

2015-01-01

Acculturation, Psychological Distress, and Smoking in Latinos Living With HIV/AIDS

Jessica Armendariz

University of Texas at El Paso, jarmendariz3@miners.utep.edu

Follow this and additional works at: https://digitalcommons.utep.edu/open_etd



Part of the [Psychology Commons](#)

Recommended Citation

Armendariz, Jessica, "Acculturation, Psychological Distress, and Smoking in Latinos Living With HIV/AIDS" (2015). *Open Access Theses & Dissertations*. 995.

https://digitalcommons.utep.edu/open_etd/995

ACCULTURATION, PSYCHOLOGICAL DISTRESS, AND SMOKING IN
LATINOS LIVING WITH HIV/AIDS

JESSICA ARMENDARIZ

Department of Psychology

APPROVED:

John S. Wiebe, Ph.D., Chair

Oswaldo F. Morera, Ph.D.

Craig A. Field, Ph.D.

Jeri J. Sias, Pharm.D.

Charles Ambler, Ph.D.
Dean of the Graduate School

Copyright ©

by

Jessica Armendariz

2015

Dedication

I dedicate this accomplishment to my mom and dad. Thank you for all of the love and support you have provided me with.

ACCULTURATION, PSYCHOLOGICAL DISTRESS, AND SMOKING IN LATINOS
LIVING WITH HIV/AIDS

by

JESSICA ARMENDARIZ, B.A.

THESIS

Presented to the Faculty of the Graduate School of

The University of Texas at El Paso

in Partial Fulfillment

of the Requirements

for the Degree of

MASTER OF ARTS

Department of Psychology

THE UNIVERSITY OF TEXAS AT EL PASO

August 2015

Acknowledgments

We are grateful to the patients and staff of Centro de Salud Familiar la Fe CARE Center, Inc. for their participation and facilitation of this study. Teresa Frias, Carolina Lara, Chrisie Lemon, Virginia Longoria, Elsa Martin, Antonio Martinez, Miriam Pando, Tatiana Rodriguez, Giselle Sanchez, John Saucedo, and Cesar Villareal Ramos assisted with data collection, entry, and analysis.

Abstract

In the United States smoking cigarettes is the leading cause of preventable death, and smoking is of particular health concern among people living with HIV. Depression has been consistently linked to smoking in the literature, and data indicate that acculturation to the U.S. is associated with increased depression among Latinos.

This study examined if acculturation moderates the impact of depression on smoking behavior among Latinos living with HIV through the mediating effect of social support. The results may extend to the sociopsychological construct of culture. We studied 300 Latinos who live with HIV on the U.S./Mexico border.

Results demonstrated there was a positive correlation between depression and smoking, and a negative correlation between social support and smoking. A negative correlation was found between social support and depression, and smoking was not correlated to acculturation to the U.S. or the culture of origin. In our sample, acculturation did not moderate the relationship between depression and smoking.

Table of Contents

Abstract	v
Table of Contents.....	vii
List of Tables	ix
List of Figures	x
Chapter 1: Introduction.....	1
1.1 Smoking Prevalence	1
1.2 HIV Prevalence.....	1
1.3 Smoking and HIV	2
1.4 HIV Regimens	3
1.5 Latino Acculturation and Health.....	4
1.6 Latino Acculturation and Smoking.....	5
1.7 Smoking and Depression.....	5
1.8 Social Support and Depression.....	7
1.9 Smoking, Depression, and Latinos.....	9
1.10 Emotion Regulation Theory as a Context.....	11
1.11 Aims and Hypotheses.....	13
Chapter 2: Method.....	16
2.1 Participants.....	16
2.2 Measures.....	17
2.3 Procedure.....	21
2.4 Approach to Analysis.....	22
Chapter 3: Results.....	23
3.1 Descriptive Statistics and Demographic Information.....	23
3.2 Scale Characteristics.....	23
3.3 Hypothesis 1.....	24
3.4 Hypothesis 2.....	25
3.5 Hypothesis 3.....	25
3.6 Hypothesis 4.....	25
Chapter 4: Discussion.....	29
4.1 Implications.....	29
4.2 Strength and Limitation.....	31
4.3 Future Directions.....	32
References.....	34

Appendix.....	40
Vita.....	41

List of Tables

Table 1: Reliabilities of Key Scales Among Latinos Living with HIV.....	24
Table 2: Correlation Matrix for Key Variables Among Latinos Living with HIV.....	24
Table 3: Hierarchical Regressions Model for Smoking on Acculturation Among Latinos Living with HIV.....	28

List of Figures

Figure 1: Among Latinos Living With HIV, Acculturation is Expected to Moderate the Impact of Depression on Smoking Through Social Support.....14

Figure 2: Among Latinos Living With HIV, Acculturation is Hypothesized to Moderate the Association Between Depression and Smoking.....15

Figure 3: Depression, Social Support, Smoking, and Acculturation Among Latinos Living With HIV.....27

Chapter 1: Introduction

1.1 Smoking Prevalence

According to the most recent data from the Centers of Disease Control and Prevention (CDC) it was estimated that in 2013 that 17.8% of all adults in the United States smoked cigarettes. Men are more likely to smoke (20.5%) compared to women (15.3%). The CDC reports cigarette smoking as the leading cause of preventable death in the United States. Smoking accounts for one of every five deaths in the United States each year. Latinos represent 16.7% of the U.S. population, making them the largest ethnic minority, and they account for 12.1% of U.S. smokers, putting them below the national average in smoking (Centers for Disease Control and Prevention Behavioral Risk Factor Surveillance System Prevalence and Trends Data, 2013). The Behavioral Risk Factor Surveillance System documents that 18.2% of adults 18 years and older in Texas report having smoked in 2012. The smoking prevalence in El Paso, Texas is 16.3% of adults (City of El Paso Department of Public Health, 2013). It is important to look at the Latino population because it is the fastest growing minority in the United States. Latinos smoke less than the general population and tend to be light smokers (Berg et al. 2012).

1.2 HIV Prevalence

The Centers for Disease Control and Prevention (CDC) estimated that in 2011 there were about 49,273 new diagnoses of HIV infection in the United States. Of those diagnoses, 38,825 were in adult and adolescent males and 10,257 cases were in adult and adolescent females (CDC). Meanwhile, 10,159 of those cases were among Latinos. These figures indicate that Latinos have a higher rate of HIV infection compared to the general population. In terms of relevance to the El Paso region, there were 107 new cases of HIV infection and 1,753 cases of

people living with HIV in the El Paso, Texas area (City of El Paso Department of Public Health, 2013). El Paso's incidence rate is low compared to other major metropolitan areas.

1.3 Smoking and HIV

Past studies have examined smoking among people living with HIV/AIDS. Gritz et al. (2004) conducted a study describing smoking frequency among a multiethnic, low-income sample living with HIV/AIDS. The sample consisted of 348 participants who were recruited at an HIV/AIDS care facility that serves an economically disadvantaged and diverse population. The average age of this sample was 40.2 years and 29% were Latino. Cigarette smoking in this sample was high with prevalence at 46.9%. Items from the Behavioral Risk Factor Surveillance System were adapted in this study to assess smoking status. The authors defined current smoking as a history of smoking at least 100 cigarettes and currently smoking every day or some days. Gritz et al. found that race/ethnicity, age, and heavy drinking were significantly associated with smoking. Specifically, Latinos with HIV were less likely to smoke compared to non-Hispanic Whites, and younger individuals were less likely to smoke compared to older individuals. Findings also indicated that those reporting heavy drinking were more likely to be current smokers.

Shuter and Bernstein (2008) examined adherence to antiretroviral medications and smoking among 64 subjects. Participants in this study utilized the Medication Event Monitoring System (MEMS), i.e., electronic medicine bottle caps that record when the bottles are opened. Once data were collected via these caps the information stored by MEMS was uploaded on the study computer. Clinical information, demographic information, and cigarette smoking status were collected from each participant. The average for adherence overall from this sample was 72.8%. Results demonstrated that current smokers took 63.5% of their doses, compared to

nonsmokers, who took 84.8% of their doses. These findings showed that cigarette smoking was a significant marker of nonadherence to medication regimens. Together, these studies indicate that smoking is common in HIV and it is associated with specific risks for people who are living with HIV. Indeed, contemporary models of HIV care might do well to include smoking treatment.

1.4 HIV Regimens

Studies from the literature that address adherence must be interpreted in light of the rapidly changing treatment context of HIV care. For example, Conway (2007) discusses several studies that demonstrate the relation between the success of HAART medication and adherence. Some factors that impact adherence consist of dosing frequency, pill burden, food requirements, and safety concerns. Conway looks at studies that assess how changing therapy from twice daily to once-daily regimens can enhance long-term adherence. Patients who switched from twice-daily dosed medications (AZT or d4T) to a one-dose regimen were monitored by an electronic device which recorded adherence and results demonstrated there was improvement with dose timing as well as adherence. Those who switched from twice daily, high pill burden regimen to a once a day regimen appeared to maintain adherence better than those who stayed on the twice-daily regimen over the duration of one year. These findings indicate that the number of times patients have to take their regimen has an impact on their adherence. That established, some of the research linking smoking and poorer adherence was conducted when HIV medications were more complex than they are today. For that reason and others, those studies may not be fully generalizable to today's treatment context.

1.5 Latino Acculturation and Mental Health

In 2003, Berry described acculturation as, “one aspect of the broader concept of culture change (an aspect that results from intercultural contact), is considered to generate change in “either or both groups,” and is distinguished from assimilation (of which acculturation may at times be a phase) (p.18). Most researchers now view and assess for acculturation as a bilinear transformation in which change happens on two levels; one level within the culture of origin and the other within the host culture. Previously, most researchers viewed acculturation as a linear transformation, which consisted of assimilating into the dominant culture (Birman, 1998).

The increase of the Latino population in the United States over the past years has prompted studies assessing the factors that add to psychological difficulties in this population. Research shows that Latinos residing in the United States may be at risk for developing mental illness (Torres, 2010). The literature suggests as Mexican-born Latinos acculturate to the U.S. culture, they become vulnerable to increased depressive symptoms (Wiebe, Saucedo, and Lara, 2013). For example, Cuellar, Bastida, and Braccio (2004) conducted a study with Mexican immigrants ($n=148$) and native-born Mexican Americans ($n=205$), and compared their mental health. They found that acculturation was a significant predictor of depressive symptoms and poorer health in general. Individuals of Mexican origin who were more acculturated to American culture tended to report more depressive symptoms and other health-related problems. A review on depression among older Latinos in the United States done by Sadule-Rios (2012) found that acculturation might have a negative impact on older Latinos’ mental health as well. The results confirm the risks associated with acculturating to the American culture and the benefits of keeping heritage cultural connections.

1.6 Latino Acculturation and Smoking

Several studies suggest that acculturation is a key variable in understanding smoking patterns of Latinos living in the U.S. For example, Wilkinson et al., (2005) examined smoking behaviors among 5,030 Mexican and U.S.-born Latinos and their association with U.S. culture. Higher levels of acculturation, older age, and education were predictors of a history of smoking among the U.S.-born participants. Predictors for history of smoking among the Mexican-born participants consisted of older age, higher level of acculturation to U.S. culture, and younger age of migration to the U.S.

Lorenzo-Blanco and Cortina (2013) conducted a study to examine how culture, gender, discrimination, and family conflict affect Major Depressive Disorder (MDD) and smoking among Latinos. The data were collected from the National Latino and Asian American Study (NLAAS), a survey of 2,554 Latinos. The findings also indicate that acculturation was associated with lower levels of family cohesion and higher levels of discrimination, family conflict, and smoking risk. In order to provide effective treatment for this population, future interventions for smoking should be tailored to Latinos and incorporate social support and acculturation.

1.7 Smoking and Depression

Many studies have examined the relationship between depression and smoking. Covey, Glassman, and Stetner (1998) conducted a literature review on the association between smoking and depression. The authors found that individuals who had major depression were more likely to smoke and to experience difficulty when they tried to quit smoking. A more recent review by Paperwalla, Levin, Weiner, and Saravay (2004) reported the prevalence of smoking among people diagnosed with depression is 49%. Paperwalla et al. (2004) made the case that depression

is a risk factor for smoking initiation. The authors found a moderate relationship between depression and the initiation of smoking among adolescents. Teenagers who scored below the threshold for depression began smoking at a rate of 12.9% compared with 19% for depressed teenagers (OR=1.35, CI= 1.1-1.6; Paperwalla et al., 2004). Paperwalla et al. (2004) noted that antidepressants bupropion and nortriptyline have been demonstrated to be effective in increasing the possibility of long-term cessation. The authors suggest that clinicians should simultaneously treat depression if appropriate when providing smoking cessation for patients.

Bolstering the case for direction of effect from smoking to depression, a study conducted in Tokyo by Nakata et al. (2008) examined exposure of different levels of passive smoking on individuals who never smoked and the association of depressive symptoms. The authors also examined depressive symptoms of former and current smokers among the full-time working population. The sample consisted of 931 women and 1839 men working in a suburb of Tokyo. Participants completed a self-report measure of their smoking behavior and passive exposure to secondhand smoke. The authors assessed depression by administering the Center for Epidemiologic Studies Self- Report Depression Scale. Those who reported they were never smokers but did experience passive smoke exposure, whether regular or occasional, at work experienced increased depressive symptoms; the adjusted odds ratios were 1.92 for those who reported regular exposure and 1.63 for occasional exposure. Those who were current smokers had significantly increased depressive symptoms (adjusted odds ratios 2.25-2.38). These findings demonstrate that participants who experienced passive smoking at work and those who reported being current smokers tend to have higher levels of depression. Those who inhale smoke reported higher levels of depression, regardless of whether they use cigarettes, themselves. Thus, it's unlikely that the entire relationship between depression and smoking can be explained by depression causing people to smoke.

1.8 Social Support and Depression

In a seminal study on social support, Leserman and others (1999) examined the association of social support and depressive symptoms to the progression of HIV infection. The study had a sample of 82 gay men who were HIV positive without symptoms of AIDS at baseline. The average age among the participants was 30.3 years and 79% of the sample was white. Results indicated that for each one-point decrease in cumulative average social support, the risk of AIDS increased nearly three-fold. Cumulative depressive symptoms were also associated with faster progression from HIV to AIDS. These findings suggest that lack of social support and the presence of depressive symptoms could possibly speed up HIV disease progression.

While both social support and depression tend to be related to important health outcomes, the two variables are unlikely to act independently. Indeed, there is strong theoretical support for a link between poor social support and depression. For example, James Coyne's (1976) interpersonal theory suggests that excessive reassurance seeking and decreases in social support are significant risk factors for depression. This theory suggests that some mildly dysphoric individuals seek reassurance about whether or not others truly care about them. When other people provide reassurance, the individuals who are mildly dysphoric do not believe the reassurance is sincere and then seek further assurance. This pattern continues and eventually results in rejection of those who seek reassurance. Thus, those who seek reassurance perceive a decline in social support, which then results in more depressive symptomatology.

Coyne (1976) proposed the possibility that depressed individuals' behaviors may elicit similar responses in others. He conducted an experiment with 45 participants who conversed over the phone with either a depressed or a non-depressed control individual. After the phone conversations, the participants who had spoken with depressed patients were themselves more

anxious, hostile, rejecting and depressed. Findings indicated that social interaction could possibly have an impact in the maintenance of depressive symptoms (Coyne, 1976).

Haefffel, Voelz, and Joiner (2007) examined Coyne's (1976) theory of depression. They found that individuals who engaged in excessive reassurance seeking demonstrated more depressive symptoms when they sensed less social support. The association of excessive reassurance seeking and fluctuations in perceived social support were specific to the development of depressive symptoms. Those who engaged in excessive reassurance seeking exhibited increases in depressive symptoms only when they noticed a decrease in social support. Viewing these results from a vulnerability-stress framework, findings show that a perceived loss of social support may be a stressor for people who take part in reassurance seeking behavior at a high level. Since the goal of reassurance seeking is to receive positive social feedback from others, if an individual senses loss in social support that would be damaging to the individual who seeks reassurance (Haefffel, Volez, & Joiner, 2007).

Lee and Kahende (2007) examined predictors that are affiliated with successful smoking cessation to inform cessation programs in tailoring their treatment plans for individuals who are at high risk for relapse. Less than 10% of smokers successfully quit smoking. The authors utilized data from the 2000 National Health Interview Survey and conducted multiple regression analysis so they could compare demographic, behavioral, and environmental features of smokers who had unsuccessfully attempted to quit in the last year with the same features of those individuals who were able to quit for 7 to 24 months prior to the survey. Findings indicated that individuals who were successful quitters were more likely to have rules prohibiting smoking in their homes compared to individuals who were unable to quit smoking. Those who were successful quitters were also more likely to be 35 years old or older, living with a significant

other or married, and non-Hispanic White. The findings of Lee and Kahende (2007) imply that social support may influence smoking behavior.

Brothers and Borrelli (2011) examined which types of social support have an impact for cessation among Latino smokers. The authors were also interested in examining if social support works as a protective factor against depressed mood during smoking cessation. This study consisted of Latino smokers and the average age of the participants was 37 years. Social support was measured by partnership status, the level of perceived general support (Interpersonal Support Evaluation List), and the amount of support participants perceived from their partners for smoking cessation (Partner Interaction Questionnaire). The authors assessed depressed mood with the Center for Epidemiological Studies-Depression (CES-D) scale. Findings indicated 30% of participants with a partner quit smoking compared to 14.3% of participants who did not have a partner. Forty-three percent of the participants with more perceived positive partner support stopped smoking compared to 17.4% of the participants who perceived low levels of partner support. Results demonstrated there was a significant interaction between partnership status and depressed mood in the prediction of quitting. Among participants who did not have a partner, those with low levels of depressed mood had higher quit rates (37%). These findings indicate it is important to assess social support and depressed mood when providing smoking interventions to Latino populations (Brothers & Borrelli, 2011).

1.9 Smoking, Depression, and Latinos

As previously noted, the literature demonstrates a relationship between depression and smoking, but few studies have examined how this association may differ with ethnicity. A study done by Berg et al. (2012) probed the interaction between ethnicity and depressive symptoms in the prediction of smoking. The authors observed the frequency of current smoking among

people experiencing depressive symptoms and those who were not experiencing depressive symptoms as a function of ethnic group. Results indicated there was a significant interaction between ethnicity and depressive symptomology in the prediction of current smoking. Indeed, non-Latino Whites smoked more when they were depressed. However, the frequency of current smoking among Latinos was lower in those individuals who endorsed depressive symptoms. In other words, Latinos who were depressed smoked at the same rate as when they were not depressed. This study emphasizes the importance of examining ethnic differences in mental health and smoking prevalence. It is of interest to extend the Berg et al. (2012) study with a sample of Latinos living with HIV on the U.S. and Mexico border because instead of probing for an ethnicity effect we can assess for an acculturation effect (since our sample consists only of Latinos living with HIV). If the Berg et al. ethnic group results can be extended to acculturation, this current study could help rule out potential biological effects associated with ethnic group differences.

To further elucidate the mechanism of effect, our study focuses on the potential mediating effect of social support. Several researchers have noted that social support can mediate acculturation effects on health among Latinos in the U.S. For example, Rivera (2007) studied a sample of 850 Latinos from South Florida. He predicted there would be a direct relationship between depression and acculturation. Rivera (2007) predicted greater levels of depression would be associated with greater levels of acculturation. He found that support mediated, but did not moderate, the impact of acculturation on depressive symptoms. The findings showed that family social support mediated the relationship between acculturation and depression.

1.10 Emotion Regulation Theory as a Context

A pioneer in the understanding of the link between smoking and affect, Tomkins (1966) proposed that management of affect is the key to comprehending smoking behavior. The author posited that the motives of the human being and the affects are innate inherited biological mechanisms. There are eight different affects that humans experience; three of them are positive and five are negative in tone. The positive affects consist of excitement, enjoyment, and surprise. The negative affects consist of anger, distress, fear, contempt, and shame. Tomkins explains that these emotions are innate because no one has to learn to cry in distress or smile in enjoyment. He does explain that stimuli that activate each emotion may be learned or innate. He suggests that humans are motivated to maximize their experience of positive affects and to minimize their experience of negative affects.

An innate behavior by which individuals may attain this balance between positive and negative affect is sucking or smoking behavior. When experiencing distress, infants will engage in sucking behavior (e.g. sucking on their fingers) thus interfering with the crying response. This results in a reduction in the neurological response signaling distress and minimizes the experience of negative affect. Sucking behavior can also promote the experience of positive affect; Tomkins explains that sucking behavior evokes the smiling response and a resulting affect of enjoyment.

Smoking or sucking is innately capable of reducing the negative affect of distress and provoking the affect of enjoyment, according to Tomkins. Thus, adults who feel distress on a daily basis might try to reduce this distress by smoking. Tomkins explains that we learn to be distressed by various things that would not innately distress us and we also learn to reduce this affect by smoking. People also learn that by smoking they relieve any negative emotion and induce more positive emotion (Tomkins, 1966).

More recent formulations have focused less on oral gratification and more on the role of nicotine when it comes to emotional regulation. For instance, Carmody, Vieten, and Astin (2007) describe recent theoretical and empirical findings pertaining to negative affect and emotion regulation in smoking cessation and dependence on nicotine. When individuals experience negative affect it usually motivates them to avoid these feelings or terminate them. The authors discuss models of addiction which concentrate on the idea that negative affect can become a conditioned stimulus that triggers conditioned drug-related responses. Self-medication models and stress and coping models are theories, which reference negative reinforcement. These models discuss that the individual who is addicted to drugs uses them to avoid or escape emotional suffering, and that drug motivation increases with stress because drugs lower the experience of stress. Then an association is created between affective distress related to stressful events and the negative affect involved in withdrawal (Carmody, Vieten, & Astin, 2007).

The emotional regulation strategy an individual engages in when experiencing affective distress may also contribute to the maintenance of smoking behavior. Fucito, Juliano, and Toll (2010) examined the subjective and behavioral responses of participants ($N=121$) in response to a mood induction procedure and their association with emotional regulation strategy (cognitive reappraisal versus expressive suppression) and smoking characteristics. The study also examined these associations in a subsample that reported current depressive symptoms ($n=46$). Results indicated that frequently engaging in expressive suppression was associated with longer smoking history while participants engaging in cognitive reappraisal were unlikely to expect smoking to improve mood. Amongst the depressed subsample, engaging in cognitive reappraisal as an emotional regulation strategy moderated the relationship between mood condition on smoking characteristics (duration, carbon monoxide boost, number of cigarette puffs). Findings from this

study suggest that emotional regulation strategies may not only contribute to motivational correlates of smoking, but smoking behavior specific to depressed individuals as well.

There is broad theoretical and empirical support for the idea that smoking is utilized as a form of emotional regulation. The literature suggests that individuals will engage in smoking in order to reduce or terminate negative affect. However, there remains very little understanding of the role that culture or acculturation might play in this process, aside from the single study of ethnicity by Berg et al. (2012), cited earlier.

1.11 Aims and Hypotheses

We plan to examine if acculturation moderates the impact of depression on smoking among people living with HIV. How acculturated an individual is should predict what kind of coping that person will engage in. Investigating the association between acculturation and depression in smokers would contribute to the literature because while others have looked at ethnicity as a moderator, we have a unique sample from the U.S./Mexico border that has a broad range of acculturation. Assessing if acculturation has an impact on depression and smoking would be beneficial for health care providers who are creating smoking cessation programs that are culturally sensitive for Latinos/Latinas. At the same time we want to test some of the bivariate correlations between depression, smoking, acculturation, and social support.

H1: There will be a positive correlation between depression and smoking, meaning the more depressed individuals are, the more likely they are to smoke.

H2: A positive correlation is expected between acculturation and smoking, indicating the more acculturated to the American culture one is, the more likely it is that one will smoke.

A negative correlation is expected for acculturation to the Mexican culture and smoking,

indicating the more one is acculturated to the Mexican culture the less likely one is to smoke (see Figure 2).

H3: A negative correlation is expected between social support and smoking, meaning the more social support one has the less likely it is one will smoke.

H4: Acculturation is expected to moderate the impact of depression on smoking through social support. Among highly acculturated people, the more depressed they are, it is anticipated that they will be more likely to smoke. Among less acculturated people, little or no association between depression and smoking is anticipated (see Figure 1 and Figure 2).

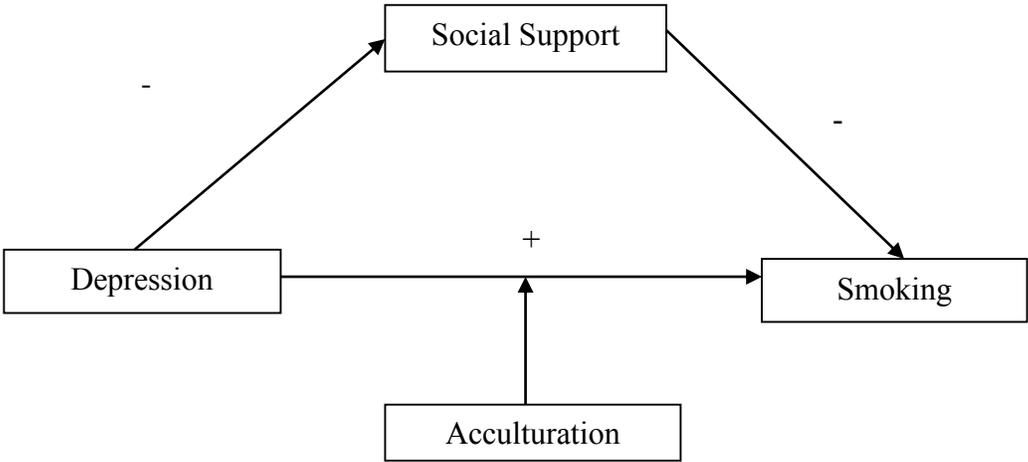


Figure 1: Among Latinos Living with HIV, Acculturation is Expected to Moderate the Impact of Depression on Smoking Through Social Support.

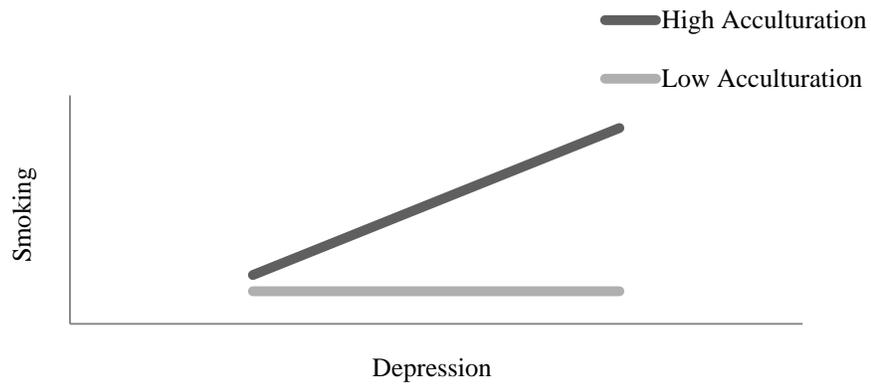


Figure 2: Among Latinos Living With HIV, Acculturation is Hypothesized to Moderate the Association Between Depression and Smoking.

Chapter 2: Method

2.1 Participants

Our sample consisted of 300 participants and the ages ranged from 18-73 years ($M=46.9$, $SD=10.1$). They had an average age of 46.4 years ($SD=10.1$) and had been living with HIV for an average of 10.4 years ($SD=7.1$). Seventy-nine percent identified as male, 19.4% identified as female, and 1.6% identified as transgender (male to female). The median household income for this sample was \$13,508 ($SIQR=\$5,592$). About 90% of the participants reported living in El Paso for an average of 10 years.

Participants were recruited through a local community health center that serves people living with HIV (Centro de Salud Familiar la Fe CARE Center, Inc.). In order for individuals to qualify to take part in our survey, they had to meet certain criteria. Participants had to be currently receiving treatment for HIV at the CARE Center. They also had to be 18 years of age (or older), able to give consent, and of Latino or Mexican descent. They had to have been taking HIV medications for a minimum period of one month.

Participants were excluded from the study if they showed signs of psychosis or dementia, or if they reported using crack, cocaine, heroin, or methamphetamines in the past month. Two other disqualification criteria were if the participant was planning on being away from the area for any extended period during the study or had a household member who had already participated in the study. The reason these were disqualification criteria was because the data were collected during an intervention study.

Data were collected in 2010 as part of a much more extensive study, which consisted of administering about an hour and a half of interview and paper-and-pencil measures to

participants. Our sample was a convenience sample; we studied a non-probability sample of 300 Latinos living with HIV. Examining smoking behavior in this population is crucial because there is a high prevalence smoking among people living with HIV. In addition, smoking compromises the effectiveness of treatment among people living with HIV. These facts, combined with the increased risk of HIV among Latinos, justify the study of such a convenience sample.

2.2 Measures

The *AMAS-ZABB* scale was developed to measure the bi-dimensional process of acculturation (Zea, Asner-Self, Birman, & Buki, 2003). The U.S. cultural identity scale consists of 6 items (e.g., “I think of myself as being U.S. American”) and the Latino cultural identity subscale consists of 6 items (e.g., “I think of myself as being Latino”). For each of these items the participant was able to choose from a 4-point Likert-type response format ranging from 1 (strongly disagree) to 4 (strongly agree). The language competence subscale contains 18 items (e.g., “How well do you speak English [school, work]?” “How well do you speak your native language [family/phone]?”). The cultural competence subscale consists of 12 items (e.g., How well do you know American national heroes from your culture?). For each of the language and cultural competence scale items, the participant was able to choose from a 4-point Likert-type response format ranging from 1 (not at all) to 4 (extremely well/like a native). For each factor (cultural identity, language competence and cultural competence) there exist two domains that the bi-dimensional measurement represents (U.S. acculturation and Latino acculturation). The measure was validated in two separate Latino samples in both English and Spanish. This scale demonstrated good internal reliability and satisfactory concurrent validity. The Cronbach’s coefficient alphas for the following subscales were: U.S. cultural identity subscale $\alpha = .90$, Latino cultural identity subscale $\alpha = .89$, English language competence subscale $\alpha = .97$, Spanish

language competence subscale $\alpha = .86$, U.S. cultural competence subscale $\alpha = .89$, and Latino cultural competence subscale $\alpha = .83$. The authors correlated the AMAS-ZABB scale with the BIQ-B, which is an adaptation of the Bicultural Involvement Questionnaire. The U.S.-American identity scale was significantly related to BIQ-B Americanism, $r(43) = .40, p < .01$, as were the English language, $r(43) = .48, p < .001$; U.S.-American cultural competence, $r(43) = .31, p < .05$; and overall AMAS-ZABB American dimensions, $r(43) = .48, p < .001$. The AMAS-ZABB subscales were significantly positively related to the BIQ-B Latinoism scale: Latino ethnic identity, $r(43) = .47, p < .01$; Spanish language, $r(43) = .46, p < .01$; and overall AMAS-ZABB culture of origin dimension, $r(43) = .41, p < .01$.

The *Smoking Scale* assesses current tobacco use and behavior as well as history of tobacco use and behaviors (Cooper et al., 2011). The self-report smoking scale has been utilized in a study by Cooper et al. (2011; Appendix A). The smoking scale was scored as follows: if respondents reported daily smoking (Item A), they were asked how many cigarettes they smoked per day. Those who smoked between 1-10 cigarettes per day were considered to be light smokers; if they reported 11+ cigarettes per day, they were considered to be moderate to heavy smokers. If they selected Item B (one to six cigarettes per week), Item C (less than one cigarette per week), or Item D (less than one cigarette per month), then they were considered to be nondaily smokers; if they selected Item E (“I no longer smoke, but in the past smoked at least two cigarettes per day”) or Item F (“I no longer smoke, but in the past smoked one-six cigarettes per week”) then they were considered quitters, and if they selected Item G (“I have smoked a cigarette or few, just to try it”) they were considered experimenters. Finally, if they selected Item H (“I have never smoked before, not even a puff”) they were considered to be never smokers.

Wong et al. (2012) conducted a study, which included a similar self-report of smoking status and a measure of urinary cotinine (biomarker of exposure to tobacco smoke). The authors then estimated the prevalence of cigarette smoking based on the self-report measures and on urinary cotinine levels. Results indicated that the self-report measures closely approximated estimates based on cotinine concentration. These findings imply that prevalence of cigarette smoking can be accurately estimated with self-report measures.

The *Multidimensional Scale of Perceived Social Support (MPSS)* is a 12-item survey of perceived social support. The survey consists of three subscales: 1-significant other (4 items; e.g., “There is a special person who is around when I am in need”), 2-friends (4 items; e.g., “My friends really try to help me”), and 3-family members (4 items; e.g., “My family is willing to help me make decisions”). Each item uses a 7-point Likert-type scale response format that ranges from 1 (very strongly agree) to 7 (very strongly disagree). The test-retest reliability for each subscale was .91, .85, and .87, respectively (Zimet et al., 1988). Cronbach’s coefficient alpha for the whole scale was .88. These values indicate good internal consistency for the scale as a whole and for the three subscales. In the development of this scale, one hypothesis the authors had was that perceived social support would be negatively associated with reported anxiety and depression symptoms. Correlations between the MSPSS subscales and the Depression and Anxiety subscales of the HSCL supported this prediction. Perceived Support from Family was significantly inversely related to both depression, $r = -.24, p < .01$, and anxiety, $r = -.18, p < .01$. Perceived Support from Friends was related to depression symptoms, $r = -.24, p < .01$, but not anxiety. The Significant Other subscale was marginally but significantly negatively related to depression, $r = -.13, p < .05$, as was the scale as a whole, $r = -.25, p < .01$.

The Beck Depression Inventory IA (BDI-IA) is a popular assessment utilized to measure depressive symptoms in research settings and clinical settings. This assessment consists of 21 items about depressive symptoms and attitudes. Each item uses a 4-point response format. Higher scores indicate higher levels of depression. Cronbach's coefficient alpha for this measure was .90 (Beck & Steer, 1993a).

The BDI-IA has been translated from English to Spanish and reports show the psychometric properties of this translation compare favorably to those of the BDI-IA in English (Bonicatto, Dew, & Soria, 1998; Suárez-Mendoza et al., 1997). The Spanish BDI-IA has demonstrated different structures through factor analyses (e.g., Ibáñez, González, & Peñate, 1997; Jurado et al., 1998), but most analyses have generated basically the same two-factor structure, distinguishing Cognitive symptoms from Somatic ones, as frequently seen with the English version (e.g., Aragón Ramírez, Bragado Alvarez, & Carrasco Galán, 1999; Bonicatto et al., 1998). In the English BDI-IA, the items that assess irritability, crying, and indecisiveness have consistently loaded on to the Cognitive/Affective factor but these items tend to fall on the Somatic scale in the Spanish BDI-IA. The scoring guidelines provided for the BDI-IA by Beck and Steer (1993) has been used for both the English and Spanish versions of the scale: 0-9 (minimal depression), 10-16 (mild depression), 17-29 (moderate depression), and 30-63 (severe depression).

Measure Translation: Scales that were previously validated and published in Spanish were utilized in this study. If a scale did not have a validated and published translation, it was translated by a certified translator in the Department of Languages and Linguistics at the University of Texas at El Paso. A certified translator whose native language was Spanish translated all the measures into Spanish. The measures were then back-translated by a second

certified translator whose native language was English. A committee of bilingual psychology graduate students then met with a doctoral-level research psychologist and the two translators to examine the measures for accuracy and cultural relevance of terms and of phrases. Any additional changes were made by consensus of the committee. Prior to the start of the study, all measures were pilot tested by staff members and HIV+ peer advocates at the center where the data were collected.

2.3 Procedure

Participants were initially contacted by staff at the community health center. The staff did not endorse the study; they simply informed their patients of it. The receptionist or medical assistants provided patients with a flyer that asked the patients if they were interested in participating in the study and noted the \$20 incentive. If the patients expressed interest, they were asked for their contact information. Research assistants then set up an appointment to discuss the study and request informed consent. Once informed consent was obtained we conducted a survey that was part interview and part paper-and-pencil. Participants were assigned numbers in order to protect their identities. All data were identified by participant number, rather than patient name. The University of Texas at El Paso's Institutional Review Board approved the study. If patients met the qualifications and rendered informed consent they were scheduled to take part in the survey. The baseline assessment usually took about an hour and a half to two hours. The participants were compensated twenty dollars for taking part in the survey.

2.4 Approach to Analysis

According to Fritz and MacKinnon (2007), if the “a” path in a mediator model is either strong or very strong, the required sample size to detect the ab effect with power set at 0.80 and an alpha set at .05 would be either 115 or 116 participants, assuming that the “b” path is not very weak. Our model satisfies these conditions; thus, we have enough participants to test this model.

Bivariate correlations were computed among relevant variables. To test the primary hypotheses we used a bootstrap analysis. Bootstrap analysis estimates the sampling distribution by treating the sample ($N=300$) as a population (Hayes, 2009; Preacher, Rucker, & Hayes, 2007). The bootstrap re-samples ($k=5000$) from the sample; k indicates how many times re-sampling from the whole sample occurred. This strategy created a 95% confidence interval, using a percentile approach (Preacher et al., 2007).

Chapter 3: Results

3.1 Descriptive Statistics and Demographic Information

Participant Characteristics. Data from the 300 participants were analyzed and the following descriptive statistics were found. Our sample scored an average of 5.1 ($SD=1.9$) on the Multidimensional Perceived Social Support scale. This indicates our sample reported levels of perceived social support similar to the sample from the Zimet (1988) study that reported an average of 5.6. Our sample scored an average of 12.8 ($SD=10.2$) on the Beck Depression Inventory 1A, which corresponds to a clinical rating of mild depression as indicated by Beck and Steer (1993). Forty-six percent of our sample reported smoking at least one cigarette in the past month, similar to the sample from Paperwalla, Levin, Weiner, and Saravay (2004). Our sample scored an average of 3 ($SD=0.9$) on the acculturation scale to the American culture and 3.1 ($SD=0.8$) for the acculturation to culture of origin. Compared to the sample in the Zea et. al., (2003) the average for their community sample for acculturation to the American culture was 2.6 and the average for acculturation to culture of origin was 3.4. Thus, our sample was, on average, fairly well acculturated to both cultures.

3.2 Scale Characteristics

Scale Reliability. Internal consistency for the scales and subscales was analyzed to ensure measures utilized in this study demonstrated adequate internal consistency reliability, as indicated by an $\alpha > .70$ (Bernardi, 1994). Cronbach's alpha (Cronbach, 1951) was computed for scales that measured depression, perceived social support, and acculturation (see Table 1).

Table 1

Reliabilities of Key Scales Among Latinos Living with HIV

<i>Scale Name</i>	<i>Cronbach's Alpha</i>
Beck Depression Inventory-1A (22 items)	.90
The Abbreviated Multidimensional Acculturation Scale (U.S.)	.91
The Abbreviated Multidimensional Acculturation Scale (Origin)	.88
Multidimensional Measure of Perceived Social Support (MSPSS)	.92

Table 2

Correlation Matrix for Key Variables Among Latinos Living with HIV (n=300)

	1.	2.	3.	4.	5.
1. Smoking Status	-	.049	.017	.119*	-.190**
2. Acculturation to the U.S.	-	-	-.027	-.010	.045
3. Acculturation to Culture of Origin	-	-	-	.007	.047
4. Beck Depression Inventory 1A	-	-	-	-	-.429**
5. Perceived Social Support	-	-	-	-	-

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

3.3 Hypothesis 1

H1: *There will be a positive correlation between depression and smoking, meaning the more depressed individuals are, the more likely they are to smoke.*

A Pearson Product-Moment Coefficient between depression and smoking indicates there is a positive correlation between these two variables ($r=.119$) (Table 2). However, the correlation is of relatively small magnitude, accounting for only 1.4% of the variance.

3.4 Hypothesis 2

H2: *A positive correlation is expected between acculturation and smoking, indicating the more acculturated to the American culture one is, the more likely it is that one will smoke. A negative correlation is expected for acculturation to the Mexican culture and smoking, indicating the more one is acculturated to the Mexican culture the less likely one is to smoke.*

Bivariate correlations were not statistically significant between acculturation to the Mexican culture and smoking and acculturation to the American culture and smoking ($r=.049$) (Table 2). In addition to being statistically insignificant, the correlations were very small in magnitude.

3.5 Hypothesis 3

H3: *A negative correlation is expected between social support and smoking, meaning the more social support one has the less likely it is one will smoke.*

There was a significant negative correlation between social support and smoking. This demonstrates those who have more social support are less likely to smoke and those who have less social support are more likely to smoke (Table 2). Social support accounted for 3.6% of the variance in reported smoking behavior.

3.6 Hypothesis 4

H4: *Acculturation is expected to moderate the impact of depression on smoking through social support. Among highly acculturated people, the more depressed they are, it is anticipated that they will be more likely to smoke. Among less acculturated people, little or no association between depression and smoking is anticipated.*

The bootstrap method was utilized to test our model. Bootstrapping is considered to be a conservative approach because it tests the whole model at one time instead of running multiple regressions individually, which can lead to a Type 1 error. A bootstrapping re-sampling approach was used to test our mediating hypotheses ($k= 5,000$ bootstrap samples; see Figure 3). The indirect effects of depression on smoking behavior through social support was significant ($b = .01$, CI [.004, .022]) The results of the analysis (Figure 3) indicate that social support contributes to smoking behavior and is linked to depression as well. Specifically, depression accounted for 18% of the variance in social support and social support accounted for 5% of the variance in smoking. However, the interaction between depression and acculturation was not statistically significant in the prediction of smoking behavior. Because this moderation hypothesis was the most direct extension of Berg et al. (2012), a specific post hoc follow-up analysis was conducted to examine the interaction between depression and acculturation in isolation, using a traditional regression approach (see Table 3). The overall model was not significant and neither was the interaction. Indeed, the lack of significance in conjunction with the very small effect sizes suggests that acculturation does not play a moderating role in the impact of depression on smoking in the way that ethnicity did in the Berg et al. study.

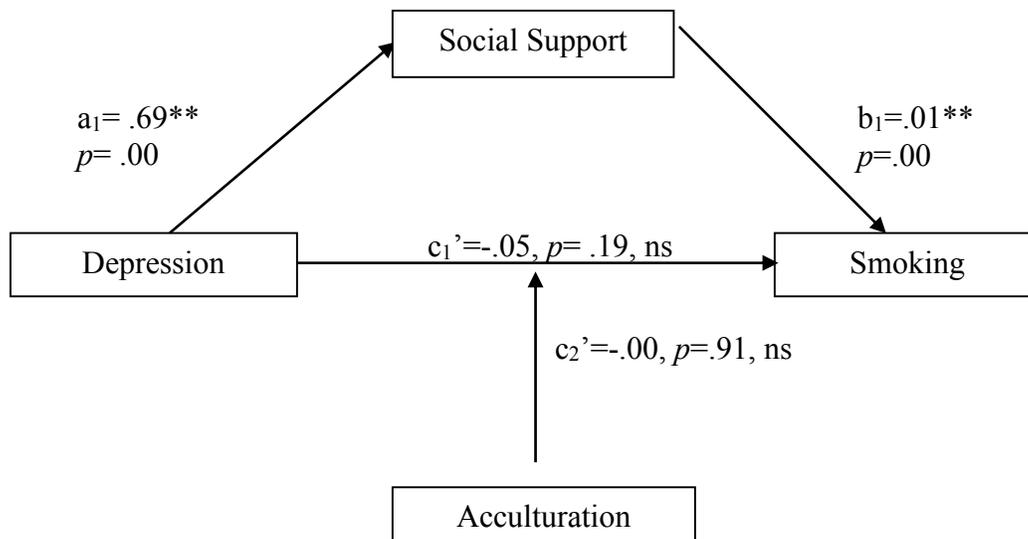


Figure 3. Depression, Social Support, Smoking, and Acculturation Among Latinos Living with HIV. * $p < .05$, $p < .01^{**}$. $k = 5,000$ bootstrapped samples. All path coefficients are standardized estimates. 95% confidence intervals for tests of statistically significant indirect effects; bias corrected and accelerated CI: [.00, .02].

Table 3

<i>Hierarchical Regression Model for Smoking on Acculturation Among Latinos Living with HIV</i>			
Model Summary			
Multiple $R = .15$, $F(3, 220) = 1.73$, $p = .16$			
Outcome: Smoking	β (se)	t	p
Step 1			Adjusted $R^2 = .01$, $p = .16$
1. Depression	.10 (.01)	1.42	.16
Step 2			Adjusted $R^2 = .01$, $p = .16$ $R^2\Delta = .01$ $F(2, 221) = 2.02$, $p = .14$
1. Depression	.09 (.01)	1.31	.19
2. Acculturation to the U.S.	.10 (.06)	1.42	.16
Step 3			Adjusted $R^2 = .01$, $p = .29$ $R^2\Delta = .01$ $F(3, 220) = 1.76$, $p = .16$
1. Depression	-.19 (.04)	-.70	.48
2. Acculturation to the U.S.	.02 (.01)	.21	.84
3. Depression X Acculturation to the U.S.	.30 (.00)	1.06	.29

Chapter 4: Discussion

4.1 Implications

To our knowledge, this is the first attempt to extend the Berg et al. (2012) study of Latinos and non-Latino White participants that found a moderating effect of ethnicity on the association between depression and smoking. The current study contained a sample of Latinos living with HIV on the U.S./Mexico border. Because the sample was entirely composed of Latino adults, and as an extension of prior work, we assessed for acculturation instead of ethnicity. In addition, we examined whether social support played a role in smoking behavior in this sample.

We found a positive correlation between depression and smoking which was consistent with the literature. Paperwalla and colleagues (2004) found that smoking is prevalent among almost half of depressed individuals. They also found that depression is a risk factor for smoking initiation. However, Nakata et al. (2008) found that “never smokers” who experienced regular or occasional passive smoke exposure reported higher levels of depression. Therefore it is unlikely that the relationship between depression and smoking can be simply interpreted as unidirectional, with depression leading to smoking. This may suggest that interventions aimed at treating depression should also screen for substance use, specifically smoking. Smoking may be an overlooked environmental factor that is contributing to depressive symptoms, and the resulting impact of depression could generate a vicious cycle that should be taken into account.

We found very small and statistically non-significant effects between acculturation and smoking among persons living with HIV in this study, although the literature has recorded an effect of acculturation and smoking (Wilkinson et al., 2005). However, in the Wilkinson et al. (2005) study, which included never, former and current smokers, they found an acculturation effect among women and not among the men. Among the women, acculturation was associated

with increased smoking behavior. Meanwhile, our sample had relatively few women (19%) while the Wilkinson et al. (2005) study was made up of 72% women. Thus, if acculturation impacts smoking behavior more heavily in Latinas than Latinos, our study was not well suited to detect this effect. Given the gender disparities surrounding the distribution of HIV in the U.S., smoking interventions among Latinos living with HIV may do well to take gender into account. However, it was beyond the scope of this study to assess for a gender effect, since we had few women take part in the study.

There was a significant negative correlation between social support and smoking, which implies that the more social support an individual has, the less likely they are to smoke (and vice versa). In addition, social support accounted for a significant portion of the variance in depression; this is consistent with Coyne's (1976) interpersonal theory. Past studies, such as one done by Lee and Kahende (2007), demonstrate that individuals are more likely to successfully quit smoking when social support (family/significant others) endorses house rules such as no smoking in the house. Indeed, findings from Brothers and Borrelli's study (2011) indicated that smoking cessation in Latinos was more likely in those individuals with social support as opposed to those who did not have a partner. Given these findings in the context of the literature, it is clear that social support plays an integral role among Latino smokers, as it does among smokers in general. Those wishing to design smoking cessation programs for Latino smokers may find culturally relevant ways to incorporate social support into their interventions.

The current study did not find a moderating effect of acculturation on the association between depression and smoking, whether mediated through social support or otherwise. This study was an attempt to extend the Berg et al. (2012) study with the exception that we did not assess for ethnicity. Instead, we assessed for acculturation as a moderator among a sample consisting entirely of Latinos. Our failure to extend the previous findings could mean that those findings were due to Type 1 error, and smoking behavior does not, in fact, vary as a function of ethnicity. If the Berg et al. results were due to chance or sample characteristics, that would explain why we did not find the effect for acculturation as moderator. Another possibility is that

our results, and not the Berg et al. results, are due to chance or the relatively smaller sample of our study lacking the power to detect a result. However, if the Berg et al. results and our results are both replicable (i.e., ethnicity is a moderator, but acculturation is not), that raises the question of what, specifically is driving the moderation effect. For example, there could be genetic differences at work in this situation. Alternatively, the underlying construct tapped by acculturation may have less variability than that tapped by ethnicity, leaving less room for an effect to be observed.

4.2 Strengths and Limitations

A strength of this study is that we utilized a sample of Latinos living with HIV on the U.S./Mexico border. Collecting data from individuals who live on the U.S./Mexico border should give us a wider range in acculturation than has been represented in past studies, which better enables detection of correlations with acculturation. In our study, participants could have been residing in either Juárez, Mexico or in El Paso, Texas. Also, due to our location, we were able to obtain a sample of Latinos large enough to power our study. Another strength of our study was that in the process of translating our measures, we utilized certified translators and a rigorous committee review process. During data collection (2010) we conducted the survey in whichever language the participant preferred, maximizing understanding and correspondingly, validity. While recruiting participants, we experienced a low refusal rate compared to other studies.

There maybe some sample-specific influences with our sample. For instance, there was substantial violence in Ciudad Juárez, Mexico at the time of data collection. Juárez is directly across the U.S.-Mexico border from El Paso. The influence of the violence on the emotional state and stability of patients may have had unanticipated effects on the sample and could be a

possible limitation to our study. However, the majority of our sample reported they had lived in El Paso, Texas for some time. We did not assess for these possible influences.

One limitation of this study involves the smoking scale. The smoking scale was not treated as a ratio variable; instead we treated it as an ordinal variable. The smoking literature indicates it is acceptable to code this variable in this manner. However, treating the smoking scale as an ordinal variable instead of a ratio variable is a limitation because we lose variance in the sample that may predict outcomes. Future studies should utilize a measure that is more psychometrically sound to assess smoking behavior.

Another limitation comes from the fact that this study employed a cross-sectional design; therefore we cannot imply causation. Also, the sample did not consist of all smokers, thus limiting the number of actual smokers we did get in our sample. Some of the measures utilized along with those in this study were not relevant to smoking; these measures are utilized in a larger study. This may have contributed to fatigue while completing the full self-report survey, which took as long as an hour and a half in some cases.

4.3 Future Directions

Future interventions for smoking cessation should take into account depression as well as perceived social support in order to target these key factors. Future studies should also utilize multiple objective measures to better assess the constructs of interest. For example, it could be suggested to utilize a structured diagnostic interview to assess for depression would be more objective compared to using a self-report measure. Observing participants' activities might be beneficial to assess how much social support they have. Collecting urine to assess for cotinine levels could provide accurate data around how much that participant is smoking. It would be instructive to replicate the ethnicity effect from the Berg et. al. (2012) while assessing acculturation simultaneously among different Latino subgroups. That could help establish

whether the Berg effect is reliable, and if so, what may drive it. Finally, assessing implications for adherence with these different subgroups would also be useful for future research.

References

- Amico, K., Fisher, W. A., Cornman, D. H., Shuper, P. A., Redding, C. G., Konkle-Parker, D. J., & Fisher, J. D. (2006). Visual Analog Scale of ART Adherence: Association with 3-day self-report and adherence barriers. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, 42(4), 455-459.
- Aragón Ramírez, N., Bragado Alvarez, M. C., & Carrasco Galán, I. (1999). Análisis factorial del B.D.I. (Beck Depression Inventory) en padres de niños con trastornos psicopatológicos [Factorial analysis of BDI (Beck Depression Inventory) in parents of children with psychopathological disorders]. *Analisis y Modificacion De Conducta*, 25, 81-102.
- Beck, A.T., Steer, R.A. (1993). *Manual for the Beck Depression Inventory*. San Antonio: Psychological Corporation.
- Berg, C. J., Kirch, M., Hooper, M. W., McAlpine, D., An, L. C., Boudreaux, M., & Ahluwalia, J. S. (2012). Ethnic group differences in the relationship between depressive symptoms and smoking. *Ethnicity & Health*, 17(1-2), 55-69.
- Bernardi (1994). Validating research results when Cronbach's alpha is below .70: A methodological procedure. *Educational and Psychological Measurement*, 54(3), 766-75.
- Berry, J. W. (2003). Conceptual approaches to acculturation. In K. M. Chun, P. Balls Organista, G. Marín, K. M. Chun, P. Balls Organista, G. Marín (Eds.) , *Acculturation: Advances in theory, measurement, and applied research* (pp. 17-37). Washington, DC, US: American Psychological Association. doi:10.1037/10472-004
- Birman, D. (1998). Biculturalism and perceived competence of Latino immigrant adolescents. *American journal of community psychology*, 26(3), 335-354.

- Bonicatto, S., Dew, A. M., & Soria, J. J. (1998). Analysis of the psychometric properties of the Spanish version of the Beck Depression Inventory in Argentina. *Psychiatry Research*, 79, 277-285.
- Brothers, B. M., & Borrelli, B. (2011). Motivating Latino smokers to quit: Does type of social support matter? *American Journal of Health Promotion*, 25(sp5), S96-S102.
- Carmody, T. P., Vieten, C., & Astin, J. A. (2007). Negative affect, emotional acceptance, and smoking cessation. *Journal of Psychoactive Drugs*, 39(4), 499-508.
- City of El Paso, Department of Public Health, Community Health Assessment and Improvement Plan Draft Report (2013), home.elpasotexas.gov
- Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System Prevalence and Trends Data, 2013. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2013.
- Centers for Disease Control and Prevention (CDC). (2011). Vital signs: HIV prevention through care and treatment--United States. *MMWR. Morbidity and mortality weekly report*, 60(47), 1618.
- Conway, B. (2007). The role of adherence to antiretroviral therapy in the management of HIV infection. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, 45, S14-S18.
- Cooper, T. V., Rodríguez de Ybarra, D., Charter, J. E., & Blow, J. (2011). Characteristics associated with smoking in a Latino college student sample. *Addictive Behaviors*, 36(12), 1329-1332.
- Covey, L. S., Glassman, A. H., & Stetner, F. (1998). Cigarette smoking and major depression. *Journal of Addictive Diseases*, 17(1), 35-46.

- Coyne, J. C. (1976). Toward an interactional description of depression. *Psychiatry: Interpersonal and Biological Processes*, 39(1), 28-40.
- Coyne, J. C. (1976). Depression and the response of others. *Journal of Abnormal Psychology*, 85(2), 186.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297-333.
- Cuellar, I., Bastida, E., & Braccio, S. M. (2004). Residency in the United States, subjective well-being, and depression in an older Mexican-origin sample. *Journal of Aging and Health*, 16(4), 447-466.
- De La Rosa, M. R., & White, M. S. (2001). A review of the role of social support systems in the drug use behavior of Latinos. *Journal of Psychoactive Drugs*, 33(3), 233-240.
- DiMatteo, M. R. (2004). Social support and patient adherence to medical treatment: a meta-analysis. *Health Psychology*, 23(2), 207.
- Finch, B. K., & Vega, W. A. (2003). Acculturation stress, social support, and self-rated health among Latinos in California. *Journal of Immigrant Health*, 5(3), 109-117.
- Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological science*, 18(3), 233-239.
- Fucito, L. M., Juliano, L. M., & Toll, B. A. (2010). Cognitive reappraisal and expressive suppression emotion regulation strategies in cigarette smokers. *Nicotine & Tobacco Research*, 12(11), 1156-1161.
- Gonzalez, J. S., Penedo, J., Antoni, M. H., Durán, R. E., McPherson-Baker, S., Ironson, G., & Schneiderman, N. (2004). Social Support, Positive States of Mind, and HIV Treatment Adherence in Men and Women Living With HIV/AIDS. *Health Psychology*, 23(4), 413-418. doi:10.1037/0278-6133.23.4.413

- Gritz, E. R., Vidrine, D. J., Lazev, A. B., Amick, B. C., & Arduino, R. C. (2004). Smoking behavior in a low-income multiethnic HIV/AIDS population. *Nicotine & Tobacco Research, 6*(1), 71-77.
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs 76*(4): 408–420.
Doi:10.1080/03637750903310360.
- Haefffel, G. J., Voelz, Z. R., & Joiner, Jr., T. E. (2007). Vulnerability to depressive symptoms: Clarifying the role of excessive reassurance seeking and perceived social support in an interpersonal model of depression. *Cognition and Emotion, 21*(3), 681-688.
- Ibáñez, I., González, M., & Peñate, W. (1997). Comparación de modelos factoriales alternativos para la versión española del Inventario de Depresión de Beck [Comparison of factorial models for the Spanish version of the Beck Depression Inventory]. *Analisis y Modificacion de Conducta, 23*, 283-303.
- Jackson, T. (2006). Relationships between perceived close social support and health practices within community samples of American women and men. *The Journal of Psychology, 140*(3), 229-246.
- Jurado, S., Villegas, M. E., Méndez, L., Rodríguez, F., Loperena, V., & Varela, R. (1998). La estandarización del Inventario de Depresión de Beck para los residentes de la Ciudad de México [Standardization of Beck's Depression Inventory for Mexico City inhabitants]. *Salud Mental, 21*, 26-31.
- Lee, C. W., & Kahende, J. (2007). Factors associated with successful smoking cessation in the United States, 2000. *American Journal of Public Health, 97*(8), 1503.

- Leserman, J., Jackson, E. D., Petitto, J. M., Golden, R. N., Silva, S. G., Perkins, D. O., ... Evans, D. L. (1999). Progression to AIDS: The effects of stress, depressive symptoms, and social support. *Psychosomatic Medicine*, *61*(3), 397-406.
- Lorenzo-Blanco, E. I., & Cortina, L. M. (2013). Latino/a depression and smoking: An analysis through the lenses of culture, gender, and ethnicity. *American Journal of Community Psychology*, *51*(3-4), 332-346.
- Nakata, A., Takahashi, M., Ikeda, T., Hojou, M., Nigam, J. A., & Swanson, N. G. (2008). Active and passive smoking and depression among Japanese workers. *Preventive Medicine*, *46*(5), 451-456.
- Paperwalla, K. N., Levin, T. T., Weiner, J., & Saravay, S. M. (2004). Smoking and depression. *Medical Clinics of North America*, *88*(6), 1483-1494.
- Preacher, K. J., Rucker, D.D., and Hayes, A.F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research* *42*(1): 185–227. doi:10.1080/00273170701341316.
- Rivera, F. I. (2007). Contextualizing the experience of young Latino adults: Acculturation, social support and depression. *Journal of Immigrant and Minority Health*, *9*(3), 237-244.
doi:10.1007/s10903-006-9034-6
- Sadule-Rios, N. (2012). A review of the literature about depression in late life among Latinos in the United States. *Issues in Mental Health Nursing*, *33*(7), 458-468.
- Shuter, J., & Bernstein, S. L. (2008). Cigarette smoking is an independent predictor of nonadherence in HIV-infected individuals receiving highly active antiretroviral therapy. *Nicotine & Tobacco Research*, *10*(4), 731-736.

- Solberg, V. S., & Villarreal, P. (1997). Examination of self-efficacy, social support, and stress as predictors of psychological and physical distress among Hispanic college students. *Hispanic Journal of Behavioral Sciences, 19*(2), 182-201.
doi:10.1177/07399863970192006
- Tomkins, S. S. (1966). Psychological model for smoking behavior. *American Journal of Public Health and the Nation's Health, 56*(12_Suppl), 17-20.
- Torres, L. (2010). Predicting levels of Latino depression: Acculturation, acculturative stress, and coping. *Cultural Diversity and Ethnic Minority Psychology, 16*(2), 256.
- Wiebe, J. S., Saucedo, J. A., & Lara, C. (2013). Assessing mood disorders and suicidality in Latinos. In *Guide to Psychological Assessment with Hispanics* (pp. 113-127). Springer US.
- Wilkinson, A. V., Spitz, M. R., Strom, S. S., Prokhorov, A. V., Barcenas, C. H., Cao, Y., Bondy, M. L. (2005). Effects of nativity, age at migration, and acculturation on smoking among adult Houston residents of Mexican descent. *American Journal of Public Health, 95*(6), 1043-1049.
- Wong, S. L., Shields, M., Leatherdale, S., Malaison, E., & Hammond, D. (2012). Assessment of validity of self-reported smoking status. *Health Reports, 23*(1), 47-53.
- Zea, M. C., Asner-Self, K. K., Birman, D., & Buki, L. P. (2003). The Abbreviated Multidimensional Acculturation Scale: Empirical validation with two Latino/Latina samples. *Cultural Diversity and Ethnic Minority Psychology, 9*(2), 10
- Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment, 52* (1), 30.

Appendix

Smoking Scale (Cooper et al., 2011)

___A. I smoke at least one cigarette per day (*Daily 1-10 cigarettes: light smokers*)

(*Daily 11+ cigarettes: moderate to heavy smokers*)

1a. If so, how many cigarettes per day? _____

___B. I smoke 1 to 6 cigarettes per week (*Nondaily smoker*)

___C. I smoke less than 1 cigarette per week (*Nondaily smoker*)

___D. I smoke less than one cigarette per month (*Nondaily smoker*)

___E. I no longer smoke, but in the past smoked at least 2 cigarettes per day (*Quitter*)

___F. I no longer smoke, but in the past smoked 1-6 cigarettes per week (*Quitter*)

___G. I have smoked a cigarette or few, just to try it (*Experimenters*)

___H. I have never smoked before, not even a puff (*Never smokers*)

Curriculum Vita

Jessica Armendariz was born in El Paso, Texas in 1988. The youngest child of Maria and Jesus Armendariz, she graduated from Montwood High School in 2006. She entered El Paso Community College and then transferred to the University of Texas at El Paso and graduated in 2011 with a Bachelors of Arts degree in psychology. She enrolled in a clinical psychology graduate program at the University of Texas at El Paso. She completed her clinical internship working with inmates at a Federal Correctional Institution providing brief therapy as well as drug treatment. She is currently in her third year of the clinical psychology program working as a research assistant for Dr. Wiebe. Her current research focuses on issues related to treatment adherence and comorbid psychiatric disorders in HIV populations.

Permanent address: 1860 Lyman Dutton
El Paso, Texas, 79936

This thesis was typed by Jessica Armendariz.