DEPRESSION IN THE BARRIO: RISK AND PROTECTIVE FACTORS FOR DEPRESSION
AMONG MEXICAN AMERICAN DRUG USERS

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ABSTRACT

Understanding the relationship between depression and drug use is essential given that drug users with depression are more likely to engage in high risk drug use behaviors. The current study aimed to explore the risk or protective relationship of the cultural values of familismo, personalismo, fatalismo, and machismo and depression among Mexican American heroin injecting men. Furthermore, this research aimed to explore the relationship between chronic neighborhood stress, acute stress, and depression among the aforementioned population. This work aimed to identify strengths clinicians may utilize when working with this population while simultaneously identify risks ripe for clinical intervention. Data for the current analysis comes from a study of Mexican-American injection heroin users. A cross-sectional research design and field intensive outreach methodology was utilized to recruit 227 Mexican-American men. Participants who met

the criteria for depression (CESD) were categorized into depressed and non-depressed groups. Selected covariates associated with the dependent variable were examined using logistic regression. Findings suggest that respondents with high familismo and fatalismo scores were less likely to score high for depressive symptomatology. Additionally, findings revealed that chronic stress was a risk factor for depressive symptomatology while acute stress was protective. The results begin to elucidate the protective and risk nature of culture and community for depression among a group of Mexican American heroin injectors residing in the Barrio.

Marina, and Michelle, who love me like I am one of their own. You have my eternal gratitude.

To my work family, James Codd, Sheila Lindsay, and Vel Escamilla. I'd like to acknowledge the cheerleading that you each did for me through the last 8 years. I would have been lost without each of you. And my dear friend Deb Shafto who provided countless hours of child care so that I could write and taught me more about life than I will ever know.

And finally this work would not have been possible without the guidance of my mentor Dr. Luis Torres who was not only an incredible teacher but a friend. He dedicated hours to my development as a scholar and he is the true epitome of a professor and scientist; I aspire to emulate him in my scholarly career.

PREFACE

As a child of impoverished Mexican immigrants I am intimately aware of the goings on in the Barrio. I spent my childhood in such a neighborhood. My friends and I all spoke the same language, ate similar food, and enjoyed the same music and novelas. There was great comfort in sharing a culture; in knowing who I was in relation to others and vice versa.

As is often the case with Mexican immigrants my parents worked incredibly difficult jobs toward their eyes on the American dream. They wanted a better life for their daughters, one free of the labor intensive jobs that they had to work to make ends meet. We eventually moved out of the barrio and in to the suburb. I lost something vital to me in that transition but I also gained some tremendous resources. In my new neighborhood I had access to better schools and opportunities and through my parents' influence and support I pursued higher education. I never forgot my friends in the Barrio. I often wondered how their lives turned out. Did they have the same opportunities that I was able to identify? Did they escape unscathed through the chains of gangs, drugs and violence so present in the neighborhood?

And so this work is dedicated to them, that it may shed a light on the strengths of Barrios while simultaneously identifying communities ripe for intervention.

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For my family and for the Latinos in the Barrio

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"We cannot seek achievement for ourselves and forget about progress and prosperity for our community... Our ambitions must be broad enough to include the aspirations and needs of others, for their sakes and for our own."   -Cesar Chavez

Introduction

Depression affects 350 million people worldwide (World Health Organization 2012). Specifically in the U.S., depression national prevalence rates range from 6 to 21 percent (Kessler et al., 2005; Grant et al. 2006). Furthermore the prevalence of depression among U.S. adults has more than doubled in the last 20 years (Compton et al., 2006) making depression a primary health concern in the U.S. (Hasin et al, 2005). Depression is a general term used to classify various forms of depression, the three most common forms being major depression, dysthymia, and bipolar or manic depression (Kytle, Strock, Spearing, Wittenberg, Wittemore, Dubous, et al. 2010). More specifically, depression is "a disorder marked by sadness, inactivity, difficulty with thinking and concentration, significant increase or decrease in appetite and time spent sleeping, feelings of dejection and hopelessness, and, sometimes, suicidal thoughts or an attempt to commit suicide" (Volkow, 2010, p. 10).

Depression incidence is diagnosed using the latest version (IV) of the Diagnostic and Statistical Manual of Mental Disorders (DSM). The DSM IV measures symptoms that cause clinical impairment in social, work or other areas (2000). Symptoms of depression include persistent low mood, diminished interest in activities, unintentional weight loss or gain, excessive sleeping or insomnia, fatigue, and feeling of worthlessness. Other measures such as the Center for Epidemiological Studies Depression (CESD) scale have been used extensively to assess many of these depressive symptoms in community samples where administration of the entire DSM IV may be arduous (Radloff, 1977).

Multiple factors are associated with depression incidence including interactions between biological, psychological, and social influences. Biological factors may include a

predisposition (either genetic or non-genetic) to a failure of the neural circuits in the brain to function properly as well as an imbalance of hormone and neurochemistry (Gilbert 2004). The cingulate cortex located in the prefrontal cortex is reportedly involved in mediating depression. Studies show changes in cortical volumes in the Cingulate Cortex of patient's with Major Depressive Disorder (Helwick, 2010). Also, low levels of 5-HT in the cingulate cortex have been associated with depression (Dongju and Patrick, 2008). These serotonin levels can be stabilized with SSRIs (Preskorn, Ross, and Stanga, 2004).

These abnormalities in the brain are often associated with psychological influences (e.g. negative thoughts or emotions) and social events (e.g. loss of a loved one, end of a significant relationship). Thus, how an individual copes with stressful life experiences, and how these experiences impact their psychological perception reciprocally influence their biological predisposition for depression. A combination of these biopsychosocial stressors is often related to the onset of depression (Lewinsohn, 1988). Furthermore, in order to understand the interactions between biopsychosocial stressors it is essential to consider the impact of an individual's physical and social ecologies (Gilbert, 2004). For instance, a lack of resources and living in a non-cooperative environment can be associated with increases in social stressors which in turn can influence the depression model. Thus it is essential when understanding depression to look at the individual in their environment. Given this, the ecological perspective (Bronfrenbrenner, 1979) will be used to guide this research.

The ecological perspective posits interactions between individuals and their environment can result in either adaptive or maladaptive social functioning. Social

functioning is a result of an individual and the environment reciprocally influencing and responding to each other. Environment consists of external and internal factors. External factors encompass micro, mezzo, and macro societal constructs such as individual life experiences, family, culture, social environment, community, work, and school. Internal factors consist of behavioral, physical and mental health and cognition (Greene, 1999). Interactions between an individual and their environment can be either adaptive or maladaptive based on the match of an individual's needs and the quality of their environment to meet those needs. Maladaptive interactions can often result in stress, drug use, family conflict, and involvement in crime (Germain & Gitterman, 1986). Findings from this study aimed to identify the relationship between an internal factor (i.e. depression) and external factors among an aging Mexican-American population engaging in maladaptive social functioning (i.e. drug use).

More specifically, this research examined the macro concepts of culture (i.e. familismo, personalismo, fatalismo, machismo, and acculturation) as well as the micro individual life experiences of incarceration and stress on the depressive status of Latino current and former heroin injectors.

Latinos

Latinos are the largest minority group comprising 16% of the population (U.S. Census Bureau, 2010). Latinos have accounted for just over half of the overall population growth in the U.S. since 2000 (Fry, 2008). Estimates predict Latinos are expected to grow to 29% of the total population by 2050 (Passal & Cohn, 2008). Latinos in the U.S. comprise a heterogeneous population by ethnicity, generation, and region of residence (Borrell, 2005). Mexican Americans account for almost 70% of this ethnic

group (U.S. Census Bureau, 2010). Based on assumptions on future childbearing, mortality and international immigration rates, the population is projected to grow to 102.6 million, an increase of 188 percent (U.S Census Bureau, 2002).

Another population projected to experience significant growth in the U.S. is older Americans. The U.S. older population, those 65 years and older, is predicted to increase by 42% in the next 4 decades (U.S. Census Bureau, 2010). This population increase among the elderly is a result of the aging baby boomer generation and increases in minority groups, especially Latinos. In 2008 there were 2.7 million Latinos aged 65 and older in the U.S; however, this group is projected to increase to 17 million by the year 2050, comprising almost 20% of the total elderly population (U.S. Census Bureau, 2010). By 2019 Latinos are predicted to be the largest minority group among older adults aged 65 years and older (U.S. Administration on Aging, 2010).

These population increases are concerning given that research has recently documented increases in substance use disorders among older adults (Lin, J.C., Karno, M., Grella, C., Ward, U. Kiao, D., Hu, P., et al 2011). National data has revealed one in five older adults have a chance of having a lifetime substance use disorder and one in twenty have a chance for a substance use disorder in the last 12 months. These trends are predicted to grow. Colliver and colleagues (2006) predict the use of illicit drugs by older adults will increase from 2.2% (1.6 million) to 3.1% (3.5 million) by the year 2020. Han et al. (2009) predict the number of older adults with a substance use disorder will double by 2020 (2.8 million to 5.7 million). Increases in use and disorders are not only a

result of an increase in the elderly population but also an increase in older adult drug consumption.

Exacerbating these findings is that older Latinos are less likely than younger Latinos to perceive substance use as problematic and are less likely to seek treatment (Karch, Barker, Strine, 2006; Wu & Blazer, 2011). Furthermore, older Latinos have characteristics that may increase their risk of developing a substance use disorders (i.e. high poverty rates and low educational attainment) (U.S. Administration on Aging, 2010; de la Rosa et al., 2005). For instance, the poverty rate for older Latinos was almost 20% in 2008, more than twice that of older non-Hispanic whites (7.8%) and 56% of older Latinos have not completed high school as compared to only 23% of the total older population (U.S. Administration on Aging, 2010). These risk factors are overrepresented among the Latino population, exacerbating their risk of drug use and dependence (de la Rosa, Holleran, Rugh, MacMaster, 2005). The over representation of these risks within the Latino community is concerning given that these risks are also associated with contracting HIV and other blood-borne pathogens among minority populations (Center for Disease Control and Prevention, 2002).

Co-Occurring Depression and Drug Use among Latinos

While the prevalence rate for depression ranges from 6 to 21 percent among the general population, prevalence rates are much higher for other sub-groups. For instance, older Latinos' prevalence of depression is 25% as compared to elderly non-Hispanic whites and African Americans whose rates range from 9% to 16.9% (Gonzalez et al., 2001). These elevated levels of depression have been attributed to the

disproportionate health needs (i.e. diabetes, life-threatening illnesses) and economic

disparities (i.e. unemployment, absence of health insurance) that Latinos experience

(Dunlop, Song, Lyons, Manheim & Chang, 2003).

Another group with elevated prevalence rates for depression as compared to the

general population are heroin users. Darke and Ross found 41% of their community

sample of injecting drug users had a lifetime prevalence of depression (1997). Similar to

current injectors, elevated prevalence rates are observed in methadone using

populations, Peles et al. (2007) found 50% of their methadone using sample had

depression. These elevated levels of depression among opioid users are concerning given

that depressed injecting drug users are heavier drug users, engage in more risk taking,

have poorer physical health and greater psychopathology than their non-depressed

counterparts (Havard, Teeson, Darke and Ross, 2006). However, when considering

these elevated prevalence rates for depression among heroin using (either current or

former) populations it is important to consider the shared neurobiology of depression

and opioids.

Opioids such as heroin and methadone may act on the neural circuitry of the

brain and cause depressive symptoms. Receptors that are involved in regulating

depression in the cingulate cortex are found in concentrated levels in the cingulate

cortex (Kosten, Markou, and Koob, 1998). More specifically heroin acts as an agonist on

mu and delta sub-type receptors (Nestler, 2001). Specifically, heroin acting on the delta

sub-receptor increases concentration of dopamine and serotonin in the prefrontal cortex

resulting in a euphoric antidepressant state (Nestler, 2001). However, after using heroin

long term, serotonin and dopamine are depleted resulting in a depressogenic effect

(Kosten et al. 1998). Furthermore, Lin and colleagues (2012) have found white matter disruptions in patients receiving methadone maintenance treatment. Specific to depression, their research found patients with altered white matter in the superior longitudinal fasciculus, para-hippocampus, and middle cerebellar peduncle had worse depression scores than a control group of non-methadone maintenance using patients.

While neuroscience research is beginning to explore the relationship between depression and opioid use what remains uncertain is how long it takes for the brain to recover from the use of opioids. Darke et al. (2007) found an overall reduction in injecting drug user's depression rates over 36 months, which coincided with a decline in their heroin use. This decline in depression may in fact be due to the fact that heroin users' depression, while present during initial assessment, subsides over time in conjunction with their drug use. In other words their depression may be a result of the depressogenic effect of heroin instead of an actual DSM IV depressive disorder.

Transdisciplinary research with heroin users is an ideal research modality to concretely identify the nuances between the social, psychological, and biological influences to depression. While it is beyond the scope of this research to tease these nuances out between what is clinically defined as depression by DSM IV criteria and what is the depressogenic effect (i.e. heroin mimicking depression symptoms) of heroin on the brain it is important to note these interaction effects and interpret findings cautiously.

Depression risks that are specific to Latinos include older age, lower levels of education, unmarried status, low monthly income, familial stress, and acculturation (Gonzalez et al, 2001; Wolfe, Scott, Wekerle, & Pittman, 2001). Many of these risks are

magnified for drug using Latinos given their residence in crime ridden, poor urban ethnic enclaves with high rates of victimization (U.S. Department of Justice, 2005; Valdez and Cepeda, 2008).

As previously noted depression is often associated with substance use disorders. The Substance Abuse and Mental Health Service Administration (2009) reports over 8.9 million people that have been diagnosed with a co-occurring substance use and mental health disorder in their lifetime, with mood disorders being the most common. In a nationally representative study researchers found almost 20% of individuals with a substance use disorder also had at least one independent mood disorder during the previous 12 months (de la Rosa et al., 2005). This association is also evidenced among older adults, research has begun to document increases in co morbid substance use and mental health disorders among the U.S. aging population (Lin, et al., 2011). Depression is associated with substance abuse as a stress and coping mechanism to help individuals deal with life-events and the psychosocial environment of home, school and peers (Miller-Johnson, Lochman, Coie, Terry, & Hyman, 1998; Steinhausen & Wingler-Metzke, 2000).

Further influencing the relationship between depression and substance use is that depression status and severity may differ based on certain drug use behaviors (Darke et al, 2009; Cepeda et al, 2012, Connor Pinquart, Duberstein, 2008; Lemstra, Rogers, Thompson, Moraros, Buckingham, 2011). For instance, longer injecting careers are associated with poorer mental health outcomes (Darke et al., 2009). This is problematic as depression among substance abusers has also been associated with high

risk drug use behaviors which place individuals at heightened risk for contracting blood-borne pathogens. Depression among drug using populations has been associated with transitioning from non-injecting to injecting, sharing injecting equipment, and increased drug use (Cepeda, et al., 2012; Connor, et al., 2008; Lemstra, et al., 2011). Cepeda et al., (2012) found among Mexican-American non-injecting heroin users that respondents who experienced depressive symptoms were more than 3 times as likely to transition to injecting drug use than those who did not experience depressive symptoms. Additionally, Lemstra and colleagues (2011) found that depression was independently associated with injecting drug users sharing injecting implements. Furthermore, a meta-analysis conducted by Connor et al. (2008) indicated that drug users who also scored high on depression measures were more likely to engage in high risk HIV infection risk behaviors and also were more likely to increase their drug consumption. Injectors are faced with unique stressors that exacerbate their risk for depression (Gonzalez et al, 2001; Wolfe et al., 2001).

With Latinos being the largest and fastest growing minority group, and given elderly Latino's increased prevalence of depression, as well as that older adults are one of the fastest-growing drug using groups, it is essential to better understand depression symptomatology (e.g. depressed mood, feelings of guilt and worthlessness, feelings of helplessness and hopelessness, psychomotor retardation, loss of appetite and sleep disturbance) levels within a drug using aging population. This is important given that drug users with depression are engaging in high risk drug use behaviors that place them at an increased risk for HIV and other blood-borne pathogens. Furthermore, the barrios from which depressed Mexican American drug users reside are common throughout the

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entire U.S. and many of the behaviors that occur in these neighborhoods (i.e. drug use, crime, violence) have an impact on society at large.

Findings from this study aimed to identify the risk or protective factors associated with depression among drug users in order to develop or adapt interventions that would reduce the depression status and by proxy the subsequent high risk drug use behaviors of drug users in barrios throughout the country. Specifically, this research examined the relationship between cultural values (i.e. familismo, personalismo, fatalismo, machismo) and depressive symptomatology. Although research has begun to examine the relationships between some of these cultural values and depression, findings are often inconsistent (Losada, Shurgot, Knight, Marques, Montorio, Izal et al., 2006; Joiner, Perez, Wagner, Berenson, Marquina, 2001; Ornelas, & Perreira, 2011; Roberts, Roberts, & Chen, 2000), leaving these relationships unclear. Thus this research aimed to address the following specific aims and answer the following hypotheses:

1. Examine levels of depressive symptomatology in a sample of long-term Mexican American IDUs.

   Hypothesis 1a. Current users will have higher levels of depressive symptomatology than former users.

2. Assess the relationship between sociodemographic and cultural variables and depressive symptomatology.

   Hypothesis 2a. Familismo will be inversely related with depressive symptomatology.

Hypothesis 2b. Personalismo will be inversely related to depressive symptomatology however this relationship will be moderated by the number of drug users in an individual's social network

Hypothesis 2c. Fatalismo will have a direct relationship with depressive symptomatology.

Hypothesis 2d. The relationship between fatalism and depressive symptomatology will be moderated by frequency of religious attendance.

Hypothesis 2e. Machismo will have a direct relationship with depressive symptomatology.

Chronic stressors are present in barrios in various forms including crime, violence, poverty, drug exposure, etc. (Valdez & Cepeda, 2008). Research has established a strong relationship between stress and depression (Brown & Harris, 1978; Lorant, Crous, Weich, Deliege, Machenback, & Ansseau, 2007). However, limited research has explored the relationship between stress and depression within Mexican American barrios with drug using populations. While many behaviors are occurring in the barrio that places individuals at heightened risk for stress and subsequently depression, what research does exist has found that living in these barrios actually provides a protective effect for stress (Ostir, Eschach, Markides, & Goodwin, 2003). However, the sample of this study was comprised of non-drug users. This is an important distinction because drug users often engage in behaviors that are associated

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with stress more frequently than the general population (U.S. Departmetn of Justice, 10=994; Valdez & Cepeda, 2008). This research aimed to address this gap in the literature by examining the risk or protective nature of chronic stress and acute stress on depressive symptomatology.

3. Assess the relationship between chronic stress and acute stress and depressive symptomatology

> Hypothesis 3a. Chronic stress (i.e. poverty, incarceration, drug use) will have a direct relationship with depressive symptomatology.

> Hypothesis 3b. The number of acute stressful life events will have a direct relationship with depressive symptomatology.

Background

Culture

An understanding of the relationship between cultural values and depression (i.e. protective or risk) is essential when conducting research with a Latino population (Gloria & Peregoy, 1996). Cultural concepts of familismo, personalismo, fatalism, and machismo have been likened to Latinos (Castro & Hernandez-Alacron, 2002; Griffith, Joe, Chatham & Simpson, 1998; Marin & Marin, 1991). Familismo, or familism, is the idea that the family unit is the priority with family members putting their individual needs aside for the betterment of the family as a whole; the family requires allegiance and connection (Cuellar, Arnold & Gonzalez, 1995; Sabogal, Marin, Otero-Sabogal & Marin, 1987). Personalismo, or personalism, refers to the idea that relationships with

others are held in high esteem, often considered more significant than traditional routes of success (i.e. wealth, educational achievements (Cuellar, et al., 1995; Cheung & Leung, 2008). Fatalismo, or fatalism, refers to the idea that life circumstances are preordained and there is little that one can do to change those life events (Roberts, Roberts, & Chen, 2000). Machismo refers to the traditional view of the male as the provider for the family (Castro et al., 2002). Historically, the concept of machismo has been used as a positive description of the honorable and responsible man, willing to undergo whatever struggles to protect and provide for his family. However, more recently, machismo has been used to describe men as dominating and overbearing toward the women in their lives as well as their families (Brendel & Sustaeta, 2003; Cheung & Leung, 2008). There is incongruence between these two definitions of machismo, with younger less traditional Latinos viewing it as a negative construct and older traditional Hispanics viewing it as positive.

Limited research has examined the association of these cultural values with depression among a drug using populations. What research is available is often contradictory about the risk or protective effects these cultural values have on depression among drug using populations. Given these inconsistencies it is not yet clear how these values are associated with depression among a general drug using population, and more specifically, how these values impact depression among a Latino aging male population with a history of injecting drug use.

Familismo

Familismo refers to the idea among Latinos that the family is of utmost importance, requiring loyalty and involvement (Cuellar, et al., 1995; Sabogal, et al., 1987). The family may consist of nuclear and extended relatives and the needs of the family are placed at a higher importance than individual needs (Cheung & Leung, 2008). Familismo has traditionally been viewed as a protective factor against depression (Parsai, Voisine, Marsiglia, Kulis & Nieri, 2009). For instance, among Latino immigrant parents with children ages 12 – 18, familismo reduced the likelihood of experiencing depressive symptoms (Ornelas, & Perreira, 2011). Similarly, Ayon and colleagues (2010) found familismo was protective to experiencing depression among a study examining immigrant parents and children. For both groups, as familismo levels increased, symptoms of depression decreased. These studies found that connectedness with the family provided the social support these individuals needed to adjust to their new communities after migration.

However, other research has found that familismo is a risk factor for depression. When studying the relationship between familismo and depression among care-givers, Losada et al. (2006) found familismo was correlated with higher levels of depressive symptoms. Similarly, Purdy and Arguello (1992) found that among caretaking of older adults, familismo actually prevented the use of services by elderly Latino. This research found sole reliance on the family for care-giving resulted in an increased burden upon the children of ailing elders; a practice correlated with depression and financial strain (Purdy & Arguello, 1992). The relationship between familismo and depression is

complex; while familismo can provide a protective effect it can also be a burden on individual family members, causing them to experience depression.

Specific to drug use, research remains unclear on the protective or risk effect of familismo. The majority of research studying familismo among substance users has focused on adolescents. For instance, Kopak, Chen, Haas, and Gillmore (2012) using data from the National Longitudinal Study of Adolescent Health found family cohesion was the only protective factor for Mexican heritage youth to not engage in drug or alcohol use. However, when studying the effect of cultural values on alcohol consumption among 6,000 middle school students researchers found familismo was not protective for adolescent alcohol use (Shih, Miles, Tucker, Zhou, D'Amico, 2012). Specific to drug use, Unger and colleagues (2002) found familismo was associated with lower risk of substance use among a multi-ethnic sample of adolescents.

Evidence suggests that familismo may be viewed as protective for drug use, however it may be a risk for engaging in risky behaviors if members within the family are engaging in high risk behaviors. For instance, research conducted among Mexican Americans residing in San Antonio's West Side has shown that individuals are engaging in intergenerational drug use, that is, children are growing up within families in which injecting heroin is common and visible in the home (Valdez & Cepeda 2008). This intergenerational drug use trend in conjunction with familismo provides a frightening depiction of the deleterious consequences of what has traditionally been considered a protective cultural factor. Researchers postulate that there may be a protective relationship between familismo and depression because of the social support and

cohesiveness that individuals depend on. Based on the aforementioned literature I predicted familismo will be inversely related with depressive symptomatology. I predicted that as familismo scores go up depressive symptomatology scores would go down.

Personalismo

Personalismo is another prominent Latino cultural value. Again, personalismo refers to the idea that individuals hold interpersonal interaction in high esteem, with a preference for personal connection with others over material or economic achievement (Cuellar, et al., 1995; Cheung & Leung, 2008). Thus engagement with others is of utmost importance; again personalismo has the potential of being a protective factor or a risk factor. For instance, if an individual's network consists of others engaging in pro-social behaviors it is likely that encounters would be protective in nature, however if their network consists of individuals engaging in deviant behaviors this may provide a route for the individual to engage in these behaviors as well. Bermudez and colleagues (2010) confirmed help-seeking Latinos self-identified with the cultural value of personalismo as an accurate depiction of their values. However, they did not assess whether this value influenced depression or depressive symptoms among their sample. To the author's knowledge little to no research exists examining the relationship between personalismo and depression among a drug using population. This gap in the literature is significant when considering that the influence (both positive and negative) of an individual's social network on decision making can be tremendous (Bond, Kaskutas, & Weisner, 2003; Neaigus et al., 2006). Even more concerning is that the social networks of drug users

tend to be comprised of other drug users (Neaigus, Gyarmathy, Miller, Frajzyngier, Friedman, & Des Jarlais, 2006). A study by Kail and Elberth (2002) found that Latinas were encouraged to continue use and were actively discouraged from discontinuing their drug using and entering treatment by their drug using friends (Kail & Elberth, 2002). Thus the relationship between personalismo, this inherent desire for interpersonal relationship, and having a network comprised of other drug users warrants further exploration. This study aimed to address this gap in the literature. Furthermore, this study predicted personalismo would be inversely related to depressive symptomatology. However, this study also predicted the relationship between personalismo and depressive symptomatology would be moderated by the number of drug users in an individual's social network.

Fatalismo

Another cultural value of Latinos is fatalismo. Fatalismo is the belief in external control in life; the idea that things are preordained and there is little that an individual can do to change the circumstances of life (Ross, Mirowsky & Cockerham, 1983). Fatalismo among Latinos may be an adaptive response to living with uncontrollable life situations (Parker & Kleiner, 1966). The effect of fatalismo has been studied among mental health disorders among Latinos and research has found it to be a risk factor in some instances for psychological distress and depression. For instance, Ross et al. (1983) examined the impact of fatalismo and having a fatalistic world view on social class among Latino and Anglo respondents who identified they had psychological distress. This research found that individuals from lower socio-economic classes and

those that were Latino were more fatalistic than those from higher socio-economic class and Anglos. They also found that fatalismo was independently associated with having higher levels of psychological distress. Specific to depression, Roberts, Roberts, and Chen (2000) found among 5400 adolescents in the southwest, that fatalismo was significantly and independently associated with depression. Specifically, adolescents who had a fatalistic world view were 2.6 times more likely to have depressive symptoms than those without a fatalistic world view.

However, other research has not identified fatalismo as a risk factor for depression. When studying a community sample of adolescent Mexican-American girls, Joiner et al. (2001) did not find a relationship between fatalismo and depression. Furthermore, some research has found that familismo provides a protective effect for depression when considering certain confounding variables. For instance, the following research by Neff and Hoppe (1993) found that while fatalismo was associated with high levels of depression, this relationship was moderated by religion. Their research found fatalismo provided a protective effect against psychological distress and depression when individuals with a fatalistic world view also had high levels of religiosity. In a study examining the racial and ethnic differences of Anglo, African American and Latino men and women in San Antonio these same researchers found respondents with higher levels of fatalismo were associated with greater depression. However, when examining the relationship between fatalismo and religiosity, those individuals with both high fatalismo and religiosity were associated with the lowest levels of depression among sample respondents. While initially one may think fatalismo has a negative effect on depression, the relationship remains unclear when examining other confounding

variables that may in fact moderate the relationship between fatalismo and depression such as religion.

It is evident based on the existing research that the association between fatalismo and depression remains unclear. Moreover, little research exists examining this relationship among a drug using population (Schlegel & Crawford, 1978). However, Schlegel and Crawford (1978) examined a multi-dimensional measure of internal-external locus of control and drug use among high school students. They found that high school students with a greater external locus of control, or fatalismo, were significantly more likely to experiment and use of both licit (cigarettes, liquor, beer) and illicit (marijuana, inhalants, heroin) drugs. While these studies begin to provide an understanding of the relationship between fatalismo and depression and fatalismo and drug use, limited research has examined the relationship between fatalismo and depression among a drug using population. It is important to conduct this research given that individuals with high fatalismo scores may be more likely to engage in drug use and subsequent high risk drug use behaviors. Based on the aforementioned research this research predicted that fatalismo would have a direct relationship with depressive symptomatology. However, this research also predicted that the relationship between these variables would be moderated by frequency of religious attendance. While Neff and Hoppe (1993) have examined the relationship between fatalismo and religion among Latinos they did not take into account whether this relationship was present in a drug using population. This study aims to address that gap in the literature.

Machismo

Machismo is a traditional gender role among Latinos that supports male dominance, either as aggressor or provider, over the family (Castro & Nieri, 2010). Research has found Latinos identify with the cultural concept of machismo as being important more than other ethnic and racial groups (Wurzman, 1982). As previously mentioned machismo is a multidimensional concept that can be understood as either positive connotation (i.e. assertive) or negative connotation (i.e. aggressive). Aggressive machismo is associated with "perpetration of and tolerance for domestic violence, abandonment of children, infidelity, alcoholism, and aggressive risk-taking behaviors" while assertive machismo is associated with "respect, honor, bravery, and a deep sense of family commitment" (Kulis, Marsiglia, Nagoshi, 2010, p. 288).

Research has examined the relationship between these two different types of machismo and drug use. Kulis and colleagues (2003) found that individuals who fell into the category of aggressive machismo, or those men who would have a less traditional definition of the cultural value, were at higher risk of drug use than those men who were more traditional and thus fell into the assertive machismo group. In a later study, these researchers supported their earlier findings by identifying individuals who adhered to aggressive masculinity but not assertive masculinity was correlated with substance use among Mexican-American adolescents (Kulis, Marsiglia, Nagoshi, 2010). Similarly, Mosher and Sirkin (1984) found that aggressive machismo was associated with drug use behaviors among college students. More specifically, men who prescribed to an aggressive machismo personality used alcohol, stimulants, depressants, and

marijuana more frequently than men who did not identify with an aggressive machismo personality.

Although limited research has examined the relationship between machismo and depression, what little research does exist has predominantly identified aggressive machismo as a risk factor for depression. For instance, in a community sample examining the mental health outcomes of 113 Mexican American men, Fragoso and Kashubeck (2000) found that higher levels of machismo were independently associated with higher levels of depression when controlling for covariates. Furthermore, as machismo scores increased so did depression scores. A more recent study examining the relationship between machismo and depressive symptoms among recently unemployed men found that men who adhered to traditional masculine norms were more likely to experience depressive symptoms (Syzdek and Addis 2010). Researchers postulate that machismo is a risk factor for depression given the strain that men have to undergo to maintain a stoic façade, a role strain that places them at risk for depression.

In keeping with the literature this study predicted that machismo would have a direct relationship after controlling for all covariates with depressive symptomatology.

Gaps in Knowledge: Culture and Depression

The aforementioned literature presents the complicated nature of relationships between the familismo, personalismo, machismo, fatalismo and depression. Decisive conclusions about the protective, or risk nature of the relationship between cultural values and depression can as of yet not be made. These inconsistencies in the literature may be a result to the diverse ethnic, racial, gender, or age groups that comprise the

samples of research with Latinos. Another possible explanation for these inconsistencies is that these cultural values have been operationalized and measured differently. This research aims to disentangle the relationship between these cultural values and depression among a drug using population. One method that this study aims to do this and to inform the literature on the relationship between cultural values and drug using Latinos is to focus specifically on Mexican American drug users. While this may limit the generalizability of findings to other Latino sub-groups it will be effective in describing the nature of these relationships within this group. An additional method used in this study to inform existing literature is by using an established scale to measure the cultural values. The Multiphasic Assessment of Cultural Constructs-Short Form is reliable and valid measure to assess familismo, personalismo, fatalismo, and machismo (MACC-SF; Cuellar et al, 1995). Thus levels of cultural value adherence from this study can be compared to other studies who used the same measure.

Individual Life Experiences

In addition to examining the effect of cultural values on depression among Latinos, it was important to understand the role of individual life experiences that current and former drug users faced. Many individual life experiences may have been associated with their depression status, thus a study of depression with this population would have been incomplete without considering their effects. While there are multiple individual life experiences that may have impacted current and former drug users' depressive status, this research focused on stress because of its' high association with depression (Brown & Harris, 1978). Stress can comprise of chronic or acute stressors

(American Psychological Association, 2011) and places individuals at heightened risk for adverse health (Ewart & Suchday, 2002; Gump, Matthews, & Raikkonen, 1999) and mental health (Ross, 2000) outcomes. Chronic stressors tend to be pervasive and indicative of long term disorder. Residing in high risk neighborhoods such as communities with a large proportion of residents who are socioeconomically disadvantaged, have lower education levels and experience unemployment, crime, and drug use (Silver, Mulvey, & Swanson, 2002) exposes residents to chronic stress.

Chronic Stress and Mental Health: The Impact of Poverty, Incarceration, and Drug Use

Poverty is the central indicator of social disorder (i.e. neighborhood disorganization) in neighborhoods and is highly associated with chronic stress and subsequently depression (American Psychological Association, 2011; Ewart, & Suchday, 2002; Ross, 2000). Neighborhood disorganization refers to communities that are poor, and disadvantaged; where residents of these communities often experience poor life outcomes (Wilson, 1987). Thirty-three percent of Latinos in the U.S. live in poverty as compared to 13% of non-Hispanic Whites, placing Latinos at higher risk for chronic stress and subsequent adverse mental health outcomes. In addition to poverty and its sequelae, residents of these *barrios* must contend with high levels of incarceration and drug use.

Poverty is highly associated with depression. Galea and colleagues found that living in neighborhoods with low socioeconomic status significantly increased risks for depression vs. residing in neighborhoods with high socioeconomic status (Galea, Ahern,

Nandi, Tracy, Beard, & Vlahov, 2007; Ross, 2002; Silver, Mulvey, & Swanson, 2002). A second chronic stressor that impacts individuals residing in Mexican American *barrios* is incarceration and its' aftermath. One out of every 36 Latino males is incarcerated in their lifetime as compared to one out of every 106 non-Hispanic white males (3% vs. 0.9% incarceration rate; U.S. Department of Justice, 2011). Imprisonment results in the immediate loss of economic and employment opportunities as well as long term separation from family members, and important source of support for Latino families (Freudenberg, Daniels, Crum, Perkins, & Richie, 2008; Western, 2002; Western, Lopoo, & McLanahan, 2004). Descriptions of life in prison indicate that incarceration is highly stressful (Abbott, 1981; Hassine, 2004). All prisoners, regardless of the time served, must upon release from prison contend with the societal consequences of having a criminal record, including stigma and discrimination, decreased employment and residential opportunities, and even educational disadvantages (Freudenberg et al., 2008; Rumbaut, 2005). This criminal record is an additional contributor to chronic stress (Pager, 2003).

A third chronic stressor in the Mexican American barrio is pervasive drug use. The relationship between drug use and neighborhood disorganization is a complex one. Drug use is sometimes a cause of social disorganization and sometimes a result of it. Either way, they both contribute to chronic stress. Involvement in a drug using lifestyle creates social stressors such as decreased neighborhood safety, crime, flight of businesses from the community, limited neighborhood resources, and decreased opportunities for upper mobility (Valdez & Cepeda, 2008). Drug users create many of these stressors through their lifestyle, and are also impacted by these stressors.

Acute Stress and Mental Health

In addition to the chronic stressors associated with neighborhood disorganization like poverty, incarceration, and drug use, individuals who reside in *barrios* must also contend with individual, acute stressors. Acute stress tends to be a result of the demands and pressures of recent, current, or anticipated event (American Psychology Association, 2011). Acute stressful life events can include losses (e.g., the death of a family member or close friend, or the loss of something cherished), divorce, illness or injury to self or those one cares about, unemployment, and financial strain (Brugha & Crag, 1990). Depression is often associated with the presence of acute stressful life events. For instance, Brown and Harris (1978) found that 75% to 90% of depressive episodes are preceded by at least one stressful or threatening life event. Mazure (1998) found that 80% of depressed incidence was preceded by a stressful life event. More recently, a study with young adults found the acute stress of economic difficulty was independently associated with depression (Andrews & Wilding, 2004).

Stressful life events can also impact the duration of a depressive episode (Lara, 2008). Specific to the Latino population, Chiriboga, Black, Aranda, and Markides (2002) found in his study of over 3,000 Latino elders that low income or a sudden decrease in income, chronic financial strain, and poor health were associated with depression. More recently Reyes-Rodriguez and colleagues (2012) found that among Latinos, experiencing acute stressful life events (e.g., loss of a relationship or illness) was associated with depression (Reyes-Rodriguez, Rivera-Medina, Camara-Fuentes, Suarez-Torres, & Bernal, 2012).

Gaps in Knowledge: Stress and Depression

Although research has documented the relationship between stress and depression, and has begun to examine the relationship between stress and drug use, less is known about how chronic and acute stress impacts depressive symptomatology among a population of drug users with unique life experiences. Stressors that may be highly associated with depressive symptomatology among the general population may be of little consequence to a population whose primary concerns revolve around drug use consumption or avoidance.

What research does exist examining differences between chronic and acute stress focuses on relapse. Tate and colleagues (2006) found that participants who experienced chronic stress where more than five times as likely to relapse post substance abuse treatment than those who did not experience chronic stress. Moreover, they found that acute stress was not associated with drug and alcohol relapse (Tate, Brown, Glasner, Unrod & McQuaid, 2006). While the aforementioned research was not specific to depression nor exclusive to Latinos it does begin to describe differences between the experiences of chronic and acute stress among drug using populations. To the author's knowledge, no research currently exists examining the relationship between chronic and acute stress with depressive symptomatology among Mexican Americans. This research aims to address this gap in the literature by exploring this relationship in a drug-using barrio population.

Rationale for the Study

The Latino population is currently undergoing significant population increases. This is true for all age groups but even more so for aging Latinos. Given aging Latinos heightened prevalence of depression and the fact that depression is associated with engaging in high risk drug use it is imperative to better understand the potential risk and protective factors of depression among this population. When conducting research with Latinos it is important to take into account their cultural values as these have been identified as sources of strengths for this population (Castro et al., 1995). This research aims to identify whether these cultural values continue to be strengths within a drug using population. Furthermore, poor, urban dwelling, drug using Latinos are under enormous amounts of chronic and acute stress. Research has identified a strong correlation between stress and depression (Brown & Harris, 1978). However this research aimed to identify what type of stressors (either acute or chronic) are more strongly associated with depression among a population of drug using Latinos who are exposed to tremendous amounts of chronic and acute stress; often more so than the general non-drug using population (U.S. Department of Justice, 1994; Valdez & Cepeda, 2008). Thus, using the following conceptual models, this research examined relevant cultural variables and the individual life experiences of chronic and acute stress in order to identify their risk and protective relationship with depressive symptomatology.

Guiding Conceptual Models: Risk Factors for Depression

Model 1: Risk Factors for Depression among Aging Mexican American Current and Former Heroin Injectors

Macro and Micro Predictors in the Barrio

Individual Life Experiences

Chronic Stress

Acute Stress

Cultural Factors & Confounders

Familismo – Familial Drug Use

Personalismo – Drug Networks

Fatalismo

Machismo

Outcome

High Depressive Symptoms

Guiding Conceptual Models Continued: Protective Factors for Depression

Model 2: Protective Factors for Depression among Aging Mexican American Current and Former Heroin Injectors

Macro and Micro Predictors in the Barrio

Outcome

Cultural Factors & Confounders

Familismo

Personalismo

Fatalismo - Religiosity

Low Depressive Symptoms

Article One: Culture and Depression

Critique of Literature

Depression among Latino aging drug using populations is of high concern given the recent increases in population in both the Latino and aging communities. As previously mentioned, aging Latinos have a higher prevalence for depression than other aging ethnic and racial groups. These elevated levels may impact their quality of life as depression is highly linked to engaging in high risk drug use behaviors that may exacerbate an individual's risk for contracting HIV and other blood-borne infections. To date, the literature examining the relationship between cultural values and depressive symptomatology among a Latino aging drug use population is sparse and often inconsistent. This research aimed to arrive at a better understanding of these relationships.

Methods

The study used a prospective cohort study design with face-to-face interviews using a semi-structured questionnaire from a larger study examining the health, mental health, and lifetime drug use trajectories of Mexican-American men in one of the largest cities in the U.S. Two hundred and twenty-seven men were recruited; 77 respondents were current (daily) injectors, 75 were former injectors who were receiving methadone treatment, and 75 were former injectors who were not in treatment at the time of the study and had not injected in at least 3 years. Participants were recruited from two geographical areas in Houston, Texas, communities with a large proportion of Mexican-

American residents, and inner city characteristics. These two neighborhoods are characteristic of Latino *barrios*, that is they are communities with high underclass characteristics such as high concentrations of poverty, limited educational achievement, high rates of unemployment, female-headed households, and a high concentration of households receiving public assistance (Torres, Kaplan & Valdez, 2011).

The overall study and the sample are described in great detail elsewhere (Torres et al., 2011). In brief, the mean age of respondents was 55 years. Thirty percent indicated they were married and 83% indicated having children. The mean number of school years completed was 9, and over 58% having completed high school or passed the high school equivalent exam (GED). Additionally, 65% reported being unemployed. These Latino, aging, and predominantly poor, long term injection drug users are at heightened risk for depression, as identified by the aforementioned literatures.

Measures

Participant's depressive symptomatology was dichotomized into "depressive symptomatology" and "non-depressive symptomatology" groups using scores on the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The CES-D consists of 20 items measured on a 4-point scale, ranging from 0 = rarely or none of the time to 3 = most of the time. Respondents who score 16 or higher on the scale are considered to have high depressive symptomatology, and a high likelihood of meeting criteria for clinical depression. The CES-D scale has high validity and reliability with both clinical and non-clinical samples. High internal consistency has been reported (Cronbach's alpha = .85) and there is strong concurrent and construct validity (Radloff,

1977). Furthermore, the CESD has strong concurrent validity with the DSM IV among elderly populations with both high sensitivity (85%) and high specificity (85%) (Harsigma, Engels, Beekman, Sphoven, 2004). A Reliability Analysis conducted with the current sample reveals a Cronbach's alpha of 0.75.

The cultural values of familismo, fatalismo, machismo, and personalismo were measured utilizing the Multiphasic Assessment of Cultural Constructs-Short Form (MACC-SF; Cuellar et al, 1995). Respondents are asked if they agree (yes = 1, no = 0) with 46 statements concerning family dynamics, having an external locus of control, the importance of getting along with others, and the role of men in the family. Reliability Analyses were conducted on the four subscales resulting in Cronbach alphas of .51 for familismo, .58 for personalismo, .74 for machismo, and .78 for fatalism. To address the lower reliability of the Familismo and Personalismo subscales, two Principal Components Analyses were conducted to test individual items' factor loadings on Familismo and Personalismo separately. After deleting items based on the PCA, the Cronbach alpha did not increase significantly. Therefore, the full Familismo subscale was used in further analyses. To conduct a Principal Components Analysis for the Personalismo subscale we first had to delete item 3 ("I like to greet people in a friendly manner when I see them") because there was no variability in this item (i.e., all respondents answered "no"). A subsequent PCA resulted in the deletion of one additional item (item 1, "Good manners are more important than a formal education") with an increase in the Chronbach alpha to 0.61. The new 9 item Personalismo subscale was used in our further analyses.

Once the final measures of each subscale was identified, subscale scores were computed for familismo, fatalismo, machismo and personalismo. Subscales were then dichotomous using the mean into low and high (e.g., 0=lower familismo score than mean; 1=higher familismo score than mean; etc.) The four dichotomous variables were used in the further analyses.

Religious adherence was included in the model as literature states that it may be associated with fatalismo (Neff, & Hoppe, 1993). Religious adherence was measured by asking respondents how often they attended religious services or took part in related religious activities such as choir practice, fellowship meetings, retreats, and bible study. Respondents who attended religious activities no more than once per month were coded as low religious adherence (0), while more than once per month was coded as high religious adherence (1). Measurement of attendance of religious frequency is an appropriate method of assessing an individual's religious adherence (Stark, 2002).

Drug network was included in the model to ascertain whether it would impact the relationship between personalismo and depression. While limited research has explored this relationship it would stand to reason that if an individual values close interpersonal relationships and those relationships were primarily with other drug users that the interaction between those two variables may influence depression. Thus drug network was assessed by asking how many people the respondent was injecting drugs with when they began and when they last injected drugs. The variable was dichotomized as 0 = no other drug users in network, and 1 = one or more drug users in network.

Other sociodemographic variables used in the analyses include respondents' age (continuous), marital status (0=single, 1=married), annual income (continuous), education (formal school years, continuous).

Based on the literature, two moderating variables were created and included in the model: Religious adherence * Fatalismo, and Personalismo * drug network. The Religious adherence* Fatalismo variable was calculated by using Religious adherence (0=low religious attendance, 1=high religious attendance) multiplied by Fatalismo (0=low fatalismo, 1=high fatalismo), where the resulting 0=either low religious attendance or low fatalismo, and 1=both high religious attendance and high fatalismo. It was important to include these variables into the model in order to control for their potential interaction effects.

Similarly, Personalismo*drug network was calculated by using Personalismo (0=low personalismo, 1=high personalismo) multiplied by drug network (0=no drug network, 1=having drug network), where 0=either low personalismo or no drug

Analysis Plan

Bivariate analyses was conducted on the relationship between depression and the sociodemographic variables was examined. These bivariate analyses identified the final sociodemographic control variables that are associated with depression.

The two moderating relationships; 1) presence of other drug users in respondent's network moderating the relationship between personalismo and depression, and 2) religious adherence moderating the relationship between fatalismo

and depression, were assessed by creating an interaction variable between the predictor and the moderator. Each relationship's impact (i.e. predictor independently, moderator independently, and interaction effect) was tested against the outcome variable at the bivariate analysis level using chi-squares. The relationship between depression and the non-moderated cultural values also used the chi-square test at the bivariate analysis.

All statistically significant relationships were entered into a multiple logistic regression model in order to control for confounding relationships and to identify which were independently associated with depression. Adjusted Odds Ratios (AOR) are reported for each significant relationship (see table 3).

Anticipated Results

I anticipated a large percentage of respondents would measure positive for depressive symptomatology on the CESD scale. Additionally, I anticipated that variables which have traditionally been viewed as risks for depression among the general community (e. g. low income, low educational attainment, etc.) would not be independently associated with depressive symptomatology for this sample given the nature of the communities in which they reside. These individuals reside within low income ethnic enclaves that have pervasive crime and violence. Furthermore, their networks consist of others with similar incomes and educational attainment. I anticipated these homogeneous ethnic enclaves potentially provided a buffer from social sanction and criticism and thus depression.

Anticipated findings for this study are that the cultural value of familismo would be inversely related to depressive symptomatology. That is, as the familismo sub-scale score increases the depressive symptomatology score would decrease.

Additionally it was anticipated that the cultural value of personalismo would be inversely related to depressive symptomatology. Thus, as scores for personalismo increase the scores for depressive symptomatology would decrease. However, it was anticipated that the number of drug users in an individual's social network would moderate this relationship. That is, as the number of drug users in an individual's social network increased their depressive symptomatology scores would also increase. Similar to the previous moderated relationship described, it was anticipated that the moderating variable to change the relationship between personalismo and depressive symptomatology from an inverse relationship to a direct relationship.

It was also anticipated that the cultural value of fatalismo would have a direct relationship with depressive symptomatology. I anticipated that as fatalismo scores increases so would depressive symptomatology scores. However, it was anticipated that religious attendance frequency would moderate the relationship between fatalismo and depressive symptomatology. Based on the literature previously mentioned that shows a decrease in depression when an individual is highly fatalistic but also has high religious attendance, it was anticipated that religious attendance would change the relationship between fatalismo and depressive symptomatology from a direct relationship to an inverse relationship.

Finally, it was anticipated that a direct relationship between the machismo sub-scale and depressive symptomatology. Respondents who scored higher on the machismo

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cultural subscale would also score higher for depressive symptomatology than those who scored lower on the machismo subscale.

Dissemination Plan

Relevant findings were disseminated to peer-reviewed journals for publication and within the context of professional presentations within the social work community and related fields. The findings of this article provided justification for future research and highlighted specific areas in which further research is needed.

Components of the Dissertation Articles

Article Two: Individual Factors Associated with Depressive Symptomatology

Critique of Literature

This study focused on identifying the relationship between the individual life experiences of chronic and acute stress and depressive symptomatology among an aging Latino drug using population. Although research has documented the relationship between stress and depression and has begun to examine the relationship between stress and drug use, less is known about how stress impacts depressive symptomatology among a population of drug users with unique life experiences. Stressors that may be highly associated with depression among the general population may be of little consequence to a population whose primary concerns revolve around drug use consumption or avoidance. Thus this study explored these relationships in order to determine if existing research findings are applicable to this high risk population.

This research will result in a better understanding of the relationship between these variables among this unique population with the ultimate goal of developing interventions targeted to address depressive symptomatology and subsequent high risk drug use behaviors.

Methods

Similar to study one this analysis will use the Mexican-American current and former heroin injectors' data. Data from the study will be used to identify differences

between depressed and non-depressed groups (depressive symptomatology) and how they differ based on chronic and acute stress.

Measures

Dependent Variable

Participants were dichotomized into "depressed" and "non-depressed" groups using their scores on the Center for Epidemiological Studies Depression Scale (CES-D), which measures depressive symptomatology and the likelihood of caseness (likelihood of meeting diagnostic criteria) for depression (Radloff, 1977). The CES-D consists of 20 items measured on a 4-point scale, ranging from 0 = rarely or none of the time to 3 = most of the time. Respondents who score 16 or higher on the scale are considered to have high depressive symptomatology, and a high likelihood of meeting criteria for clinical depression. The CES-D scale has high validity and reliability with both clinical and non-clinical samples. A Reliability Analysis conducted with the current sample reveals a Cronbach's alpha of 0.75.

Predictors

The predictors of high depressive symptomatology in the model contained the sociodemographic variables indicative of chronic stressors (i.e., poverty, drug or alcohol use, incarceration) and stressful life events. Other sociodemographic variables included the respondents' age, marital status (0=single, 1=married), and education (formal school years).

Chronic stress was measured by the poverty level of the respondents. The poverty variable was created based on the respondents' household size, household annual income, and annual federal poverty level at the point in time they were interviewed, resulting in a dichotomous variable where 0 is "above the poverty line" and 1 is "below the poverty line".

Drug or alcohol use was measured by three independent variables, including any alcohol use in the past 30 days (0=did not drink any alcohol in the past 30 days, 1=drank alcohol in the past 30 days), and any drug use in the past 30 days (0=did not use any drug in the past 30 days, 1= used at least one kind of drug in the past 30 days), and severity of dependence. The Severity of Dependence Scale (SDS) is a 5-item Likert scale. The first four items are answered on a 5-point Likert-type scale where 0=never or almost never, 1=sometimes, 2=often, 3=always or nearly always. For the fifth item ("how difficult do you think it would be to go without heroin") possible responses are 0 =not difficult, 1 = quite difficult, 2 = very difficult, or 3 = impossible. The SDS is a summative scale and a score of 3 or more is indicative of a Diagnostic and statistical manual of mental disorders diagnosis of substance dependence (Torres, et al., 2011).

Incarceration was measured by the total number of years the respondents were incarcerated.

The acute stressful life events variable was measured by The Life Events Questionnaire (LEQ) which is a 12-item instrument capturing events such as death and loss, economic hardships, disruptions to personal social networks, and problems with the police and/or court system. Respondents indicate either yes = 1 or no = 0 if a

stressful event occurred in the prior 6 months. The reliability of LEQ based on the sample used in this study was fairly good (Cronbach's α= 0.67). The LEQ is useful in making assessments for an Axis IV diagnosis with the DSM-IV-TR and has been used to assess the relationship between vulnerability, life events, and depression (Kadir & Bifulco, 2011).

Findings from this analysis aimed to inform the literature by identifying the relationship between chronic and acute stressors and depressive symptomatology among a sample of men living in situations and communities that are highly stressful. These findings will inform the literature by identifying respondent's self assessed stress levels and how those levels relate to their depressive symptomatology. To date no study had examined the self perception of stress and how it related to depressive symptomatology using the LEQ measure among this studies' sample population. This study aimed to address this gap in the literature.

Analysis Plan

First, bivariate analyses (chi-square test of independence and Independent Sample T-tests) were used to test the relationships between depressive symptomatology and each individual independent variable, including marital status, age, education, total number of stressful life events, poverty, total years of incarceration, severity of dependence, any alcohol use in the past 30 days, and any drug use in the past 30 days.

Multiple logistic regression then tested how depressive symptomatology related to each predictor after controlling for all the other variables. Adjusted Odds Ratios (AOR) are reported for each significant relationship.

Anticipated Results

This research anticipated that chronic stressors (i.e. poverty, length of incarceration, current drug use) would have an inverse relationship with depressive symptomatology. Additionally, it was anticipated that the number of acute stressful life events would have a direct relationship with depressive symptomatology.

Dissemination Plan

Relevant findings were disseminated to peer-reviewed journals for publication and within the context of professional presentations within the social work community and related fields. The findings of the article provided a justification for future research and highlighted specific areas in which research is needed.

Evaluation of Research

Strengths

The potential impact of the proposed study was vast in its prospective ability to address significant gaps in the literature. To the author's knowledge no study had attempted to explore the impact of cultural values and/or stress and depressive symptomatology among a population of aging current and former Mexican-American heroin injectors. Moreover, this study provided information that could be used to develop culturally appropriate interventions targeted toward treating depressive symptomatology among Mexican-American drug users.

Limitations

The proposed study posed some significant limitations. Most notably, and as previously mentioned, due to the nature of the research it was not possible to determine if we measured clinically defined DSM-IV symptoms of depressive or if we measured the depressogenic effect of heroin on the brain that was mimicking depression symptoms.

Moreover, we did not have a diagnostic tool to assess actual DSM-IV-TR depression. However, the CESD has been proven reliable and valid in measuring current levels of depressive symptomatology among both clinical and non-clinical samples. Furthermore, the CESD has strong concurrent validity with the DSM IV among elderly populations (Harsigma, Engels, Beekman, Sphoven, 2004). An additional limitation was that our data was self-report and one must contend with a social desirability bias however, self-report data has been proven to have good reliability in validity in other studies of depression (Weisman, Sholomskas, Pottenger, Prusoff, & Locke, 1977). Another limitation is that the study while the research attempted to distinguish between

current and former heroin injectors, it did not contend with the polydrug using nature of the sample. Thus there was no way to compare current users from former drug users as the majority of respondents in the sample were using some type of illicit substance. A final limitation of the study was that the sample consists exclusively of Mexican American men and results cannot be generalized to other ethnic, racial, or gender groups.

Summary

Currently limited research exists examining the predictive risk and protective variables associated with depression among an aging, Latino, drug using population. This research study aimed to address these gaps in the literature. Specifically, cultural variables such as familismo, personalismo, fatalismo, machismo, along with the chronic and acute stress were studied.

This research also had significant health implications. As previously mentioned, research has documented depression is associated with individuals engaging in high risk drug practices that places them at elevated risk of contracting HIV/AIDS and other blood-borne pathogens. Thus a better understanding of the risk and protective factors associated with depressive symptomatology would aid clinicians working with this population by providing them scientific support to increase protective influences while simultaneously reducing risks with their clients. Interventions that take into account specific risk and protective factors would be more efficacious in reducing individual's depressive symptoms and potentially reduce any subsequent negative health outcomes.

Chapter 2

Depression in the Barrio: An Analysis of the Risk and Protective Nature of Cultural Values among Mexican American Drug Users

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McClain Sampson

Abstract:

Understanding the relationship between cultural values and depression is essential when conducting research with a Latino population. Especially considering that the cultural values of familismo, personalismo, fatalismo, and machismo may provide protection against or enhance the risk for depression among Mexican Americans. The current study will identify the risk or protective nature of familismo, personalismo, fatalismo, and machismo on depressive symptomatology among a sample of Mexican-American heroin injecting men. Data for the current analysis comes from a study of Mexican-American injection heroin users. A cross-sectional research design and field intensive outreach methodology was utilized to recruit 227 Mexican-American men. Participants who met the criteria for depression (CESD) were categorized into depressed and non-depressed groups. Selected covariates associated with the dependent variable were examined using logistic regression. Findings suggest that respondents with high familismo and fatalismo scores were less likely to score high for depressive symptomatology. Additionally, findings revealed that age was inversely related to depressive symptomatology. The results begin to elucidate the protective nature of familismo and fatalismo to depression among a group of Mexican American heroin injectors residing in high risk communities.

Keywords: Mexican American, Injecting Drug Use (IDU), Depression, Culture

Introduction

Cultural values are found in all groups in society, but are often discussed more frequently in the context of traditional, minority communities (Roosa, Morgan-Lopez, Cree, & Specter, 2002). For example, the literature on *Latino* cultural values references familismo, the idea that the family is of utmost importance, requiring loyalty and involvement (Cuellar, Arnold & Gonzalez, 1995; Sabogal, Marin, Otero-Sabogal & Marin, 1987); personalismo the idea that Latinos hold interpersonal interaction in high esteem, with a preference for personal connection with others over material or economic achievement (Cuellar, et al., 1995); fatalismo the idea that things are preordained and there is little that an individual can do to change the circumstances of life (Ross, Mirowsky & Cockerham, 1983); and machismo a traditional gender role among Latinos that supports male dominance, either as aggressor or provider, over the family (Castro & Nieri, 2010). These values are not unique or exclusive to Hispanics, but are often mentioned in reference to Hispanics and linked to a variety of health outcomes (Morales, Lara, Kington, Valdez, & Escarce, 2002).

Research on the relationship between depression and Latino cultural values often yields inconsistent findings (Losada, Shurgot, Knight, Marques, Montorio, Izal et al., 2006; Joiner, Perez, Wagner, Berenson, Marquina, 2001; Ornelas, & Perreira, 2011; Roberts, Roberts, & Chen, 2000). Moreover, limited research has examined the association between these cultural values and depression in drug-using populations

(Alergria, Takeuchi, Canino, Duan, Shrout, Meng, et al. 2004). Given these inconsistencies and gaps in the literature, the relationship warrants further exploration.

Cultural Values present in Latino Communities

Familismo

Familismo dictates that the family unit is the priority, and that family members should put their individual needs aside for the betterment of the family as a whole; the family requires allegiance and connection (Cuellar et al., 1995; Sabogal, et al., 1987). Familismo has traditionally been viewed as protective for depression (Parsai, Voisine, Marsiglia, Kulis & Nieri, 2009). For instance, among Latino immigrant parents of adolescents, familismo decreased the likelihood of depressive symptoms. Family connectedness provided the protective social support needed to adjust to new communities after migration (Ornelas, & Perreira, 2011). Other research has found familismo a risk for depression. Among care-givers, researchers found familismo was correlated with higher levels of depressive symptoms (Losada, et al., 2006; Purdy & Arguello, 1992). Sole reliance on the family for care-giving resulted in an increased burden upon the children of ailing elders; a practice correlated with depression and financial strain (Purdy & Arguello, 1992).

Specific to drug use, research remains unclear on the protective or risk nature of familismo. Most research has focused on adolescent substance users. Kopak, Chen, Haas, and Gillmore (2012) found family cohesion protective for alcohol and drug use in Mexican heritage youth. Similarly, Unger and colleagues (2002) found familismo was associated with lower risk of substance use among a multi-ethnic sample of adolescents

(Unger, Ritt-Olson, Teran, Huang, Hoffman, & Palmer, 2002). Further research is warranted to determine if the protective nature of familismo for depression continues through adulthood when drug use continues as well.

Personalismo

Personalismo governs relationships between individuals. It maintains that relationships with others are held in high esteem, often considered more significant than traditional routes of success (i.e., wealth, or educational achievements) (Cuellar, et al., 1995; Cheung & Leung, 2008). Bermudez, Kirkpatrick, and Hecker (2010) found that help-seeking Latinos self-identified described personalismo as an accurate depiction of how they valued relationships with others. However, research has not assessed the protective or risk nature of this cultural value and depression among Latinos in general, or in Latino drug using populations. This gap is significant given the tremendous influence of an individual's social network on decision making (Bond, Kaskutas, & Weisner, 2003; Neaigus et al., 2006). Even more concerning, social networks of drug users tend to be comprised of other drug users (Neaigus, Gyarmathy, Miller, Frajzyngier, Friedman, & Des Jarlais, 2006). Kail and Elberth (2002) found that Latinas were encouraged to continue use and actively discouraged to discontinue and enter treatment by their drug using friends (Kail & Elberth, 2002). Thus the relationship between personalismo, an inherent desire for interpersonal relationship, and having a network comprised of other drug users warrants further exploration.

Fatalismo

Fatalismo refers to the idea that life circumstances are preordained and there is little one can do to change life events (Roberts, Roberts, & Chen, 2000). Among Latinos, it may be an adaptive response to living with uncontrollable life situations (Parker & Kleiner, 1966). Fatalismo has been studied in Latinos with mental health disorders and found to be a risk factor for depression. Ross et al. examined the relationship between fatalismo and social class among Latino and Anglo respondents experiencing psychological distress, and found that fatalismo was independently associated with higher levels of psychological distress (Ross, Mirowsky, & Cockerham, 1983). Specific to depression, Roberts, Roberts, and Chen (2000) found fatalismo to be significantly and independently associated with depression in a large sample of adolescents in the Southwest U.S. Adolescents who had a fatalistic world view were 3 times more likely to have depressive symptoms than those without a fatalistic world view.

Other research has not found a relationship between fatalismo and depression. In a community sample of adolescent Mexican-American girls, Joiner et al. (2001) found no effect. Furthermore, some research has found familismo protective for depression when moderated by religious adherence (Neff & Hoppe, 1993; Joiner, Perez, Wagner, Berenson, & Marquina, 2001). Examining the racial and ethnic differences of Anglos, African Americans and Latinos, researchers found higher levels of fatalismo associated with greater depression (Neff & Hoppe, 1993). However, when considering religiosity, those individuals with both high fatalismo and high religiosity had the lowest levels of depression.

Little research exists examining the relationship between fatalismo and drug use. Schlegel and Crawford (1978) examined a multi-dimensional measure of internal-external locus of control, a proxy measure for fatalismo, and drug use among high school students. Those with a greater external locus of control, indicative of high fatalismo, were significantly more likely to experiment and use both licit and illicit substances. This early work begins to elucidate the complex relationship between fatalismo and drug use. However, given the limited research examining these associations, further research is needed to better understand the protective or risk nature of fatalismo for depression in Latino drug users.

Machismo

Machismo refers to the traditional view of the male as the dominant figure and provider for the family (Castro et al., 2002). Historically likened with caballerismo or "gentlemanliness", in recent decades it has been viewed exclusively in a negative light. Machismo is now used to describe men as philanderers, dominating, and overbearing toward the women in their lives and their families (Arciniega, Anderson, Tovar-Blank, & Tracey, T., 2008; Brendel & Sustaeta, 2003).

Research has examined the relationship between machismo and drug use. Kulis and colleagues (2003) found that individuals who scored high on aggressive machismo were at higher risk for drug use than those men who were more traditional and thus fell into the assertive machismo group (Kulis, Marsiglia, Lingard, Nieri, & Nagoshi, 2003). In a later study, these researchers supported their earlier findings by identifying that Mexican American adolescents who adhered to aggressive masculinity had higher levels

of substance use (Kulis, Marsiglia, Nagoshi, 2010). Similarly, Mosher and Sirkin (1984) found that aggressive machismo was associated with drug use behaviors among college students; men who adhered to aggressive machismo used alcohol, stimulants, depressants, and marijuana more frequently than men who did not.

Limited research has examined the relationship between machismo and depression, and what little research does exist predominantly identifies machismo as a risk factor. For instance, in a community sample examining the mental health outcomes of Mexican American men, Fragoso and Kashubeck (2000) found that higher levels of machismo were independently associated with higher levels of depression. A more recent study of recently unemployed men found that men who adhered to traditional masculine norms (i.e. machismo) were more likely to experience depression symptoms (Syzdek and Addis 2010).

The aforementioned literature reveals a complicated relationship between Hispanic cultural values and depression, without any definitive conclusions about the risk or protective nature of these values. This may be due to the diverse ethnic, racial, gender, or age groups that comprise the samples of research with Latinos, to how cultural values have been operationalized and measured. Our research aims to disentangle the relationship between these cultural values and depression among a drug using population.

Depression

The prevalence of depression among U.S. adults has more than doubled in the last 20 years (Compton et al., 2006) making depression a primary health concern

(Hasin et al, 2005). National prevalence rates range from 6 to 21 percent (Kessler et al., 2005; Grant et al. 2006), and are much higher for sub-groups of the population. The rate for older Latinos is 25%, compared to 9% and 17% for elderly non-Hispanic Whites and African Americans, respectively (Gonzalez, Haan, & Hinton, 2001). Depression risks specific to Latinos include older age, lower levels of education, unmarried status, low income, familial stress, and acculturation (Gonzalez et al, 2001; Wolfe, Scott, Wekerle, & Pittman, 2001). Many of these risks are magnified for drug using Latinos residing in crime ridden, poor urban ethnic enclaves with high rates of victimization (U.S. Department of Justice, 2005; Valdez and Cepeda, 2008).

Latino heroin users have even higher rates of depression: 41% of a community sample of injecting heroin users (IDUs) had a lifetime prevalence rate for depression (Darke & Ross, 1997). These elevated levels of depression among opioid users are concerning given that depressed opioid users are heavier drug users, engage in more risk-taking, and have poorer physical health and greater psychopathology than their non-depressed counterparts (Havard, Teeson, Darke and Ross, 2006). Among Mexican-American non-injecting heroin users, those with depressive symptoms were more than 3 times as likely to transition to injecting drug use than those without (Cepeda, Kaplan, Neaigus, Cano, Villarreal & Valdez, 2012). Additionally, Lemstra and colleagues (2011) found depression independently associated with sharing injecting implements (Lemstra, Rogers, Thompson, & Moraros, 2011). A meta-analysis by Connor et al. (2008) indicated that depressed drug users were more likely to engage in high HIV-risk behaviors and to increase drug consumption (Conner, Pinquart, & Duberstein, 2008). Injectors are faced

with unique stressors that exacerbate their risk for depression (Gonzalez et al., 2001; Wolfe et al., 2001).

Research has begun to document increases in co-morbid substance use and mental health disorders among the U.S. aging population (Lin, et al., 2011). Depression is associated with substance abuse as a stress and coping mechanism to help individuals deal with life-events and the psychosocial environment of home and peers (Miller-Johnson, Lochman, Coie, Terry, & Hyman, 1998; Steinhausen & Wingler-Metzke, 2000). Elderly Latinos are one of the largest and fastest-growing U.S. groups, and given their increased depression rates (Gonzalez et al, 2001), we must better understand the relationship between depression and drug use in this population.

This manuscript describes research aimed to identify the relationship between cultural values, depressive symptomatology, and drug use in long-term Mexican American injecting drug users. We hypothesized that familismo and personalismo would be inversely related to depressive symptomatology; that the relationship between personalismo and depressive symptomatology would be moderated by network size; that fatalismo would have a direct relationship with depressive symptomatology, moderated by frequency of religious attendance; and that machismo would have a direct relationship with depressive symptomatology.

Methods

The study used a prospective cohort study design with face-to-face interviews with injection drug users (IDUs) using a semi-structured questionnaire to examine the health, mental health, and lifetime drug use trajectories of Mexican-American men in

one of the largest cities in the U.S. Two hundred and twenty-seven current and former IDUs were recruited from two communities with a large proportion of Mexican-American residents and inner city characteristics. These two neighborhoods are characteristic of Latino *barrios* or Hispanic ethnic enclaves, with high underclass characteristics such as high poverty, limited educational achievement, high unemployment, female-headed households, and a high concentration of households receiving public assistance (Torres, Kaplan & Valdez, 2011).

The overall study and sample are described in depth elsewhere (Torres et al., 2011). In brief, mean age was 55 years; 30% (n=69) were married and 83% (n=189) had children. Mean number of school years completed was 9 (SD = 2.29); over 58% (n=136) completed high school or GED; and 65% (n=148) were unemployed.

[Inset Table 1]

Measures

Participants were dichotomized into "depressed" and "non-depressed" groups using their scores on the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The CES-D consists of 20 items measured on a 4-point scale, ranging from 0=rarely or none of the time to 3=most of the time. Score of 16+ are considered high depressive symptomatology and likelihood of meeting criteria for clinical depression. The CES-D has high validity and reliability with both clinical and non-clinical samples, high internal consistency (Cronbach's alpha = .85) and strong concurrent and construct validity (Radloff, 1977). In this study the CESD measure had a Cronbach's alpha of .92.

Familismo, fatalismo, machismo, and personalismo were measured with the Multiphasic Assessment of Cultural Constructs-Short Form (MACC-SF; Cuellar et al, 1995). Respondents are asked if they agree (yes = 1, no = 0) with 46 statements concerning family dynamics, external locus of control, importance of getting along with others, and the role of men in the family. Reliability Analyses were conducted on the four subscales resulting in Cronbach alphas of .51 for familismo, .58 for personalismo, .74 for machismo, and .78 for fatalismo. To address the lower reliability of the Familismo and Personalismo subscales, two Principal Components Analyses (PCA) were conducted to test individual items' factor loadings on Familismo and Personalismo separately. After deleting items based on the PCA, the Cronbach alpha did not increase significantly; thus the full subscale was used in further analyses. To conduct a PCA for the Personalismo subscale we deleted item 3 ("I like to greet people in a friendly manner when I see them") due to no variability (i.e., all respondents answered "no"). The PCA resulted in the deletion of one additional item (item 1, "Good manners are more important than a formal education") with an increase in the Chronbach alpha to 0.61. The new 9-item Personalismo subscale was used in further analyses. Once the final subscales were set, subscale scores were computed and dichotomized using the mean into low and high (e.g., 0=lower familismo score than mean; 1=higher familismo score than mean; etc.) The four dichotomous variables were used in the further analyses.

Religious adherence was included in the model based on the literature (Neff, & Hoppe, 1993) and measured by asking for frequency of attendance at religious services and participation in religious activities. This variable was dichotomized using the mode: 57% (N = 129) attended religious activities once a month or less (0) and 43% (N = 98)

several times per month or more (1). Measurement of attendance of religious frequency is an appropriate method of assessing an individual's religious adherence (Stark, 2002).

Size of drug network was included in the model to ascertain whether it would impact the relationship between personalismo and depression. While limited research has explored this relationship it would stand to reason that if an individual values close interpersonal relationships and those relationships were primarily with other drug users that the interaction between those two variables may influence depression. Thus drug network was assessed by asking how many people the respondent was injecting drugs with when they began and when they last injected drugs. The variable was dichotomized as 0 = no other drug users in network, and 1 = one or more drug users in network.

Other sociodemographic variables used in the analyses include respondents' age (continuous), marital status (0=single, 1=married), annual income (continuous), and education (formal school years, continuous).

Based on the literature, two moderating variables were created and included in the model to control for potential interaction effects: Religious adherence*Fatalismo, and Personalismo*drug network. The Religious adherence* Fatalismo variable was calculated by using Religious adherence (0=low, 1=high) multiplied by Fatalismo (0=low, 1=high), where the resulting 0=either low religious attendance or low fatalismo, and 1=both high religious attendance and high fatalismo. Similarly, Personalismo*drug network was calculated by using Personalismo (0=low, 1=high) multiplied by drug network (0=no drug network, 1= drug network), where 0=either low personalismo or no drug network, and 1=both high personalismo and having drug network.

Analyses

Bivariate analyses on the relationship between depression and sociodemographic variables identified the final sociodemographic control variables associated with depression. The two moderating relationships were assessed by creating an interaction variable between the predictor and the moderator. Each relationship's impact (i.e. predictor independently, moderator independently, and interaction effect) was tested against the outcome variable at the bivariate level using chi-squares. For the relationship between depression and non-moderated values we also used chi-squares.

All statistically significant relationships were entered into a multiple logistic regression model to control for confounding relationships and identify which were independently associated with depression. Adjusted Odds Ratios (AOR) are reported for each significant relationship (see table 3).

Results

The relationships between depressive symptomatology and familismo, fatalismo, personalismo, and Fatalismo*Religious Adherence were all statistically significant at the bivariate level (see Table 2). Three independent samples t-tests were conducted to identify the relationships of depressive symptomatology with age, annual income, and education. The results indicated that respondents who had depressive symptomatology, on average, were significantly younger and earned significantly less (see table 2). To avoid multicollinearity, a correlation matrix of all independent variables was conducted. The results indicated that no two predictors were correlated above the .80 level.

[Insert Table 2]

Table 3 reports the results of the Multiple Logistic Regression Model. Familismo, fatalismo, age and annual income had statistically significant effects on depressive symptomatology, after controlling for all other predictors. Familismo had a beta of -0.754 and an odds ratio of 0.471, indicating a negative effect on depressive symptomatology; that is, familismo was protective for depression. Respondents with high familismo were 53% less likely to report depressive symptomatology than those with low familismo. Fatalismo (B = -1.372, AOR = 0.254) was also protective: respondents with high fatalismo were 75% less likely to report depressive symptomatology than those with low fatalismo. Age (B = -0.086, AOR = 0.918) was also protective for depressive symptomatology; with every incremental year of age, the likelihood of reporting depressive symptomatology decreased 8%. Respondents' Annual Income had a B less than 0.001, and an odds ratio of 1.000, with a p-value less than 0.05. Although significant, the effect size was too small to identify the decrease in depression score by each incremental change in the income variable.

[Insert Table 3]

Discussion

The study revealed 43% of respondents had depressive symptomatology; given the tremendous risk for depression in this population, it is surprising that 57% ***did not***. Clearly, there are factors that may be protective for depression, in this case familismo and fatalismo.

Being an injection drug user in an inner city Mexican American barrio is fraught with risks for depression. These impoverished urban ethnic enclaves are characterized by limited educational opportunities and economic advancement, high rates of violence,

crime and poverty (De Jesus Acosta, 2007), all of which are risks for depression (Galea, Ahern, Nandi, Tracy, Beard, & Vlahov, 2007). However, the majority of the participants in this study, residing in two of the highest risk communities in the city, did not evidence high depressive symptomatology. Familismo emphasizes the importance of loyalty, reciprocity, and solidarity toward one's family (Marín, & Marín, 1991). While these Mexican American men live in high risk communities and are exposed to multiple risk factors, they also have their families, nuclear and extended, as sources of direct social support. They rely heavily on their families to support and buffer some of the risks they confront every day. This is consistent with other literature that has found family and social supports to be protective for a variety of adverse health and mental health conditions (Parsai, Voisine, Marsiglia, Kulis & Nieri, 2009; Seeman, T. 2000), and it shows that this relationship also holds in chronic drug users. Family cohesiveness may be a product of the *barrio* where there is limited social mobility and families are in close proximity to each other. Future research should explore whether the protective nature of familismo to depression is weakened if individuals reduce their contact with family.

Other research on this population has found that family members are directly and indirectly supporting high risk drug use (Applewhite, Kao, Scinta, Villarreal, Torres, Haider, et al., Under Review). For example, the men are allowed to continue to live in the home despite their ongoing drug use, and many are also allowed to inject in their own rooms. There are also instances of families financially supporting the drug use to avoid withdrawal symptoms (Applewhite et al., Under Review; Flores, Torres, Torres-Vigil, Ren, Y., Haider, & Bordnick, 2013; UK Drug Policy Commission, 2009). Our study suggests that even though partners and families are in some ways helping maintain the

drug use, at the same time the family structure is providing the social support necessary to protect them from depression. This dichotomous (e.g., risk and protective) nature of Latino families vis a vis injection drug users needs to be further disentangled. Reliance on the family may be problematic in drug using communities when drug use knowledge and normalization of drug use behaviors is transmitted by family members, and at the same time might be leveraged for prevention efforts.

The second cultural value that was protective for depression was fatalismo. This is contradictory to the limited existing literature which has found that fatalismo was a risk for depression (Roberts, Roberts, & Chen 2000). Again, this relationship in our sample may be explained by considering the unique living conditions of respondents. Participants had lived in impoverished communities all their lives and had limited opportunities for social mobility and chronic exposure to the challenging psychosocial stressors present in these communities. This long term exposure may have provided an buffer against depressive symptoms. In other words, those who believe that things are beyond their control may be freeing themselves from the stress of being unable to change what must seem as insurmountable life outcomes (Maier & Seligman, 1976; Greer & Calhoun, 1983). This may simultaneously protect them from depression. Future research should further examine the relationship between fatalismo and stress for Mexican Americans residing in poor urban ethnic enclaves to ascertain if in fact there is an interaction effect of these variables. This could also help explain the protective nature of age on depression. Older individuals (average age was 55) have the benefit of experience and perspective. They have been around long enough to know that things get worse and then get better and then get worse again; such is the cycle of life in the barrio.

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The present study has some limitations that warrant caution when interpreting the results. We did not have a diagnostic tool to assess actual DSM-IV-TR depression. However, the CESD has been proven reliable and valid in measuring current levels of depressive symptomatology in both clinical and non-clinical samples. Furthermore, the CESD has strong concurrent validity with the DSM IV among elderly populations (Harsigma, Engels, Beekman, Sphoven, 2004). An additional limitation is that our data was self-report and one must contend with a social desirability bias. However, self-report data has been proven to have good reliability and validity in other studies of depression (Weisman, Sholomskas, Pottenger, Prusoff, & Locke, 1977). Another limitation is the low internal consistency of the familismo subscale. This tool was developed along the Mexico-US border with participants that had lower levels of acculturation than those in our sample (Cuellar et al., 1995). Some of the items might lack relevance to a second and higher generation, older, sample of Mexican Americans in a large urban center.

Despite these limitations, our findings suggest that attention to culture and context can help us identify and stave off depression in inner city *barrios*. Research has identified strengths that reside in the inherent culture of individuals residing in the barrio; strengths that may be sheltering them from succumbing to the contextual stressors that place them at risk for depression.

This research has some implications for practice. Depression is associated with high risk drug use behaviors and a better understanding of the relationship between familismo, personalismo, machismo, and fatalismo and depressive symptomatology can

help guide clinicians when working with depressed drug users in an effort to ameliorate some of these risks. When working with these clients, clinicians should be aware that family cohesiveness is protective for depression, and that interventions focused on the family as a whole should be considered.

Table 1. Description of Depression and Predictors (N=227)

Variables	Categories	Mean (Std)	N (%)
Depression	Yes		98 (43)
	No		129 (57)
Familismo	High		99 (44)
	Low		128 (56)
Fatalismo	High		101 (45)
	Low		126 (56)
Personalismo	High		123 (54)
	Low		104 (46)
Machismo	High		78 (34)
	Low		149 (66)
Drug use network	Yes		43 (19)
	No		184 (81)
Age		55.13 (8.279)	
Marital Status	Single		158 (70)
	Married		69 (30)
Annual income		10756.28 (9102.294)	
Education		9.29 (2.287)	
Religious Adherence	High		98 (43)
	Low		129 (57)
Fatalismo*Religious	Yes		47 (21)
	No		180 (79)

| Personalismo*Drug use network | Yes | 20 (9) |
| | No | 207 (91) |

Table 2. Bivariate Analysis of Depression by Culture Values and Demographic Variables

Crosstab (Chi-square) of Depression by Culture Values, Drug use network and Marital Status

(N=227)		Depression N(% within Culture Values and Demographic Variables)		Chi-square	Sig.	Phi φ
		Yes	No			
Familismo	High	32 (32)	67 (68)	8.422***	.000	0.19
	Low	66 (52)	62 (48)			
Fatalismo	High	26 (26)	75 (74)	22.530***	.000	0.32
	Low	72 (57)	54 (43)			
Personalismo	High	36 (35)	68 (65)	5.728*	.017	0.16
	Low	62 (50)	61 (50)			
Machismo	High	33 (42)	45 (58)	0.036	.849	0.01
	Low	65 (44)	84 (56)			
Drug use network	Yes	11 (26)	32 (74)	6.691	.010	0.17
	No	87 (47)	97 (53)			
Marital Status	Single	65 (41)	93 (59)	0.875	.349	0.06
	Married	33 (48)	36 (52)			
Religious	High	32 (44)	40 (56)	0.70	.792	0.06
	Low	66 (43)	89 (57)			
Fatalismo*Religious	Yes	13 (28)	34 (72)	5.813*	.016	0.16
	No	85 (47)	95 (53)			
Personalismo *Drug use network	Yes	5 (25)	15 (75)	2.952	0.086	0.11
	No	93 (45)	114 (55)			

T-Test of Depression by Age, Annual Income and Education

		N	Mean (Std)	t	df	Cohen's D
Age	Depression: Yes	98	52.92 (6.66)	3.751***	224.866	0.49
	Depression: No	129	56.81 (8.99)			

Annual Income	Depression: Yes	97	8127.81 (7560.44)	4.020***	222.778	0.53
	Depression: No	128	12748.17 (9677.23)			
Education	Depression: Yes	98	9.38 (2.11)	-0.523	225	0.07
	Depression: No	129	9.22 (2.42)			

*: p<0.05; **: p<0.01; ***: p<0.001

Table 3. Logistic Regression of Depression by Culture Values and Demographic Variables

	B	S.E.	Sig.	AOR
Familismo	-0.754*	.347	.030	.471
Fatalismo	-1.372**	.468	.003	.254
Machismo	0.281	.366	.443	1.325
Personalismo	-0.405	.363	.264	.667
Religious Adherence	0.730	.438	.095	2.075
Marital Status	0.402	.366	.443	1.325
Drug use network	-0.846	.594	.154	.429
Age	-0.086***	.022	.000	.918
Annual Income	.000**	.000	.001	1.000
Education	.020	.075	.784	1.021
Fatalismo*Religious	-0.563	.678	.407	.570
Personalismo*Drug use network	0.183	.888	.837	1.200

*: p<0.05; **: p<0.01; ***: p<0.001

Chapter 3

Chronic, Acute Stress, and Depressive Symptomatology among

Mexican American Male Drug Users in the Barrio

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Abstract:

Residing in the Mexican American *barrio* may place individuals at heightened risk for chronic and acute stress which are associated with adverse health and mental health outcomes. These stressors may be exacerbated for a drug using population. This research aims to identify the relationship between chronic stress, acute stress and depressive symptomatology a sample of Mexican American heroin injecting men. Data for the current analysis comes from a study of Mexican-American injection heroin users. A cross-sectional research design and field intensive outreach methodology was utilized to recruit 227 Mexican-American men. Participants who met the criteria for depressive symptomatology (CESD) were categorized into depressed and non-depressed groups. Selected covariates associated with the dependent variable of depressive symptomatology were examined using logistic regression. Findings suggest that respondents with chronic stress were more likely to score high for depressive symptomatology. Additionally, findings revealed that acute stress were inversely related to depressive symptomatology. This research elucidates the need for community level interventions targeted at reducing the chronic stressors present in the barrio.

Introduction

Depression effects 350 million people worldwide (World Health Organization 2012). The prevalence of depression among U.S. adults has more than doubled in the last 20 years (Compton et al., 2006) making depression a primary health concern in the U.S. (Hasin et al, 2005). Social risks for depression include low socioeconomic status, financial problems, social isolation, and living in stressful environments (Lorant, Crous, Weich, Deliege, Machenback, & Ansseau, 2007).

Many of these risks are present in Mexican American *barrios* (inner city ethnic enclaves). *Barrios* are often considered high risk neighborhoods indicative of social disorder (Valdez & Cepeda, 2008). However, research with Mexican Americans has found that residing in *barrios* provides protection from depressive symptomatology (Ostir, Eschach, Markides, & Goodwin, 2003). *Barrios* tend to have a large proportion of residents who are socioeconomically disadvantaged, and residents of these communities are more likely to have lower education levels and to experience unemployment, crime, and drug use (Silver, Mulvey, & Swanson, 2002). Residing in these high risk neighborhood exposes individuals to chronic stress and places them at heightened risk for adverse health (Ewart & Suchday, 2002; Gump, Matthews, & Raikkonen, 1999) and mental health (Ross, 2000) outcomes. Poverty is the central indicator of social disorder in neighborhoods and is highly associated with chronic stress and subsequently depression (American Psychological Association, 2011; Ewart, & Suchday, 2002; Ross, 2000). Thirty-three percent of Latinos in the U.S. live in poverty as compared to 13% of non-Hispanic Whites, placing Latinos at higher risk for chronic

stress and subsequent adverse mental health outcomes. In addition to poverty and its sequelae, residents of these *barrios* must contend with high levels of incarceration and drug use.

Chronic Stress and Mental Health: The Impact of Poverty, Incarceration, and Drug Use

Poverty is highly associated with depression. Galea and colleagues found that living in neighborhoods with low socioeconomic status significantly increased risks for depression vs. residing in neighborhoods with high socioeconomic status (Galea, Ahern, Nandi, Tracy, Beard, & Vlahov, 2007; Ross, 2002; Silver, Mulvey, & Swanson, 2002). A second chronic stressor that impacts individuals residing in Mexican American *barrios* is incarceration and its' aftermath. One out of every 36 Latino males is incarcerated in their lifetime as compared to one out of every 106 non-Hispanic white males (3% vs. 0.9% incarceration rate; U.S. Department of Justice, 2011). Imprisonment results in the immediate loss of economic and employment opportunities as well as long term separation from family members, and important source of support for Latino families (Freudenberg, Daniels, Crum, Perkins, & Richie, 2008; Western, 2002; Western, Lopoo, & McLanahan, 2004). Descriptions of life in prison indicate that incarceration is highly stressful (Abbott, 1981; Hassine, 2004). All prisoners, regardless of the time served, must upon release from prison contend with the societal consequences of having a criminal record, including stigma and discrimination, decreased employment and residential opportunities, and even educational disadvantages (Freudenberg et al.,

2008; Rumbaut, 2005). This criminal record is an additional contributor to chronic stress (Pager, 2003).

A third chronic stressor in the Mexican American *barrio* is pervasive drug use. The relationship between drug use and social disorganization is a complex one. Drug use is sometimes a cause of social disorganization and sometimes a result of it. Either way, they both contribute to chronic stress (Sinha, 2001). Involvement in a drug using lifestyle creates social stressors such as decreased neighborhood safety, crime, flight of businesses from the community, limited neighborhood resources, and decreased opportunities for upper mobility (Valdez & Cepeda, 2008). Drug users create many of these stressors through their lifestyle, and are also impacted by these stressors.

Acute Stress and Mental Health

In addition to the chronic stressors associated with neighborhood disorganization like poverty, incarceration, and drug use, individuals who reside in *barrios* must also contend with individual, acute stressors. Acute stress tends to be a result of the demands and pressures of recent, current, or anticipated event (American Psychology Association, 2011). While chronic stressors tend to be long lasting, pervasive, and constant. acute stressors tend to be more sporadic and unexpected. Acute stress can include losses (e.g., the death of a family member or close friend, or the loss of something cherished), divorce, illness or injury to self or those one cares about, unemployment, and financial strain (Brugha & Crag, 1990). Depression is often associated with the presence of acute stress. For instance, Brown and Harris (1978) found that 75% to 90% of depressive episodes are preceded by at least one acute

stressor. Mazure (1998) found that 80% of depressed incidence was preceded by a stressful life event. More recently, a study with young adults found the acute stress of economic difficulty was independently associated with depression (Andrews & Wilding, 2004).

Acute stress can also impact the duration of a depressive episode (Lara, 2008). Specific to the Latino population, Chiriboga, Black, Aranda, and Markides (2002) found in his study of over 3,000 Latino elders that low income or a sudden decrease in income, chronic financial strain, and poor health were associated with depression. More recently Reyes-Rodriguez and colleagues (2012) found that among Latinos, experiencing acute stress (e.g., loss of a relationship or illness) was associated with depression (Reyes-Rodriguez, Rivera-Medina, Camara-Fuentes, Suarez-Torres, & Bernal, 2012).

Gaps in Knowledge

Although research has documented the relationship between stress and depression, and has begun to examine the relationship between stress and drug use, less is known about how chronic and acute stress impacts depressive symptomatology among a population of drug users with unique life experiences. Stressors that may be highly associated with depressive symptomatology among the general population may be of little consequence to a population whose primary concerns revolve around drug use consumption or avoidance. Identifying the relationship between stress and depression among a drug using population is especially important given that depressed drug users tend to engage in riskier drug use behaviors that further expose them to deleterious health consequences (Havard, Teeson, Darke & Ross, 2006). This research

aims to explore the relationship between chronic and acute stress and depressive symptomatology in a drug-using *barrio* population.

Methods

This paper is based on data from a study examining the health, mental health, and lifetime drug use trajectories of Mexican-American men in one of the largest cities in the U.S. The study used a prospective cohort study design with face-to-face interviews using a semi-structured questionnaire. Two hundred and twenty-seven men were recruited; 77 of the sample were current (daily) injectors, 75 were former injectors who were receiving methadone treatment, and 75 were former injectors who were not in treatment at the time of the study and had not injected in at least 3 years. Participants were recruited from two geographical areas in Houston, TX, communities with a large proportion of Mexican-Americans, and inner city characteristics. These two neighborhoods are characteristic of Latino *barrios*, that is, they are communities with high underclass characteristics such as long lasting concentrations of poverty, limited educational achievement, high rates of unemployment, female-headed households, and a high concentration of households receiving public assistance (Torres, Kaplan & Valdez, 2011).

The overall study and the sample are described elsewhere (Torres et al., 2011). In brief, the mean age of respondents was 55 years. Thirty percent indicated they were married and 83% indicated having children. The mean number of school years completed was 9, and over 58% having completed high school or passed the high school equivalent exam (GED). Additionally, 65% reported being unemployed. These Latino,

aging, and predominantly poor, long term injection drug users are at heightened risk for depression, as identified by the aforementioned literatures.

[Insert Table 1]

Variables & Measurement

Dependent Variable

A dichotomous "depressive symptomatology" and "non-depressive symptomatology" variable was created from participants' score on the Center for Epidemiological Studies Depression Scale (CES-D), which measures depressive symptomatology and the likelihood of caseness (likelihood of meeting diagnostic criteria) for depression (Radloff, 1977). The CES-D consists of 20 items measured on a 4-point scale, ranging from 0 = rarely or none of the time to 3 = most of the time. Respondents who score 16 or higher on the scale are considered to have high depressive symptomatology, and a high likelihood of meeting criteria for clinical depression. The CES-D scale has high validity and reliability with both clinical and non-clinical samples. A Reliability Analysis conducted with the current sample reveals a Cronbach's alpha of 0.75.

Predictors

The predictors of depressive symptomatology in the model contained the sociodemographic variables indicative of chronic stressors (i.e., poverty, drug or alcohol use, incarceration) and acute stress. Other sociodemographic variables included the

respondents' age, marital status (0=single, 1=married), and education (formal number of school years).

Chronic stress was measured by 3 distinct proxy variables; poverty, incarceration, and drug use that have been identified in the literature as being predictors of chronic stress (Freudenberg et al., 2008; Lepore, 1997; Pager, 2003; Rumbaut, 2005; Sinha, 2008; Sinha, 2001).

The poverty variable was created based on the respondents' household size, household annual income, and annual federal poverty level at the point in time they were interviewed, resulting in a dichotomous variable where 0 is "above the poverty line" and 1 is "below the poverty line".

Drug or alcohol use was measured by three independent variables, including any alcohol use in the past 30 days (0=did not drink any alcohol in the past 30 days, 1=drank alcohol in the past 30 days), and any drug use in the past 30 days (0=did not use any drug in the past 30 days, 1= used at least one kind of drug in the past 30 days), and severity of dependence. The Severity of Dependence Scale (SDS) is a 5-item Likert scale. The first four items are answered on a 5-point Likert-type scale where 0=never or almost never, 1=sometimes, 2=often, 3=always or nearly always. For the fifth item ("how difficult do you think it would be to go without heroin") possible responses are 0 =not difficult, 1 = quite difficult, 2 = very difficult, or 3 = impossible. The SDS is a summative scale and a score of 3 or more is indicative of a Diagnostic and statistical manual of mental disorders diagnosis of substance dependence (Torres, et al., 2011).

Incarceration was measured by the total number of years the respondents were incarcerated.

The acute stress variable was measured by The Life Events Questionnaire (LEQ) which is a 12-item instrument capturing events such as death and loss, economic hardships, disruptions to personal social networks, and problems with the police and/or court system. Respondents indicate either yes = 1 or no = 0 if a stressful event occurred in the prior 6 months. The LEQ is a summative scale with higher scores indicating higher levels of acute stress. The reliability of LEQ based on the sample used in this study was fairly good (Cronbach's α= 0.67). The LEQ is useful in making assessments for an Axis IV diagnosis with the DSM-IV-TR and has been used to assess the relationship between vulnerability, life events, and depression (Kadir & Bifulco, 2011).

Analysis

First, bivariate analyses (chi-square test of independence and Independent Sample T-tests) were used to test the relationships between depressive symptomatology and each individual independent variable, including marital status, age, education, total number of acute stressors, poverty, total years of incarceration, severity of dependence, any alcohol use in the past 30 days, and any drug use in the past 30 days.

Multiple logistic regression then tested how depressive symptomatology related to each predictor after controlling for all the other variables. Adjusted Odds Ratios (AOR) are reported for each significant relationship.

Results

The results indicated that depressive symptomatology is significantly related to poverty level at the bivariate level [X^2 (1, N = 227) =11.892, p=.001]. Depressive symptomatology was also bivariately related to having consumed alcohol in the last thirty days [X2 (1, N = 227) =7.288, p=.007].

In addition, the bivariate analysis indicate that respondents who had depressive symptomatology, on average, were significantly younger than those who did not have depressive symptomatology (*M*=52.92, *SD*=6.656 vs. *M*=56.81, *SD*=8.992), *t* (224.866) = -3.751, p<0.001). Respondents with depressive symptomatology were associated with significantly less acute stress (*M*=7.65, *SD*=1.878 vs. *M*=8.95, *SD*=1.354), *t* (168.761) = -5.769, p<0.001). Moreover, on average, the respondents who suffered from depressive symptomatology had significantly more incarceration years than those who did not suffer from depressive symptomatology (*M*=8.25, *SD*=8.245 vs. *M*=10.93, *SD*=9.519), *t* (225) = -2.224, p<0.05).

[Insert Table 2]

Table 3 indicates the results of the Multivariate Logistic Regression Model. The model illustrated that total number of acute stressors and poverty level had statistically significant effects on depressive symptomatology, after controlling for all other predictors.

The total number of acute stressors events was negatively related to depressive symptomatology, with an odds ratio of 0.687. Those who experienced acute stress were 31.3% less likely to suffer from depressive symptomatology with each additional acute

stressor. Poverty level was also significantly negatively related to depressive symptomatology, after controlling for all other predictors. The respondents whose household income was above the poverty level were 60.4% less likely to suffer from depressive symptomatology, compared to the respondents whose household income was below poverty level.

[Insert Table 3]

Discussion

Findings from this study identify the chronic stressor of poverty as associated with depressive symptomatology in a male drug using population from a Mexican American *barrio*. This is counter to other research with Mexican Americans which has found that residing in *barrios* provides protection from depressive symptomatology (Ostir, Eschach, Markides, & Goodwin, 2003). This may be due to the drug-using nature of our sample. Individuals engaging in a behavior such as drug use may not have the positive social capital (Flores et al., 2013) that is protective for depression among neighborhoods with less pervasive drug use (Fitzpatrick, Wright, Piko, & LaGory, 2005). While the chronic stressor of poverty was associated with depressive symptomatology, incarceration and drug use were not after controlling for all other variables. This may be a result of the lack of variability in our sample: all participants had a history of incarceration and of drug use.

An unexpected finding was that experiencing acute stressors in the previous 6 months was protective for depressive symptomatology; each additional stressor

decreased the risk of depression by 31.3%. This can potentially be explained by the overarching impact of the chronic stressors the participants live under. That is, chronic stress is so pervasive in the communities the sample comes from, that acute stressors may be failing to register with any grave significance. In other words, these individuals may have become immune to the impact of acute stress given the ever constant presence of chronic neighborhood stressors. Furthermore, individuals living with chronic stress may have developed a sense of fatalism which may minimize the impact of acute stressors. Other research on the impact of chronic and acute stress on depressive symptomatology has found that chronic stress was more strongly related to depressive symptomatology than acute stress (McGonagle & Kessler, 1990). This has also been found in animal models of stress, where chronic stress trumps acute stress (Katz, Roth, and Carroll, 1980; Keeney, Jessop, Harbuz, Marsden, Hogg, & Blackburn-Munroe, 2006).

Basic animal studies have examined the differences between these two types of stress and are useful in understanding the impact of depression in humans (Abelaria, Reus Qevedo, 2013). Katz, Roth, and Carroll (1980) found that rats who had been exposed to chronic stress did not have a distressed response when introduced with an acute stressor. Furthermore, the researchers go on to note that these responses in animal models are similar to the depressive effects seen in humans in that the chronically stressed rats showed changes in endocrine; also evidenced in humans with depression. Similarly, Keeney et al. (2006) found that rats exposed to chronic stress were sensitized to the introduction to a new acute stressor. From these studies one can surmise that because individuals are living with chronic stress they may be desensitized

from the effects of acute stress and are better able to cope with these novel stressors. In short, both human and animal research suggests that living with chronic stress desensitizes us from the effects of acute stress.

This finding under girths the need for structural interventions geared at eradicating the contextual factors related to chronic stress present in high risk communities (Latkin & Curry, 2003). Interventions that decrease drug availability, increase employability, and otherwise invest in improving the health and wellbeing of these communities might be more far reaching than clinical interventions geared toward the individual experience the stress. Especially when considering that chronic stressors consist of contextual factors that can be impacted by systemic change whereas acute stressors typically are experiences that are beyond one's control. An example of a successful comprehensive community intervention that targeted drug consumption is the Midwest Prevention project which mounted a coordinated effort by the community, schools, and families to prevent substance abuse in 42 public middle and junior high schools in the Kansas City area. This initiative consisted of a media campaign, education curriculums, parent education, community organization, and changes in local health policy for a period of four years. Findings from this study revealed the comprehensive intervention was effective in reducing the drug use of adolescents in both the general population and high risk communities (National Criminal Justice Reference Service, 1999). Adapting such a program and targeting it to address the specific contextual factors associated with chronic stress in the barrio may be advantageous in reducing depression and subsequent high risk drug use behaviors.

Of further consideration when examining the relationship between stress and depressive symptomatology is that in drug using populations this relationship may be cyclical in nature. Stress impacts depressive symptomatology and or drug use, which may exacerbate the occurrence of acute stress throughout the life course and result in additional depressive episodes and increased drug use over time. For instance, a study examining risk factors for drug use among adolescents found negative life events was independently associated with drug use initiation and increased use over time (Nation & Heflinger, 2006). Moreover, Tate and colleagues (2006) found that chronic stress was associated with substance use initiation and severity (Tate, Brown,Glasner, Unrod, & McGuaid, 2006). However this relationship was not found for acute stress. Future research should explore the differences between chronic and acute stress using a longitudinal research model that can tease out the differences between these two types of stressors and depressive symptomatology among drug using populations.

Table 1. Description of Depression and Predictors (N=227)

Variables	Categories	Mean (Std)	N (%)
Depression	Yes		98 (43)
	No		129 (57)
Any drug use	Yes		142 (63)
	No		85 (37)
Any alcohol use	Yes		137 (60)
	No		90 (40)
Total number of acute stressors		8.388 (1.722)	
Total years of incarceration		9.773 (9.070)	
Dependence of drug		13.498 (3.770)	
Age		55.13 (8.279)	
Marital Status	Single		158 (70)
	Married		69 (30)
Education		9.29 (2.287)	
Poverty Level - 2008/2009 HHS Poverty Guidelines	Below		161 (71)
	Above		58 (26)
	Missing		8 (4)

Table 2. Bivariate Analysis of Depression by Behavior and Demographic Variables

Crosstab (Chi-square) of Depression by Culture Values, Drug use network and Marital Status

		Depression *N(% within Behavior Values and Demographic Variables)*		Chi-square	Sig.
		Yes	No		
Any drug use	Yes	68 (48)	74 (52)	3.437	.064
	No	30 (35)	55 (65)		
Any alcohol use	Yes	69 (50)	68 (50)	7.288**	.007
	No	29 (32)	61 (68)		
Poverty Level - 2008/2009 HHS Poverty Guidelines	Below Poverty	81 (50)	80 (50)	11.892**	.001
	Above Poverty	14 (24)	44 (76)		
Marital Status	Single	65 (41)	93 (59)	0.875	.349
	Married	33 (48)	36 (52)		

T-Test of Depression by Age, Annual Income and Education

		N	**Mean**	**t**	**df**
Age	Depression: Yes	98	52.92	-3.751***	224.866
	Depression: No	129	56.81		
Education	Depression: Yes	98	9.38	0.523	225
	Depression: No	129	9.22		
Total number of lifetime traumatic events	Depression: Yes	98	7.65	-5.769***	168.761
	Depression: No	129	8.95		
Total years of incarceration	Depression: Yes	98	8.25	-2.224*	225
	Depression: No	129	10.93		
Dependence of drug	Depression: Yes	98	13.98	-1.685	225
	Depression: No	129	13.13		

*: p<0.05; **: p<0.01; ***: p<0.001

Table 3. Logistic Regression Analysis for Depression

	B	S.E.	Sig.	AOR
Marital Status				
Single	.276	.339	.416	1.318
Age	-.028	.023	.222	.972
Education	-.015	.068	.820	.985
Total number of acute stressors	-.376***	.105	.000	.687
Poverty	.925*	.381	.015	.396
Total years of incarceration	-.011	.021	.604	.989
Dependence of drug	.067	.042	.112	1.070
Any alcohol use	.384	.341	.260	1.468
Any drug use	.013	.352	.971	1.013
Constant	3.541	1.758	.044	34.496

*: p<0.05; **: p<0.01; ***: p<0.001

Chapter 4

The overall objective of this research was to study correlates of depressive symptomatology among a sample of Mexican American drug users in the *barrio*. Depression among drug users is associated with high risk drug use behaviors that place individuals at risk for deleterious health outcomes such as infectious diseases (Cepeda, et al., 2012; Connor, et al., 2008; Lemstra, et al., 2011). Thus an understanding of risks and protective factors associated with depressive symptomatology would be advantageous for practitioners to identify how best to intervene when working with individuals from this demographic group.

This research consisted of two research studies which focused on correlates identified by the literature as associated with depressive symptomatology. The first study aimed to explore the risk or protective relationship between culture (specifically, values of familismo, personalismo, machismo, fatalismo) and depressive symptomatology. The second study focused on disentangling the relationship between chronic stress, acute stress, and depressive symptomatology.

Study 1: Depression in the Barrio: An Analysis of the Risk and Protective Nature of Cultural Values among Mexican American Drug Users

The study findings revealed that two cultural values (i.e. familismo and fatalismo) were protective for depressive symptomatology among Mexican American heroin injectors.

Familismo, a cultural value that is central to Latinos which emphasizes the importance of loyalty, reciprocity, and solidarity toward one's family (Marín et al., 1991),

has traditionally been viewed as a protective mechanism for depression (Parsai, et al., 2009). Furthermore, familismo has been found to be protective for alcohol and substance use among adolescents (Gil, Wagner & Vega, 2000; Unger et al., 2002). However, limited research had explored the risk or protective nature of familismo to depressive symptomatology among drug using adults. This study found that participants with a higher score on the familismo measure were less likely to suffer depressive symptomatology than those with low familismo scores. This is consistent with other literature that has found that family provides the social supports necessary to be protective for a variety of adverse health and mental health conditions (Parsai et al., 2009; Seeman, T. 2000). What is unique about this particular finding is that the population under study resided in Mexican American *barrios* where they were exposed to stressors (e.g. crime, violence, poverty) that have been shown to exacerbate depression (Lorant et al., 2007). However, their ties to the family provided the buffering support they needed to protect them from depressive symptomatology even when exposed to these heightened risks. This cohesiveness to the family is intrinsic within Latino families and has been identified as a known protective factor for a variety of outcomes. This study uniquely extends research on this relationship because it is exploring the relationship between familismo and depression among a drug using population. Drug users are highly exposed to risks that may place them at risk for depression and the high risk drug use behaviors associated with depression. However, the participants of this study had relatively low levels of depression as compared to other samples of heroin users; clearly something is protecting them from depression.

One of the protective factors that this research identified was cohesiveness with ones' family.

Fatalismo was also protective for depressive symptomatology. Fatalismo is the belief that things are preordained and that there is very little that once can do to change ones circumstances (Marin et al., 1991). There is sparse conclusive evidence on the nature of the relationship between fatalismo and depressive symptomatology. However the concept familismo is related to external locus of control and research on the relationship between external locus of control and depression does exist. Individuals with an external locus of control believe they are powerless to control events that impact them (Rotter, 1966). A meta-analysis of 97 articles studying the relationship between locus of control and depression by Benassi, Sweeney, and Dufour (1988) found greater externality of locus of control associated with greater depression (Besassi, Sweene, & Dufour, 1988). A later meta-analysis supported also supported this relationship (Presson, & Benassi, 1996).

From the aforementioned literature one would expect familismo to be a risk for depression. However our findings contradict existing literature. This may be a result of the social context of the communities from which our sample was drawn from. As previously mentioned, residing in *barrios* exposes residents to heightened stressors and subsequent depression. It could be in fact these very stressors that make the relationship between familismo and depressive symptomatology inverse. Given that participants are constantly exposed to stressful communities having the belief that things are preordained and that there is little that one can do to change their circumstances may free individuals from the responsibility to change their

circumstances (Maier et al., 1976; Greer et al., 1983). This findings extends research by contributing to the sparse research on the relationship between familismo and depression among Latino drug users. To the researcher's knowledge no study has explored the relationship between familismo and depressive symptomatology among Mexican American drug users.

Study 2: The interrelationship of chronic and acute stress and depressive symptomatology among Mexican American male drug users in the barrio

The study findings revealed the chronic stress was a risk for depressive symptomatology among Mexican American heroin injectors. On the side of protective factors for depressive symptomatology, acute stress emerged as a significant variable. Of the chronic stressors studied in the analysis (i.e. poverty, drug use, incarceration) poverty was inversely associated with depressive symptomatology. That is, those individuals who were exposed to poverty at the time of the interview were more likely to score as having depressive symptomatology as compared to those who did not live in poverty. This relationship is supported by the literature that has found poverty is a risk for adverse mental health outcomes (Ross, 2000) and more specifically depression (Galea et al., 2007).

In addition to the relationship between chronic stress and depressive symptomatology, there was also a relationship between acute stress and depressive symptomatology. Those respondents with more acute stressors were at a reduced risk of scoring as having depressive symptomatology than those with low acute stressors. Other research on the impact of chronic and acute stress on depressive symptomatology has

found that chronic stress was more strongly related to depressive symptomatology than acute stress (McGonagle et al. 1990). This has also been found in animal models of stress, where chronic stress trumps acute stress (Katz et al. 1980; Keeney et al., 2006). Findings from this study contradicts other research with Mexican Americans which has found that residing in barrios provides protection from depressive symptomatology (Ostir, Eschach, Markides, & Goodwin, 2003). This may be due to the drug-using nature of our sample. Individuals engaging in a behavior such as drug use may not have the positive social capital (Flores et al., 2013) that is protective for depression among neighborhoods with less pervasive drug use (Fitzpatrick, Wright, Piko, & LaGory, 2005).

Additionally, this research identified that not only is there a relationship between acute stress and depressive symptomatology, the relationship is in fact inverse. For this population, experiencing acute stress protected participants from depressive symptomatology. This can potentially be explained by the overarching impact of the chronic stressors the participants live under. That is, chronic stress is so pervasive in the communities the sample comes from, that acute stressors may be failing to register with any grave significance. In other words, these individuals may have become immune to the impact of acute stress given the ever constant presence of chronic neighborhood stressors. Furthermore, individuals living with chronic stress may have developed a sense of fatalism which may minimize the impact of acute stressors.

Limitations and Recommendations for Future Research

This study contributed to our understanding of depressive symptomatology among Mexican American current and former heroin injectors by providing insight into

the risk or protective nature of culture values and various forms of stress. As with any study, this study has several limitations that will be discussed below with some recommendations for future research that may address these limitations.

First, is that the study utilized a non-probability sampling technique to recruit study participants; limiting the generalizability of the findings. This research assessed depressive symptomatology among a hidden population, making randomization extremely difficult. A lack of a random sample may result in research bias given that the researcher may influence the selection of certain members of the study given his/her understanding of the overall research aims (Singleton & Straits, 2005). In order to address this threat to external validity, as well as the problem of not selecting a random sample, catchment areas (Census blocks) were identified. In these areas fieldworkers identified houses from which potential members could be recruited into the study. Subsequently they engaged in social mapping. Of these mapped houses a random sample was collected, thus minimizing, as best as possible, any researcher bias.

Additionally, a purposive snowball sampling methodology was used upon recruitment of participants into the study. Snowball sampling, also known as chain-referral sampling, is better suited to studying hidden populations engaging in anti-social activities (Gray, Williamson, Karp, & Dalphin, 2007). In order to carry out the snowball methodology, informants were asked to refer two individuals who meet the inclusion criteria and were interested in participating in the study. Subsequently these individuals were asked to refer two other potential respondents, etc. In order to minimize selection bias only two chain referrals were used. The second referred group was not asked to refer any additional individuals to the study. Snowball sampling is one of the most

common non-probability sampling methodologies used and while it may compromise the generalizability of the findings, due to the nature of this population, it was the most effective to address the research aims.

Future studies with this population can utilize more representative sampling techniques to examine whether the risk and protective variables found in this current study hold true. Furthermore, findings from this research can be used to inform large scale epidemiological studies. A larger sample size would allow for the use of Structural Equation Modeling (SEM) to test theoretical models of direction and non-directional linear relationships among the variables discovered as significant for depressive symptomatology through this research. Given the relatively small sample size of this research logistic regression was an appropriate statistical analysis, however utilizing SEM would further our knowledge on the direction of the predictor and outcome variables. Finally, findings from this study could be used to inform a qualitative study. Qualitative research is well suited to explore the nuances between social processes (Patton, 2002). Thus understanding the social context of the *barrio* and the nuances of the risks and protective factors identified through this study as associated with depressive symptomatology may be well suited for qualitative research.

A second limitation of this research is related to the measures used in the study. While the measures used have been shown to be reliable and valid among Latino populations, they may not be adequately tapping into the unique cultural and contextual experiences of Mexican American heroin users. Future research should explore, quantitatively and qualitatively, if the measures for the predictors are reliable and valid among this sample. Another measurement limitation is that the study used the CESD

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scale to measure depressive symptomatology which solely captures symptoms of depression instead of an actual diagnostic measurement for depression (DSM-IV-TR). However, the CESD has been proven reliable and valid in measuring current levels of depressive symptomatology among both clinical and non-clinical samples. Furthermore, the CESD has strong concurrent validity with the DSM IV among elderly populations (Harsigma, et al., 2004). Future research should examine if the relationships between the predictors and the depression remain when using a diagnostic instrument to measure depression.

A third limitation and a threat to internal validity is that our data was self-report and one must contend with a social desirability bias. Self-report data has been proven to have good reliability and validity to other studies of depression (Weisman, et al., 1977) however given the sensitive nature of the topics being discussed during the interview (i.e. drug use, depression, crime, etc.) one must consider their reluctance to share their experiences during their interview. Multiple precautions were considered to minimize the effects of social desirability. Main among these was recruiting field workers who was endemic from the community and having them devote the time to build rapport and trust so that participants felt comfortable in sharing their experiences with them. An additional attempt to minimize social desirability is that all interviews were conducted in private, often in participants' homes, where participants felt comfortable and confidentiality could be assured. Future research should use qualitative methods to identify the nuances of the experience of depression among Mexican American drug using men in the *barrio*. Furthermore, qualitative research could better understand the nuances of the cultural values that were protective for depression. A future study on this

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topic for instance, could focus on understanding the specific relationship and constructs within Latino families that provide a protective effect for depressive symptomatology.

A final limitation is that due to the heroin using nature of the sample we are unable to differentiate between actual clinical depression as measured by the DSM IV-TR and what is the depressogenic effect of heroin on the brain. Thus findings from this research should be interpreted cautiously. Future research should include a transdisciplinary model where brain scans can be conducted periodically to assess if they coincide with a decrease in depression status by clinical measures.

Implications for Social Work Practice

Social work is a profession that is called to work with the disenfranchised and the forgotten. The participants of this study are aging, long term drug users, who are engaging in behaviors that place them at disproportionate risks for adverse health and mental health disorders. Given all of this, many would say that they are a population that is operating at such high risk that they are beyond helping. However, social workers code of ethics calls us to the unique position to advocate for those who have fallen victim to the circumstances that they were born into. They are a people who deserve our respect, care, and concern. This research has several implications for social work practice with depressed Mexican American drug using men. Findings from this study can inform social work practitioners on how best to incorporate cultural and contextual understanding in the development of interventions with marginalized populations. Depression is associated with high risk drug use behaviors and a better understanding of the relationship between familismo, personalismo, machismo, and fatalismo and

depressive symptomatology can help guide clinicians when working with depressed drug users in an effort to ameliorate some of these risks.

When working with Mexican American drug using men with depressive symptomatology, clinicians should be aware that cohesiveness to their family provides a protective effect to depressive symptomatology. Co-occurring mental health and addiction places a tremendous strain on families (Clark & Drake, 1994). Addiction is a family disease impacting all members of the family by creating stress and compromising stability in the home, relationships between family members, finances, and overall family dynamics (National Council on Alcoholism & Drug Dependence, 2014). This is also true for Latino families. Research with participants from this study has found family members are often involved in drug use initiation and inadvertently and purposefully support continued drug use (Applewhite et al., Under Review; Villarreal, Torres, Bordnick, In Progress). Clinicians should be aware of these family dynamics when working with depressed Mexican American drug users. An evidence based intervention that is ripe for adaption to work with individuals from this population is the Brief Strategic Family Therapy (BSFT) (Szapocznik, Hervis & Schwartz 2003). "The BSFT is a short-term, structured, problem-focused, and practical approach to the treatment of conduct problems, associations with antisocial peers, early drug use and the accompanying maladaptive family interactions (relations), all of which are recognized risk factors for substance abuse" (Szapocznik et al., 2003). Clients and their family members participate in 12 to 16 sessions in an effort to address individual and familial functioning. This intervention has been effective in reducing drug use consumption among Latino adolescents and increasing family functioning (Parsai, et al.,

2009; Szapocznik et al., 2003). This intervention could be adapted to work with Mexican American adults who have a history of drug use. It would be efficacious in including family members into therapy in an effort to increase familial strengths and diminish familial risks associated with depression and drug use. This type of intervention would not only aid the individual presenting for services but support the family, both of origin or creation, through the recovery process.

Practitioners should also be aware of the contextual stressors that are associated with depressive symptomatology status of Mexican American male drug users in the *barrio*. They should consider the impact of chronic stressors on depressive symptomatology and focus on developing structural interventions geared at eradicating the chronic stressors present in high risk communities (Latkin et al., 2003). Community macro practitioners should focus on implementing interventions that reduce crime, increase employability, improve health and healthy choices, and otherwise invest in improving the health and wellbeing of these communities. Findings from this research imply that these types of interventions may be more far reaching than clinical interventions geared toward the individual experience the stress.

More specifically, social work practitioners should be more conscious to the detrimental relationship between pervasive poverty and depression. Programs that are geared to skill building, and employment opportunities would be especially beneficial for this population. An example of a successful comprehensive community intervention that targeted drug consumption is the Midwest Prevention project which mounted a coordinated effort by the community, schools, and families to prevent substance abuse in 42 public middle and junior high schools in the Kansas City area. This initiative

consisted of a media campaign, education curriculums, parent education, community organization, and changes in local health policy for a period of four years. Findings from this study revealed the comprehensive intervention was effective in reducing the drug use of adolescents in both the general population and high risk communities (National Criminal Justice Reference Service, 1999). Adapting such a program and targeting it to address the specific contextual factors associated with poverty in the barrio may be advantageous in reducing depression and subsequent high risk drug use behaviors. Finally, when working with this populations clinicians should also be aware that poverty may be a barrier to service acquisition and continuation. Thus programs focused on eradicating poverty should be endemic to the community and easily accessible to residents within the communities that are being targeted for intervention.

Implications for Policy

Effective policy development is crucial for this population as policy would eradicate some of the societal chronic stressors associated with depression among this population at a national level. Findings from this research can inform existing house and senate bills geared at promoting health communities. While few U.S. legislative bills are focused exclusively on Latinos many of the currently proposed legislations could aid Latinos by focusing on strengthening families and high risk communities. For instance, a bill currently in the House of Representatives entitled "Securing American Families by Educating and Training Youth (SAFETY) Through Nonviolence Act of 2013" focuses on reducing community violence by providing education, mentoring and counseling to youth. Findings from this research could provide the rationale to modify this bill to

include employment training that may be beneficial in chipping away at the pervasive poverty within these communities.

Furthermore, findings from this research can be communicated to stake holders in the community through Policy Briefs that would call for investment into programs that support health families and healthy communities. Action items for such a policy could include 1) providing grants to social service agencies to bring resources and services to the residents of these communities, 2) incentivizing employers to move into low income communities and to hire from within those neighborhoods, and 3) investing into schools within these communities to ascertain that children are getting an education that would well prepare them to obtain gainful employment and simultaneously aid in ending the poverty cycle.

Conclusion

In conclusion, the Mexican American *barrio* is a community with incredibly high risks that should place individuals at a high disproportionality for poor health and mental health outcomes. However, in spite of these risks, participants of this study are relatively healthy with lower levels of depression than other community samples of drug users (Darke et al., 2009). Even within the *barrio* there are protective mechanisms that individuals can draw upon. It is evident from this research that Mexican American male drug using men are relying heavily on the support they get from their cultural values and their families. However, they are also placed at risk for depression by the contextual chronic stressors present within these communities. It is the push and pull of life in the *barrio*. These participants have shown a tremendous capacity to survive and lead full

lives even with limited resources and when exposed to constant stressors. This dissertation highlighted the strengths within this population while simultaneously identifying areas ripe for social work intervention. It is my hope that the results from both of the studies of this work will result in ameliorating the risk and promoting the strengths of Mexican Americans living in the *barrio*.

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