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# Lifetime history of traumatic events in a young adult Mexican American sample: relation to substance dependence, affective disorder, acculturation stress, and PTSD

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## Abstract

Mexican Americans comprise one of the most rapidly growing populations in the United States, and within this population, trauma and post-traumatic stress disorder (PTSD) are associated with physical and mental health problems. Therefore, efforts to delineate factors that may uniquely contribute to increased likelihood of trauma, PTSD, and substance use disorders over the lifetime in Mexican Americans are important to address health disparities and to develop treatment and prevention programs. Six hundred fourteen young adults (age 18–30 yrs) of Mexican American heritage, largely second generation, were recruited from the community and assessed with the Semi-Structured Assessment for the Genetics of Alcoholism and an acculturation stress scale. More males (51.2%) reported experiencing traumas than females (41.1%), however, a larger proportion of females received a PTSD diagnosis (15%) than males (8%). Alcohol dependence and affective disorders, but not anxiety disorders, antisocial disorders, nicotine, marijuana, or stimulant dependence, were significantly comorbid with PTSD. Endorsing higher levels of acculturation stress was also significantly associated with both trauma exposure and a diagnosis of PTSD. Logistic regression revealed that female gender, having an affective disorder, alcohol dependence, higher levels of acculturation stress, and lower levels of education were all predictors of PTSD status. Additionally, alcohol dependence generally occurred after the PTSD diagnosis in

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**Contributors**

Cindy Ehlers and Rachel Yehuda were responsible for the study design for assessing trauma and PTSD. Raul Caetano designed all aspect of the study regarding acculturation stress scales and data analyses. Corrine Kim, Gina Stouffer and David Gilder were responsible for collecting and coding the clinical data and David Gilder for making all the best final diagnoses. Cindy Ehlers, Rachel Yehuda, David Gilder, and Raul Caetano were responsible for the preparation of the manuscript. All authors contributed to and have approved the final manuscript.

early adulthood in this high-risk population. These studies suggest that treatment and prevention efforts should particularly focus on young adult second generation Mexican American women with higher levels of acculturation stress, who may be at higher risk for PTSD, affective disorder, and alcohol dependence following trauma exposure.

**Keywords**

Mexican American; PTSD; substance dependence; trauma

## Introduction

Understanding the risk factors for PTSD is important because the public health consequences of PTSD are significant and can include substance dependence and other mental health disorders (Breslau, 2002; Breslau et al., 2003; Kessler, 2000), health problems (see Farley and Patsalides, 2001; Koenen et al., 2008; Kubzansky et al., 2009; Zayfert et al., 2002), and social disability (Kessler, 2000). Ethnic differences in both trauma exposure and the subsequent development of PTSD have been reported, yet the exact causes of those differences remain unclear (Alegria et al., 2013; Roberts et al., 2011). The identification of factors specific to an ethnic group that may influence the prevalence, severity and course of PTSD, as well as the associated comorbidities, is important in order to develop more effective treatment and prevention programs for that population.

A number of studies have reported that Hispanics are more likely than their non-Hispanic counterparts to experience a higher prevalence of PTSD and/or greater overall PTSD symptom severity (see Alcantara et al., 2013; Marshall et al., 2009; Pole et al., 2008), as well as harmful health-related conditions including alcohol use disorders and cirrhosis (see Caetano et al., 2014). Earlier studies that evaluated a large sample of Vietnam veterans reported that Hispanics were twice as likely as non-Hispanic Caucasians to meet criteria for PTSD (Kulka, 1990; Schell and Marshall, 2008) and also had more severe symptoms (Marshall et al., 2009; Ortega and Rosenheck, 2000). However, two large national studies, one that pooled datasets of (1) National Latino and Asian America Study (NLAAS), (2) National Comorbidity Survey Replication (NCS-R), and (3) National Survey of American Life (NSAL) (n=16,238) (see Alegria et al., 2013); and another that reported data from the 2004–2005 wave of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) (n=34,653) (Roberts et al., 2011), found that Latino Whites/Hispanics had roughly equivalent prevalence of PTSD compared to non-Latino Whites/Whites. The causes of the discrepancies in studies evaluating PTSD in Hispanic groups are unclear. However, a recent meta-analysis of PTSD in Latinos (Alcantara et al., 2013) found consistent evidence of elevated rates of PTSD onset and severity among Latinos relative to non-Latino Whites.

One factor, which has not been routinely evaluated in large national samples, is the diversity within the Hispanic American community and how specific subgroups may differ in risk for trauma and PTSD. Hispanic national groups have different patterns of alcohol use, drug use, alcohol-related problems, and psychiatric disorders (Alegria et al., 2006; Caetano et al., 1998, 2008; Vaeth et al., 2009). However, studies evaluating trauma, PTSD, and associated

mental health comorbidities, such as substance dependence, in specific Hispanic subgroups have been sparse (Blume et al., 2009; Cervantes et al., 1989; Galea et al., 2004).

Another factor that may influence the intensity and prevalence of PTSD and other comorbid disorders, such as substance use disorders in Hispanic Americans, is the level of acculturation and presence of acculturation stress. An important finding in first generation (immigrant generation) Mexican Americans is that substance use and other psychiatric disorders increase in frequency as age and time spent in the U.S. increases (Alderete et al., 2000; Alegria et al., 2007; Burnam et al., 1987; Golding and Burnam, 1990; Grant et al., 2004; Kessler et al., 1994; Maldonado-Molina et al., 2011; Reingle et al., 2014; Vega et al., 1998, 2003). This increase in rates suggests that the trans-generational process of adapting to living in the U.S. may play an important role in the development of psychiatric disorders (Escobar, 1998; Ortega et al., 2000). Acculturation stress has been defined as a stress that emerges when an individual develops problems or conflicts associated with adjustment between the immigrant culture and that of the host society (Berry, 2003; Born, 1970; De La Rosa, 2002). There have been a number of studies of Hispanic communities that have reported positive associations between a measure of acculturation stress and a wide range of self-rated mental health behaviors (Caetano et al., 2007; Conway et al., 2007; Crockett et al., 2007; Finch et al., 2001; Firestone et al., 2003; Gil and Vega, 1996; Gil et al., 1994; Hovey and Magana, 2000), including alcohol and other substance dependence (Conway et al., 2007; Ehlers et al., 2009). However, the relationship between PTSD and acculturation stress has not to date been explored.

The present report is part of a larger study exploring risk factors for substance dependence in a community sample of Mexican American young adults, who are primarily second generation immigrants. The lifetime prevalence of substance dependence in this sample and associations with acculturation stress and other comorbid mental disorders has been previously reported (Criado and Ehlers, 2007; Criado et al., 2013; Ehlers and Phillips, 2007; Ehlers et al., 2009, 2010, 2011, 2012, 2014; Gilder et al., 2007; Norden-Krichmar et al., 2014). Specifically, lifetime diagnoses of alcohol dependence, substance dependence, and anxiety disorders were associated with elevations in acculturation stress. However, descriptions of traumatic events, PTSD, and their associations with acculturation stress and comorbid psychiatric conditions have not been examined in these Mexican American young adults. Therefore, the aims of the present study were (1) to document the range of traumatic events, the prevalence of PTSD, and the severity of PTSD symptoms in this Mexican American community sample; and (2) to determine the comorbidity of trauma and PTSD with substance dependence, affective disorder, anxiety disorder and conduct disorder/antisocial personality disorder; and (3) to test whether acculturation stress was significantly higher in individuals exposed to trauma and with PTSD.

## Methods and Materials

### Participants

Participants were recruited using a commercial mailing list that provided the addresses of individuals with Hispanic surnames in 11 zip codes in San Diego County. The geographic areas targeted in the mailing lists were within 25 miles of the research site, and at least 20%

of the residents in the communities were of Hispanic heritage. The mailed invitation stated that potential participants must be of Mexican American heritage, be between the ages of 18 and 30 years, be residing in the United States legally, and be able to read and write in English. A phone interview was used to screen 1,199 potential participants for the inclusion criteria listed on the invitation, and they were further excluded if they were pregnant or nursing, currently had a major medical or neurological disorder, or a head injury. Participants were asked to refrain from alcohol or recreational drug use for 24 hours prior to testing. On the test day, after a complete description of the study was given to the participants, written informed consent was obtained using a protocol approved by The Institutional Review Board of The Scripps Research Institute. Participants were eliminated from the current data analyses if they had a positive breath-analyzer test on the day of the evaluation.

## Psychiatric diagnoses

Each participant completed a face-to-face interview with the Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA) (Bucholz et al., 1994), which was used to generate substance use and other psychiatric disorder diagnoses according to DSM-IV criteria. The SSAGA is a fully structured, polydiagnostic psychiatric interview that has undergone both reliability and validity testing (Bucholz et al., 1994; Hesselbrock et al., 1999). All interviewers were trained in accordance with the guidelines for use of the SSAGA by an addiction psychiatrist who made all the best final diagnoses in consultation with the interviewer. Lifetime diagnoses of alcohol dependence, other drug dependence (marijuana, stimulants, sedatives, hallucinogens, opioids, nicotine), antisocial personality disorder/ conduct disorder (ASPD/CD), “any affective disorder” (major depressive disorder, dysthymia, bipolar I disorder), “any anxiety disorder” (social phobia, agoraphobia, panic disorder, obsessive compulsive disorder), and post-traumatic stress disorder (PTSD) in this population were defined by DSM-IV criteria.

## Acculturation stress

Level of acculturation stress was assessed using an instrument developed by Caetano et al., (2007), using items from the scale of acculturative stress of Mena et al., (1987) and Vega et al., (1993), and additional items. This acculturation stress scale has been used in several studies (Caetano et al., 2007, 2009), including the population in the present study (Ehlers et al., 2009). The reliability of the acculturation stress scale is high, with the Cronbach’s alpha at 0.86 (Caetano et al., 2007). Principal components factor analysis confirmed that the scale items represented acculturation stress. The main factor with an Eigen value of 4.7 accounted for 43% of the variance in the data. An estimate of the reliability of this scale in the present sample revealed that the split-half reliability using the Spearman Brown formula was 0.89, demonstrating high reliability.

## Data analysis

Data analyses were based on the three specific aims of this study. All analyses were carried out using SPSS software (IBM SPSS Statistics for Macintosh, Version 20.0, Armonk, NY). In all univariate analyses, the alpha level (2-tailed) was set at 0.01, and p-values were considered significant if < 0.01 to control for multiple comparisons. For the logistic

regression analyses, the alpha level (2-tailed) was set at 0.05, and p-values were considered significant if < 0.05. The first aim was to document the range of traumatic events reported, determine the prevalence of PTSD by gender, and identify which symptoms of PTSD were more frequently endorsed in this Mexican American community. To investigate this aim, the number of participants who experienced any of six types of trauma (military combat, sexual abuse, injury or assault, natural disaster with loss, witnessed trauma, other trauma), and whether they met criteria for PTSD, as documented by the SSAGA, were tallied, and a chi-square analysis and Fisher's Exact Test were used to detect gender effects. Individual symptoms of PTSD were also tallied, and the number endorsed according to gender was identified.

The second aim was to determine the comorbidity of PTSD with any anxiety disorder (panic disorder with or without agoraphobia, agoraphobia without panic, social phobia, and obsessive-compulsive disorder, ANY AX), any affective disorder (major depressive disorder, bipolar I disorder, and dysthymic disorder, ANY AF), conduct/antisocial personality disorder (ASPD/CD), nicotine dependence, stimulant dependence, marijuana dependence and alcohol dependence. Based on previous findings, we predicted that PTSD would be comorbid with: personality disorders, anxiety and affective disorders, and substance dependence (see Moreau and Zisook, 2002). For these sets of analyses, chi-square analysis, Fisher's Exact Test, Odds ratios, and 95% confidence intervals were calculated for each diagnosis (yes/no) by PTSD (yes/no) diagnosis.

The third aim was to test whether acculturation stress was significantly higher in those participants who had reported trauma exposure and those with PTSD. It was our hypothesis that since acculturation stress was previously found to be higher in individuals with anxiety disorders in this population (Ehlers et al., 2009), it would also be higher in those individuals with a PTSD diagnosis. To test this hypothesis, ANOVA was used to determine if level of acculturation stress, as indexed by the total score on the acculturation stress instrument, was higher in individuals with a PTSD diagnosis compared to those without a PTSD diagnosis. Additionally, we tested whether those individuals who had been exposed to trauma were also higher on the total score of the acculturation scale.

In order to test a larger integrated model, the demographic, diagnostic, and acculturation stress variables that were significantly comorbid with PTSD in the univariate analyses (chi-square and ANOVA) were all entered simultaneously, along with gender, into a logistic regression to determine predictors for PTSD. Finally, in order to determine the chronology of PTSD with an alcohol dependence diagnosis, the age onset of each diagnosis for every individual with PTSD and alcohol dependence was compared to determine which diagnosis the individual recalled having first.

## Results

Six hundred and fourteen participants completed a SSAGA and provided information on traumatic events and PTSD diagnoses. The mean age of the sample was 23.5 (S.E.=0.3) yrs, 59% of the sample was female, 60% of the sample was employed, the mean number of years of education was 13.1 (S.E.=0.1) yrs, 74% had a household income of over $20,000 a year,

and 60% were second generation Mexican Americans, with 88% of the sample being second generation or greater. Those with PTSD (n=75, 12%) were more likely to have less years of education F(1,611)=11.8, p=.001. There were no other significant differences found between those participants with a diagnosis of PTSD and those without PTSD in any other of the demographic variables.

As seen in Table 1, data analyses for the first aim revealed that a range of traumatic events were experienced in this young adult Mexican American community sample. Forty-five percent (n=278) of the participants reported experiencing at least 1 of 6 types of trauma. More men (51.2%) than women (41.1%) endorsed having experienced at least one trauma. Only men endorsed having experienced military combat, $X^2(1)=11.6$, p=.001; men were also more likely to have witnessed trauma, $X^2(1)=12.3$, p=.001, than women. Women were more likely to have experienced sexual abuse, $X^2(1)=15.8$, p<.001, than men. Twenty-seven percent of individuals who had experienced at least one trauma met DSM-IV criteria for PTSD (12% of the entire population). A larger proportion of women who had experienced at least one trauma received a PTSD diagnosis (36.2%) than men (16.3%), $X^2(1)=14.0$, p<0.0001. There were no significant gender differences in the reported individual symptoms of PTSD.

The second aim was to determine the comorbidity of trauma and PTSD with substance dependence, affective disorder, and conduct disorder/ASPD. The comorbidity of PTSD with each of the other diagnoses was also estimated using chi-square analysis and Fisher's Exact Tests, Odds ratios, and 95% confidence intervals. Alcohol dependence $X^2(1)=11.1$, p=.002, and any affective disorder $X^2(1)=9.6$, p=.003, were found to be significantly comorbid with PTSD as shown in Table 2. However, marijuana dependence, stimulant dependence, nicotine dependence, antisocial personality disorder/conduct disorder, and any anxiety disorder were not significantly comorbid with PTSD.

The third aim was to test whether acculturation stress was higher in those individuals who had experienced trauma and in those with a diagnosis of PTSD using ANOVA. Individuals who had experienced "any trauma" had significantly higher total scores on the acculturation stress scale (mean ± S.E. trauma= 24.6 ± 0.53; no trauma= 22.9 ± 0.46, F(1,612) = 6.0, p<0.01). As seen in Table 3, those individuals with a PTSD diagnosis also had a significantly higher total sum of the items on the acculturation stress scale, F(1,612)=8.1, p=0.005. Finally, the demographic and diagnostic variables that were significantly associated with PTSD in the chi-square analysis and ANOVA analyses (gender, presence of an affective disorder diagnosis, presence of an alcohol dependence diagnosis, the total score on the acculturation stress scale, and education) were all entered together into a logistic regression model to determine which variables remained predictive of PTSD. Gender (Wald=8.8, p=0.003), any affective disorder (Wald=4.6, p=0.03), alcohol dependence (Wald=8.1, p=0.004), acculturation stress (Wald=4.1, p=0.04), and education (Wald=13.9, p<0.001) all remained significant predictors in the analyses.

In order to determine the chronology of PTSD with alcohol dependence, the age at diagnosis of PTSD and the age of diagnosis of alcohol dependence were compared in each individual with dual diagnoses. Twenty-six of the 75 individuals with PTSD (34.7%) had both alcohol

dependence and PTSD. Of those, 15 (57.7%) had an age onset of PTSD first, 5 (19.2%) had an age onset of alcohol dependence first, and 6 (23.1%) had a PTSD diagnosis and alcohol dependence diagnosis at the same age. Thus, these data suggest that alcohol dependence generally occurs after PTSD or in same general age range in young adulthood in this population.

## Discussion

Data from this sample of mostly second generation Mexican American young adults suggest that trauma is not more prevalent in this population compared to other general population samples of Hispanics. In the present study, 45 percent of the sample reported having experienced at least one trauma. However, the overall prevalence of PTSD in this population (12%) was higher than what has been reported for Hispanics in general population surveys. In the NESARC study, the rate of PTSD in Hispanics was 7% (Roberts et al., 2011) and for the NLASS/NCS-R/NSAL study, it was 6.9% (Alegria et al., 2013). Taken together, these data suggest that while this young adult Mexican American population does not have substantially increased exposure to trauma, they appear to be overall at higher risk, and especially increased conditional risk, for PTSD given their level of trauma exposure. This finding is consistent with the results of a recent meta-analysis and systematic review of conditional risk for PTSD among Latinos, which found that Latinos exposed to trauma were more likely to develop PTSD and have more severe PTSD symptoms, compared to non-Latinos exposed to trauma (Alcantara et al., 2013). It has also been suggested that Hispanics report higher levels of PTSD symptoms that could be regarded as exaggerated cognitive and/or sensory perceptions (Marshall et al., 2009). In the present study, over 80% of participants with a PTSD diagnosis reported “being more watchful or extremely aware of things around them”, providing some support for this hypothesis.

Understanding the risk factors for PTSD is important because the public health consequences of PTSD are significant and include substance dependence and other mental health disorders (Breslau, 2002; Breslau et al., 2003; Kessler, 2000), health problems (see Farley and Patsalides, 2001; Koenen et al., 2008; Kubzansky et al., 2009; Zayfert et al., 2002), and social disability, such as marital instability and unemployment (Kessler, 2000). There have been several large studies that have linked anxiety and depressive disorders with an increase in the risk for PTSD in the general population (see Breslau et al., 1997; Bromet et al., 1998; Perkonigg et al., 2000). Few studies have conducted analyses on comorbidity of PTSD and anxiety/depressive disorders in Hispanics. In one small study evaluating PTSD and depression symptoms among Latina mothers receiving child welfare, a high rate of comorbid PTSD and depression was found (Chemtob et al., 2011). These findings are consistent with the present study, where a significant level of comorbidity was found between the presence of “any affective disorder” and PTSD.

The comorbidity of trauma, PTSD and substance use disorders is very high, with 52% prevalence rates for men and 28% for women in the general population, and as high as 85% in clinical samples (Baker et al., 2009; Kessler et al., 1995, 2005; Mills et al., 2006; Petrakis et al., 2002). However, substance use, trauma, and PTSD may have some differences across population groups. For instance, there is no published evidence that holocaust survivors have

any increased risk for substance dependence (see Amir and Lev-Weisel, 2003; Brodaty et al., 2004; Niederland, 1981; Yehuda et al., 1997). However, studies of American Indians and aboriginal Australians have provided evidence to suggest that high rates of alcohol use disorder and traumatic stress can be seen compared to general population samples (Beals et al., 2005a, 2005b; Boyd-Ball et al., 2006; Ehlers et al., 2013; Nadew, 2012; Westermeyer et al., 2009). Little information is known concerning the comorbidity of PTSD with substance use disorders specifically in Hispanics. In a study that evaluated Mexican American residents living along the U.S.-Mexico border, participants with alcohol dependence reported more symptoms of anxiety and post-traumatic stress, and the symptoms of anxiety were significantly associated with alcohol use disorders (Blume et al., 2009). In the present study, significant comorbidity was found between alcohol dependence, but not nicotine, marijuana, or stimulant dependence, and PTSD. These data suggest that there may be a selective risk for alcohol dependence and PTSD in this population. Additionally, using retrospective reports, we attempted to further explore the relationships between substance dependence, trauma, and PTSD by ascertaining whether a PTSD diagnosis preceded, followed, or emerged concurrently with the development of alcohol dependence. We found that in 80 percent of the cases, alcohol dependence generally occurred after PTSD, or in the same general age range in young adulthood in this population. These data suggest preliminarily that PTSD may be a risk factor for alcohol dependence in this population.

There is ample data that the trans-generational process of adapting to living in the U.S. may play an important role in the development of alcohol use disorder and perhaps other psychiatric disorders, such as PTSD (Burnam et al., 1987; Escobar, 1998; Ortega et al., 2000). Numerous analyses of the effects of acculturation on risk factors for mental health have assumed that these effects are a result of the “stress” inherent to the acculturation process. However, many studies have not actually measured acculturation stress directly. In a previous study of this young adult Mexican American sample, lifetime diagnoses of alcohol dependence, substance dependence, and anxiety disorders were found to be associated with elevations in acculturation stress (Ehlers et al., 2009). However, that study did not specifically evaluate trauma exposure or symptoms of PTSD. Interestingly, in the present study having experienced “any trauma” was associated with elevated scores on the acculturation stress scale. This suggests that acculturation stress may make an individual more vulnerable to trauma exposure. In the present study, a significant association was also found between acculturation stress and PTSD even in a model that controlled for gender, alcohol dependence, and level of education.

How acculturation stress may directly impact symptoms of PTSD and the development of alcohol use disorders is not currently known. In one study that evaluated Latino males in middle school in south Florida, a path model was developed, in which acculturation stress led to less positive identification with family values, which in turn led to a disposition of deviant behavior and ultimately alcohol involvement (Gil et al., 2000). The data from the present study suggest that in this Mexican American population, female gender and affective disorders may be more associated with acculturation stress and PTSD than disorders associated with deviant behavior, seen primarily in males, such as ASPD/CD. Tentatively, we suggest that female gender, lower levels of education, acculturation stress, alcohol dependence and depressive disorders are all associated with PTSD in this young adult

Mexican American sample. These data may prove informative in the development of targeted treatment programs in this population.

It is important to consider some of the present study's limitations. This study was not an epidemiological sample of Hispanics living in San Diego County, but rather a study of Mexican American young adults who responded to a flyer mailed to individuals with Hispanic surnames asking for participation in health-related research. Therefore, the findings may not generalize to all Mexican Americans, or all Hispanic young adult Americans. Over half of the participants in the present study were women, and thus findings may not generalize to previous studies that have focused on samples of mostly male participants. Second, the study was limited to young adults between the ages of 18 and 30 years and those who spoke English, limiting the generalizability of the findings. Another limitation of the study was in examining the temporality of the relationship between PTSD and alcohol dependence, since participants who did not meet full criteria for PTSD diagnosis were not included. When PTSD is comorbid with other disorders, diagnosis may be difficult, and significant PTSD symptoms and impairment may occur in subclinical thresholds (Moreau and Zisook, 2002). Further studies employing a longitudinal design will be required to test the relationship of acculturation stress, PTSD, and eventual alcohol related morbidity and mortality. Despite these limitations, this report represents an important first step in an ongoing investigation to determine risk and protective factors associated with the development of substance use disorders in Mexican Americans.

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## Table 1

Total number of traumas endorsed by all participants and cases of PTSD according to trauma type and gender

| | Males | Females | $X^2$ | p-value |
|---|---|---|---|---|
| ***Total Number of Traumas Endorsed*** | (n=252) | (n=362) | | |
| Military Combat | 8 | 0 | 11.6 | **0.001** |
| Sexual Abuse | 5 | 37 | 15.8 | **<0.001** |
| Injury or Assault | 44 | 40 | 5.2 | 0.023 |
| Natural Disaster with Loss | 4 | 2 | 1.6 | 0.234 |
| Witnessed Trauma to Others | 88 | 80 | 12.3 | **<0.001** |
| Other Trauma | 17 | 11 | 4.7 | 0.030 |
| ***PTSD Cases by Trauma Type*** | (n=21) | (n=54) | | |
| Military Combat | 2 | 0 | 5.3 | 0.076 |
| Sexual Abuse | 1 | 18 | 6.5 | 0.011 |
| Injury or Assault | 4 | 9 | 0.1 | 1.000 |
| Natural Disaster with Loss | 1 | 0 | 2.6 | 0.280 |
| Witnessed Trauma to Others | 9 | 19 | 0.4 | 0.537 |
| Other Trauma | 4 | 8 | 0.2 | 0.729 |

Total number of traumas endorsed and cases of PTSD according to trauma type are presented for males compared to females. The p-values reported are Pearson Chi-Square or Fisher's Exact Test for categorical variables, with significance set at **p<0.01**

## Table 2

Odds ratios and 95% confidence intervals of PTSD according to substance dependence and psychiatric diagnoses

| | $X^2$ | Odds ratio | 95% C.I. | p-value |
|---|---|---|---|---|
| Alcohol Dependence | 11.10 | 2.39 | 1.41–4.03 | **0.002** |
| Marijuana Dependence | 5.70 | 2.02 | 1.12–3.62 | 0.023 |
| Stimulant Dependence | 2.19 | 1.73 | 0.83–3.60 | 0.188 |
| Nicotine Dependence | 0.01 | 1.03 | 0.47–2.25 | 1.000 |
| ASPD/CD | 2.94 | 1.84 | 0.91–3.74 | 0.091 |
| Any Anxiety Disorder | 6.90 | 2.13 | 1.20–3.79 | 0.015 |
| Any Affective Disorder | 9.60 | 2.13 | 1.31–3.47 | **0.003** |

The p-values reported are Pearson Chi-Square or Fisher's Exact Test for categorical variables, with significance set at **$p<0.01$**

## Table 3

Acculturation stress scale items according to PTSD diagnosis

| Acculturation stress scale item | No PTSD diagnosis (n = 539) Mean ± SE | PTSD diagnosis (n = 75) Mean ± SE | F; df | p-value |
|---|---|---|---|---|
| It bothers me that family members I am close to do not understand my new values. | 2.8 ± 0.1 | 3.1 ± 0.2 | | |
| Close family members and I have conflicting expectations about my future. | 2.7 ± 0.1 | 3.1 ± 0.2 | | ** |
| It is hard to express to my friends how I really feel. | 2.3 ± 0.1 | 2.4 ± 0.2 | | |
| I don't feel at home. | 2.4 ± 0.1 | 2.7 ± 0.2 | | |
| People think I am unsociable when, in fact, I have trouble communicating in English. | 1.7 ± 0.1 | 1.9 ± 0.1 | | |
| It bothers me when people pressure me to assimilate or live the Anglo-American way. | 2.0 ± 0.1 | 2.2 ± 0.1 | | |
| I often think about my cultural background. | 1.9 ± 0.0 | 2.0 ± 0.1 | | |
| I have more barriers to overcome than most people. | 2.3 ± 0.1 | 2.7 ± 0.2 | | ** |
| Because of my ethnic background, I feel that others often exclude me from participating in their activities. | 1.9 ± 0.0 | 2.2 ± 0.2 | | |
| People look down upon me if I practice customs of my culture. | 1.8 ± 0.0 | 2.0 ± 0.1 | | |
| People dislike me because I am Hispanic. | 1.7 ± 0.1 | 2.0 ± 0.1 | | |
| Total Sum of Item Scores | 23.3 ± 0.4 | 26.3 ± 1.0 | 8.1; 1, 612 | **0.005** ** |

Acculturation stress scale items are presented according to a diagnosis of PTSD compared to No PTSD diagnosis. The p-values reported are ANOVA for continuous variables, with significance set at ****p<0.01**