated that neighborhood safety did not predict depression symptoms ( $\beta=-.04$ ,  $R^2=0.06$ ,  $F(6, 338)=3.28$ ,  $p>.05$ ); see Table 3.6.

**3.6.4 Acculturative stress, social cohesion and depression symptoms.** Simple moderation analyses were conducted to determine whether social cohesion moderated the relation between acculturative stress and depression symptoms. Results yielded from these analyses indicated that this interaction term was nonsignificant for the full sample ( $\beta=.01$ ,  $R^2=0.05$ ,  $F(8, 1589)=10.6$ ,  $p>.05$ ). Results yielded from moderation analyses utilizing a subset of the sample reporting at least one depression symptom ( $N=349$ ) indicated that social cohesion didn't moderate the relation between acculturative stress and depression symptoms ( $\beta=-.003$ ,  $R^2=0.05$ ,  $F(8, 337)=2.53$ ,  $p>.05$ ); see Table 3.7.

**3.6.5 Acculturative stress, neighborhood safety and depression symptoms.** Simple moderation analyses were conducted to determine whether neighborhood safety moderated the relation between acculturative stress and depression symptoms. Results yielded from these analyses indicated that this interaction term was nonsignificant for the full sample ( $\beta=-.01$ ,  $R^2=0.05$ ,  $F(8, 1596)=12.5$ ,  $p>.05$ ). Results yielded from moderation analyses utilizing a subset of the sample reporting at least one depression symptom ( $N=349$ ) indicated that neighborhood safety didn't moderate the relation between acculturative stress and depression symptoms ( $\beta=-.011$ ,  $R^2=0.06$ ,  $F(8, 336)=2.65$ ,  $p>.05$ ); see Table 3.8.

**3.6.7 Acculturative stress, social cohesion, neighborhood safety, and depression symptoms.** Moderated moderation analysis was conducted to determine

whether the interaction of neighborhood safety and social cohesion moderated the relation between acculturative stress and depression for the full sample (N=1,624). Results yielded from this analysis indicated a nonsignificant relation between this interaction term and acculturative stress and depression symptoms ( $\beta=.008$ ,  $R^2=0.06$ ,  $F(8, 1596)=9.12$ ,  $p>.05$ ). Results yielded from moderated moderation analyses utilizing a subset of the sample reporting at least one depression symptom (N=349) also indicated a nonsignificant relation between this interaction term and acculturative stress and depression symptoms ( $\beta=.005$ ,  $R^2=0.06$ ,  $F(8, 336)=1.83$ ,  $p>.05$ ); see Table 3.9.

Table 3.1

*Sample Demographic Characteristics (N=1630)*

	N	%
<b>Gender</b>		
Male	724	44
Female	906	56
<b>Race/Ancestry</b>		
Cuban	501	31
Puerto Rican	217	13
Mexican	488	30
All Other Hispanic	424	26
<b>Citizen of the US*</b>		
Yes	740	46
No	883	54
<b>Age at immigration**</b>		
Less than 12 yrs.	365	23
13-17 yrs.	216	13
18-34 yrs.	735	45
35+ yrs.	306	19
<b>Years in the US**</b>		
Less than 5 yrs.	250	16
5-10 yrs.	245	15
11-20 yrs.	411	25
20+ yrs.	716	44

*Note.* N=1630

\* 7 Participants chose not to answer this question

\*\* 8 missing values for these variables

Table 3.2

*Descriptive statistics and correlations among study variables and continuous covariates*

	N	Mean	SD	Correlations						
				1	2	3	4	5	6	
(1) Acculturative Stress	1620	2.60	1.80	1						
(2) Social Cohesion	1609	11.90	3.10	-.13**	1					
(3) Neighborhood Safety	1616	9.00	2.70	-.14**	.47**	1				
(4) Depression Symptoms	1630	1.40	2.80	.09**	-.20	-.11**	1			
(5) Age	1630	43.20	15.80	-.11**	.17**	.07**	.09**	1		
(6) Household Income	1630	\$40,647	\$43,244	-.19**	.14**	.21**	-.06*	-.06*	1	

*Note.*

\*\* Correlation is significant at the 0.01 level (2-tailed)

\* Correlation is significant at the 0.05 level (2-tailed)

Table 3.3

*Results of one-way ANOVA for categorical covariates and study variables*

	Acculturative Stress		Social Cohesion		Neighborhood Safety		Depression Symptoms	
	F	Sig.	F	Sig.	F	Sig.	F	Sig.
Gender	.825	.581	.872	.590	2.40	.006	3.90	.000
Citizen status	19.65	.000	4.25	.000	3.04	.000	2.70	.004
Race/Ancestry	3.07	.002	5.22	.000	5.45	.000	1.80	.070



Table 3.4

*Multiple regression analysis of the relation between acculturative stress and depression symptoms*

Predictors	N=1624				N=349			
	$\beta$	R <sup>2</sup>	F	<i>p</i>	$\beta$	R <sup>2</sup>	F	<i>p</i>
Step 1	-	0.04	11.65	.000*	-	0.05	3.73	.003*
Race/Ancestry	-.13	-	-	.049	.03	-	-	.704
Age	.01	-	-	.250	-.00	-	-	.731
Sex	.71	-	-	.000*	.52	-	-	.019*
Citizen status	.47	-	-	.003*	.24	-	-	.281
Household Income	-4.01	-	-	.016	-7.57	-	-	.002*
Step 2	-	.04	13.6	.000*	-	.06	3.37	.003*
Race/Ancestry	-.14	-	-	.032	.02	-	-	.806
Age	.01	-	-	.207	-.00	-	-	.700
Sex	.71	-	-	.000*	.53	-	-	.017*
Citizen status	.64	-	-	.000*	.31	-	-	.172
Household Income	-2.9	-	-	.084	-7.32	-	-	.003*
Acculturative Stress	.20	-	-	.000*	.07	-	-	.209

*Note.* All analyses controlled for race/ancestry, age, gender, citizen status, and household income.

\*  $p < 0.05$  level

Table 3.5

*Multiple regression analysis of the relation between social cohesion and depression symptoms*

Predictors	N=1624				N=349			
	$\beta$	R <sup>2</sup>	F	<i>p</i>	$\beta$	R <sup>2</sup>	F	<i>p</i>
Step 1	-	0.04	11.94	.000*	-	0.05	3.70	.003
Race/Ancestry	-.12	-	-	.056	.04	-	-	.683
Age	.01	-	-	.214	-.00	-	-	.702
Sex	.73	-	-	.000	.51	-	-	.021
Citizen status	.49	-	-	.002	.24	-	-	.279
Household Income	-3.90	-	-	.021	-7.60	-	-	.002
Step 2	-	.04	10.3	.000*	-	.05	3.16	.005
Race/Ancestry	-.13	-	-	.043	.03	-	-	.731
Age	.01	-	-	.163	-.00	-	-	.762
Sex	.73	-	-	.000	.52	-	-	.020
Citizen status	.50	-	-	.002	.25	-	-	.268
Household income	-3.57	-	-	.036	-7.33	-	-	.003
Social cohesion	-.03	-	-	.161	-.023	-	-	.457

*Note.* All analyses controlled for race/ancestry, age, gender, citizen status, and household income.

\*  $p < 0.05$  level

Table 3.6

*Multiple regression analysis of the relation between neighborhood safety and depression symptoms*

Predictors	N=1624				N=349			
	$\beta$	R <sup>2</sup>	F	<i>p</i>	$\beta$	R <sup>2</sup>	F	<i>p</i>
<i>Step 1</i>	-	0.04	12.3	.000*	-	0.05	3.67	.003*
<i>Race/Ancestry</i>	-.12	-	-	.058	.03	-	-	.738
<i>Age</i>	.01	-	-	.195	-.00	-	-	.689
<i>Sex</i>	.73	-	-	.000*	.50	-	-	.025
<i>Citizen status</i>	.50	-	-	.002*	.26	-	-	.240
<i>Household Income</i>	-4.0	-	-	.017	-7.67	-	-	.002*
<i>Step 2</i>	-	.05	13.6*	.000*	-	.06	3.28	.004*
<i>Race/Ancestry</i>	-.15	-	-	.017	.02	-	-	.856
<i>Age</i>	.00	-	-	.142	-.00	-	-	.678
<i>Sex</i>	.70	-	-	.000*	.49	-	-	.027
<i>Citizen status</i>	.50	-	-	.002*	.25	-	-	.265
<i>Household income</i>	-2.0	-	-	.128	-6.90	-	-	.007*
<i>Neighborhood safety</i>	-.11	-	-	.000*	-.04	-	-	.248

*Note.* All analyses controlled for race/ancestry, age, gender, citizen status, and household income.

\*  $p < 0.05$  level

Table 3.7

*Moderation analysis for acculturative stress, social cohesion, depression symptoms and covariates*

	N=1624			N=349		
	$\beta$	R <sup>2</sup>	F	$\beta$	R <sup>2</sup>	F
<i>Race/Ancestry</i>	-.14	-	-	0.2	-	-
<i>Age</i>	.01	-	-	-	-	-
<i>Sex</i>	.73*	-	-	.52	-	-
<i>Citizen status</i>	.65*	-	-	.31	-	-
<i>Household Income</i>	.00	-	-	.00*	-	-
<i>Acculturative Stress</i>	.03	-	-	.10	-	-
<i>Social Cohesion</i>	-.06	-	-	-.01	-	-
<i>Acculturative Stress x Social Cohesion</i>	.01	.05	10.6	-.003	.05	2.53

*Note.* All analyses controlled for race/ancestry, age, gender, citizen status, and household income.

\* p < 0.05 level

Table 3.8

*Moderation analysis for acculturative stress, neighborhood safety, depression symptoms and covariates*

	N=1624			N=349		
	$\beta$	R <sup>2</sup>	F	$\beta$	R <sup>2</sup>	F
<i>Race/ancestry</i>	-.16	-	-	.00	-	-
<i>Age</i>	.01	-	-	-	-	-
<i>Sex</i>	.70*	-	-	.51	-	-
<i>Citizen status</i>	.65*	-	-	.30	-	-
<i>Household income</i>	.00	-	-	.00*	-	-
<i>Acculturative stress</i>	.23	-	-	.16	-	-
<i>Neighborhood safety</i>	.08	-	-	-.00	-	-
<i>Acculturative stress x neighborhood safety</i>	.01	.05	10.6	-.01	.05	2.53

*Note.* All analyses controlled for race/ancestry, age, gender, citizen status, and household income.

\* p< 0.05 level

Table 3.9

*Moderation analysis for acculturative stress, neighborhood safety, social cohesion, depression symptoms and covariates*

	N=1624			N=349		
	$\beta$	R <sup>2</sup>	F	$\beta$	R <sup>2</sup>	F
<i>Race/ancestry</i>	-.16*	-	-	.01	-	-
<i>Age</i>	.01	-	-	-.00	-	-
<i>Sex</i>	.68*	-	-	.48	-	-
<i>Citizen status</i>	.63*	-	-	.32	-	-
<i>Household income</i>	.00	-	-	.00*	-	-
<i>Acculturative stress</i>	.81	-	-	.58	-	-
<i>Social Cohesion</i>	.08	-	-	.03	-	-
<i>Neighborhood safety</i>	.06	-	-	.07	-	-
<i>Acculturative Stress x Social Cohesion x Neighborhood Safety</i>	.008	.06	9.12	.005	.06	1.83

*Note.* All analyses controlled for race/ancestry, age, gender, citizen status, and household income.

\* p< 0.05 level

## CHAPTER 4

### DISCUSSION

Past research has noted that aspects of living in the United States place Latinos at risk for experiencing depression (Torres, 2010). Acculturative stress has been noted as a risk factor for depression and other mental health conditions (Hovey & Magaña, 2002; Moyerman & Forman, 1992; Torres, 2010). Several researchers have suggested that increased exposure to the mainstream U.S. culture may be related to negative outcomes for Latinos/as (Grant et al., 2004; Vega et al., 1998). However, specific features of the adaptation process that contribute to depression remain unclear. There is evidence to suggest that contextual factors such as neighborhood context may influence both acculturative stress processes and mental health outcomes (Vega et al., 2011). Unfortunately, there remains a lack of clarity regarding the circumstances in which this occurs. The current study was designed to fill this gap in the literature by examining neighborhood safety and social cohesion, and their interaction with acculturative stress and depression among first generation Latino/a immigrants. Understanding these factors might inform systematic forms of intervention, such as promoting cohesiveness and social support among Latino/a neighbors. Findings may also add to the literature on depression symptoms among Latino/as.

#### **4.1 Acculturative Stress and Depression Symptoms**

The first aim of this study (research question 1a) was to determine whether acculturative stress was associated with depression among first generation Latino/a adults

in the U.S. Findings from this study support the hypothesis that higher levels of acculturative stress are related to higher levels of depression in this sample. This finding is consistent with previous research documenting this relation (D'Anna-Hernandez, Aleman & Flores, 2015; Driscoll & Torres 2013; Sarmiento & Cardemil, 2009; Torres, 2010; Torres, Driscoll & Voell, 2012; Zeiders, Umaña-Taylor, Updegraff & Jahromi, 2015). A limitation of prior research in this area is that some studies on acculturation and health outcomes have not controlled for SES (Taningo, 2007). In addition to replicating the association between acculturative stress and depression among first generation Latino/a adults in the U.S., this is one of few studies to assess this relation while controlling for SES. Thus, the findings of this study are important in explaining the relation between acculturative stress and depression symptoms in the general first generation Latino/a sample while controlling for SES, gender, race, and citizenship status.

In addition to assessing the relation between acculturative stress and depressive symptoms with the whole sample, we sought to determine whether acculturative stress was associated with depression symptom severity among a subset of the sample that endorsed at least one symptom of depression. We found that the association did not hold with this subset of the sample. These exploratory analyses suggest that the sub-sample may be qualitatively different than the overall sample. At the outset, participants who reported at least one depression symptom had already been screened for other features of depression such as anhedonia (i.e. lack of pleasure) and dysphoric mood (i.e. profound unease or dissatisfaction). Thus, those who reported symptoms of depression were more likely to report clinical levels of depression. Interestingly, the relation between



acculturative stress and depression symptoms among Latino/as hasn't been studied in clinical samples.

Differences in findings suggest that first generation Latino/a immigrants with high levels of acculturative stress may be at risk of experiencing depression. However, once depression symptoms are reported, acculturative stress may not be as influential in determining depression severity (Hovey, 2000). This finding might also be related to the Latino Health Paradox, which refers to the contradictory finding that Latino/as in the U.S. report better health and mortality outcomes than the average population (Taningo, 2007). Moreover, the Latino Health Paradox states that when Latinos are compared across generations, first generation immigrants, like the sample utilized in this study, are healthier. The levels of acculturative stress in this sample were relatively low, which is intuitively unexpected among first generation immigrants. However, research that has looked at acculturative stress among different generations shows that first generation immigrants show lower levels of acculturative stress than later generations depending on the age when they arrive in the US. Individuals who come to the U.S. as adults are more likely to report positive health outcomes (Heron, Schoeni & Morales, 2003; Wu & Schimmele, 2005). One explanation for this finding is that such individuals may have a stronger sense of ethnic identity to their heritage culture (Umaña-Taylor & Updegraff, 2007). About 64% of our sample immigrated to the US after age 18. Therefore, it is possible that acculturative stress doesn't have an impact on depression because a stronger sense of identity with their heritage culture protected these individuals from higher levels of acculturative stress. Further research needs to be carried out to understand why

acculturative stress did not influence individuals who reported clinical levels of depression.

#### **4.2 Neighborhood Context and Depression Symptoms**

We also aimed to determine whether two factors of neighborhood context – social cohesion and neighborhood safety – influenced depression symptoms (research questions 1b and 1c). We found that a greater sense of neighborhood safety predicted lower levels of depression symptoms. This is consistent with previous studies that have shown that people who perceive their neighborhoods as safe report better health outcomes.

Individuals who feel safe in their neighborhoods may be more likely to engage in physical activity and utilize community resources. These activities are associated with lower levels of depression and other positive health outcomes (Burdette et al., 2006; Pichon et al., 2007; Kim, 2008). Moreover, findings from this study contribute to the literature because we controlled for factors such as SES, gender, race, and citizenship status.

Although neighborhood safety was associated with fewer depression symptoms, results from this study did not support the hypothesis that higher levels of neighborhood social cohesion predict lower depression symptoms. Although this is inconsistent with prior research, which has demonstrated this association, most of the research on social cohesion and depression symptoms has been carried out among youth (Cattell, 2001; Echeverría et al., 2008; Gee & Payne-Sturges, 2004; Hong, Zhang & Walton, 2014; Kawachi and Berkman, 2000; Mulvaney-Day, Alegria & Sribney, 2007; O’Campo, Salmon & Burke, 2009). Given that this study consisted of an adult sample, these findings add to the literature on neighborhood social cohesion by explaining a caveat to

findings amongst youth. Social cohesion may be perceived differently or may not be as important in predicting depression symptoms among adults. Another possible explanation for the results observed for social cohesion in this study may be related to measurement error. Prior research suggests that measures of social cohesion are more prone to measurement error (Friedkin, 2004). In contrast to constructs such as neighborhood safety which are measured in the material and observable features of neighborhoods, social cohesion is an abstract construct that is more difficult to operationalize (Echeverría et al., 2008).

### **4.3 Acculturative Stress, Neighborhood Context and Depression Symptoms**

We also aimed to determine whether neighborhood social cohesion moderated the relation between acculturative stress and depression among Latino/a adults in the U.S. (research question 2a). Findings from this study did not support the hypothesis that higher levels of social cohesion moderate the relation between acculturative stress and depression symptoms. This is not surprising since, as described above, we did not find an association between social cohesion and depression symptoms. It appears again that social cohesion is either not a determining factor on depression for the adult sample or not as important as the perception of neighborhood safety (Echeverría et al., 2008). For example, Lee and Liechty (2015) propose that ethnic minorities living in neighborhoods with a high density of residents from their own racial or ethnic group are likely to have better health and mental health than those living outside of such neighborhoods; this is known as the ethnic density hypothesis. Beneficial effects of ethnic density on depressive symptoms have been found in Latino adults in the U.S. (Ostir, Eschbach, Markides & Goodwin, 2003). The data utilized for this study did not include neighborhood density.

Therefore, it is possible that participants didn't live in ethnically dense areas where social cohesion is more likely to occur due to fewer cultural barriers such as language use and similar cultural practices (Vega et al., 2011).

Next, we sought to understand whether neighborhood safety would buffer the impact of acculturative stress on depression symptoms (research question 2b). Findings did not support the hypothesis that neighborhood safety would moderate the relation between acculturative stress and depression symptoms. This was surprising given that we had found a relation between acculturative stress and depression symptoms and a relation between neighborhood safety and depression symptoms. However, both findings were modest. Meares (2015) presents two lines of criticism regarding the construct of neighborhood safety. First, she challenges the universality of neighborhood disorder, or what would be perceived as unsafe neighborhoods. Specifically, she argues that measures of neighborhood safety, and the construct of neighborhood safety itself, fail to explain how disorder is a problem among communities. Second, she states that the perception of safety may change over time and that physical cues are important but perhaps not essential to overall neighborhood safety. This is in line with research carried out by Pichon et al (2007), which found that that, while neighborhood safety is important in positive health behaviors (i.e. physical activity), it does not influence acculturation. It is possible that a similar mechanism is at play when studying acculturative stress and neighborhood safety, given that acculturative stress and acculturation are closely related constructs. Thus, while we understand how neighborhood safety influences depression symptoms among first generation Latinos/as, there is still more research needed to understand whether it influences the acculturation process or acculturative stress. It is

also unclear whether acculturative stress influences the perception of neighborhood safety.

Finally, we sought to understand whether neighborhood social cohesion and neighborhood safety interacted to moderate the relation between acculturative stress and depression (exploratory research question 3). Results did not support the hypothesis that the interaction of neighborhood safety and social cohesion would buffer the effects of acculturative stress on depression symptoms. This was expected given the results of our first two moderation models (research questions 2a and 2b). While the literature suggests that an overall healthier neighborhood context is predictive of lower levels of depression, findings in this study were not consistent with previous studies (Kawachi & Berkman, 2000). This may have occurred because other factors that were controlled for, such as SES, race, gender and citizenship status, explained more variance in the model than acculturative stress, neighborhood safety, and social cohesion. Another explanation is in line with other findings in this study; that is, social cohesion and neighborhood safety may not be mechanisms that interact with acculturative stress to buffer depression, and thus should be considered separately or through a different path analysis.

#### **4.4 Limitations, Strengths and Implications**

There are some limitations to this study that merit noting. We were not able to assess temporality because of the cross-sectional nature of the data. For instance, although we know that neighborhood safety and acculturative stress are not static constructs, we were not able to assess how they changed over time with these data. It is also possible that acculturative stress, neighborhood safety, and social cohesion change depending on contextual factors. For example, acculturative stress might increase as

immigrants spend more time in the U.S. or it may decrease as they assimilate.

Neighborhood safety perception may also change as people become more familiar with their community, or depending on whether they live in an ethnically dense area. We were also not able to understand how these factors influence each other.

Moreover, the NLAAS relied on self-report which may be impacted by poor recall and social desirability bias. Acculturative stress, social cohesion and neighborhood safety may be related to social desirability. Future studies should include objective measures of neighborhood safety, social cohesion, and other factors influencing neighborhood context. Such measures may include clear definitions of neighborhood, aggregate reports from individuals living in the same neighborhood to diminish measurement error, and linguistic isolation and collective efficacy (Echeverría et al., 2008; Ostir et al., 2003; Vega et al., 2011). Moreover, objective measures of physical environmental characteristics using Geographic Information Systems may inform the direction of future studies with Latinas/os.

As described above, the lack of relation between acculturative stress, perceived neighborhood safety, social cohesion and depression may be due to measurement challenges. For example, the NLAAS utilized a measure of acculturative stress that pertains to some experiences that may cause stress among recent Latino/a immigrants (i.e., fear of immigration authorities). These experiences, while important, may not be necessarily related to the process of acculturation, and are more closely related to other features influencing the well-being of first generation Latino/a immigrants, such as discrimination and context of reception. The study also did not address later generations of Latino/a immigrants, who may experience these processes differently. For example, it

may be that Latino/as that have lived in their neighborhoods for longer are able to obtain gains from those social networks, while recent immigrants might not. Another limitation to this study is that our outcome variable did not meet the assumption of normality for regression. As a result, findings from this study should be interpreted with this in mind.

Furthermore, correlates such as familial support may have been important to include, as they likely influence Latinas/os acculturative stress processes and depression outcomes. Social support, which involves the provision of psychological and material resources, may serve as a buffer against stress by preventing a situation from being appraised as stressful in the first place or by providing a solution to a stressful problem, minimizing its perceived importance, or facilitating healthy behavioral responses (Cohen & Wills, 1985). Latino culture emphasizes familismo, which involves strong feelings of attachment, shared identity, and loyalty among family members (Marín & Marín, 1991). Latino families are thought to provide emotional support, which protects members against external stressors. Consistent with this notion, better family functioning and emotional support from family members have been linked to lower levels of depressive symptoms among Latino adolescents and adults (Crocket et al., 2007; Hovey & King, 1996; Vega et al., 1991).

Despite these limitations, the study had several strengths. It was guided by a strong empirical foundation that illustrated a relation between neighborhood context and depression symptoms. Participants included in the analysis were all first-generation Latino/as, a group that is understudied in the depression research. The study also utilized a large sample of first generation immigrants that was more representative for the Latino American adult population in the U.S. than those applied in other studies, specifically for

Cubans, Mexicans and other Latinos from Colombia, the Dominican Republic, El Salvador, Ecuador, Guatemala, Honduras, Peru and Nicaragua. Moreover, we controlled for SES, race, gender and citizenship status. Many studies that focus on Latino/as fail to control for these variables; this contributes to the understanding of aspects that influence depression among Latino/as by utilizing these controls. To our knowledge, this is the only study that has explored the joint relations between acculturative stress, neighborhood context, and depression. This is important in helping scientists and practitioners understand how individual-level outcomes such as depression, can be influenced by macro -or meso- level factors such as neighborhood context.

The study offers several implications to the mental health field and to the policy field. There is a strong need to reach first generation Latino/as who experience acculturative stress with mental health services to promote well-being. The increased risk of depression symptoms found among this sample does not necessarily translate into increased treatment rates. Rates of service use vary considerably across subgroups and across disorders (Alegría et al., 2007). Clinicians and medical professionals need to consider the patterns of psychological disorder risk observed among Latinos in the present study and use this information to inform their clinical assessments. Specifically, it would be beneficial to screen for depression symptoms early on so that symptoms can be treated. These efforts should be culturally appropriate, and should involve community partnerships.

Moreover, the need for further research around contextual factors and Latino mental health is evident, given the complexities and nuances involved in negotiating effective intercultural interactions. Although the present study has established a relation



between acculturative stress and depression symptoms, continued research is needed to determine the temporal sequence of events. That is, do acculturative stressors lead to depressive symptoms, or does depression cause greater cultural pressures? Longitudinal analyses will help to determine this causal chain of events and assist clinical researchers in identifying the appropriate time to apply effective intervention and prevention efforts. Furthermore, demonstrating discrete effects of social factors at the neighborhood level, and avoiding confounding variables, remains a major research challenge.

Finally, advocates for the Latino/a community should emphasize prevention efforts that promote Latino/a mental health by placing emphasis on factors that heighten acculturative stress. Advocates may draw from this study to point out the effects of factors that may influence acculturative stress - such as discrimination, or a negative context of reception- which may in turn place Latino/as at higher risk for depression.

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