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## Alcohol Use and Comorbid Anxiety, Traumatic Stress, and Hopelessness Among Hispanics

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### Abstract

Little is known about the comorbidity of alcohol use, anxiety, hopelessness, and trauma among Mexican Americans, especially those living in impoverished and often isolated communities or neighborhoods (colonias in Spanish) along the U.S.-Mexico border that may be particularly vulnerable due to stressful living conditions. The current study utilized a community participatory model to investigate the relationships of alcohol use, acculturation, anxiety, hopelessness, and trauma in 100 Mexican origin colonia residents. Significant comorbidity was expected and that anxiety, hopelessness, and post-traumatic symptoms were hypothesized to be associated with the severity of the alcohol use disorders of participants. Participants who met DSM-IV criteria for alcohol dependence reported significantly more symptoms of anxiety and posttraumatic stress, and symptoms of anxiety were significantly associated with alcohol use disorders. This study provides evidence of the need for further investigation of stress, trauma, anxiety, hopelessness, and alcohol abuse in Mexican American residents and to inform future prevention and treatment efforts to improve both the physical and mental health of this population.

### Keywords

Alcohol abuse; anxiety; PTSD; hopelessness; Mexican Americans

## Alcohol Use and Comorbid Anxiety, Traumatic Stress, and Hopelessness Among Hispanics

Hispanics constitute the largest and fastest growing ethnic minority group in the United States (United States Census Bureau, 2006). Evidence suggests that Hispanic adults may be at greater risk than the general population for experiencing drinking problems. The National Epidemiological Survey on Alcohol and Related Conditions (NESARC) found a 12-month prevalence rate of alcohol dependence in approximately 4% of Hispanics and Latinos for 2001-2002 (Grant et al., 2004). The National Survey on Drug Use and Health (NSDUH), conducted in 2002, projected slightly higher drinking rates but lower prevalence rates of alcohol use disorders for Hispanics and Latinos than the NESARC (Gruza, Abbacchi, Przybeck, & Gfroerer, 2007). Another study found that alcohol dependence prevalence rates may be as high as 19% for Hispanic men and 7% for Hispanic women (Vega et al., 1998). Acculturation into

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the mainstream American society has been associated with increased drinking (Abraído-Lanza, Chao, & Flórez, 2005). Higher levels of acculturation have been associated with increased frequency of drinking by Hispanics in social situations, increased heavy drinking events by young Hispanic men (Caetano, 1987), and increased alcohol dependence rates (Vega et al., 1998), which have been found to be four times higher amongst American-born Mexican Americans than Mexican American immigrants (Escobar, 1998).

Hispanic adults often evidence higher incidence of alcohol-related health problems as adults. Cirrhosis and other liver diseases are the sixth leading cause of death across all age groups among Hispanic Americans and the twelfth leading cause of death in non-Hispanics (NCIPC, 2006). In a study conducted in hospital emergency departments, Hispanic Americans who were injured often had positive breathalyzer tests upon examination and reported greater frequency of intoxication during the preceding year (Cherpitel, 1998).

### **Mexican Americans, Hopelessness, and Anxiety**

Hopelessness among Hispanic American men (Karel & Moye, 2002) and women (Myers et al., 2002) has been a potent predictor of depression. Correlates of hopelessness commonly are related to anxiety and anxiety disorders as well. Vega and colleagues (1998) found that the lifetime prevalence for any anxiety disorder in Mexican American immigrants was 18% for women and 9% for men, and for Mexican Americans born in the United States, nearly 27% of women and 20% of men met criteria for an anxiety disorder. Anxiety disorders may be underdiagnosed since Mexican Americans may attribute such disorders to an “attack of nerves” (USDHHS, 2001). Specific familial issues can negatively affect Hispanic Americans and lead to increased anxiety. General family strain or dysfunction and a larger household size have demonstrated associations with anxiety (Glover, Pumariega, Holzer, Wise, & Rodriguez, 1999; Grzywacz, Quandt, Arcury, & Marin, 2005). A dearth of social support, low self-esteem, and strong religious beliefs can contribute to the development of anxiety disorders in Mexican Americans (Hovey & Magaña, 2002).

Acculturation may affect the development of anxiety in several ways, but the relationship between these factors is complex. Stress resulting from the acculturative process is one mechanism through which acculturation has been shown to influence anxiety (Hovey & Magaña, 2002). Data collected from Mexican origin farm workers in California found a lifetime prevalence rate of anxiety disorders to be 12.9%, with higher rates of acculturation related to increased odds of developing an anxiety disorder (Alderete, Vega, Kolody, & Aguilar-Gaxiola, 2000). On the other hand, English language proficiency was shown to negatively associate with anxiety in Mexican American youths residing in Texas (Glover et al., 1999). Mexican Americans who immigrated at a younger age and have lived in the U.S. longer have demonstrated increased rates of psychiatric morbidity, including anxiety disorders (Vega, Sribney, Aguilar-Gaxiola, & Kolody, 2004). Comparisons between Mexican born Mexican Americans, U.S. born Mexican Americans, and Anglo Americans have shown that the lowest levels of anxiety disorders were found in individuals born in Mexico, whereas Anglo Americans demonstrated the highest rates of anxiety disorders (Grant et al., 2004).

### **Mexican Americans and Posttraumatic Stress**

Significant evidence exists that Hispanic Americans may be at greater risk for experiencing post traumatic stress disorder (PTSD) than other ethnic groups (Pole, Best, Metzler, & Marmar, 2005). Hispanic Americans may experience more exposure to stressors than the general U.S. population, including some stressors that are directly related to traumatic events, and the experience of stressors may be associated with vulnerability to subsequent exposure to trauma and stress. One type of stressor includes major life events. A large community based study ( $N = 2,393$ ) found that although there were no statistical differences between the numbers of

major life events experienced by Hispanics and non-Hispanic Whites, there were qualitative differences between the life experiences among each ethnic group. Hispanics were significantly more likely to report chronic life stressors, such as economic stress, and were significantly less likely to report positive life events compared to non-Hispanic Whites (Golding, Potts, & Anehensel, 1991). Among Mexican Americans, one community survey found that 25% of the participants who had migrated to the United States for political reasons met criteria for PTSD (Cervantes, Salgado de Snyder, & Padilla, 1989). Another study that examined interpersonal violence and trauma among low income Latina and African American women found that 25% of the subjects met criteria for PTSD and that over 10% had witnessed violence (Hien & Bukszpan, 1999).

Among Vietnam veterans it was found that Hispanic Americans often had a higher incidence of PTSD, controlling for time in combat, and also had more severe symptoms than non-Hispanic Whites (Ortega & Rosenheck, 2000). Some have attributed these findings to cultural differences that may magnify the experience of stressors (Wilcox, Briones, & Suess, 1991). For instance, studies have found that Hispanic women are less likely to report rape than non-Hispanic White women (Lira, Koss, & Russo, 1999). Others have suggested that previous experiences of stress and trauma, rather than cultural factors, may predispose people to vulnerability for symptoms in the face of new traumas. For instance, one study found that combat related PTSD was often preceded by other traumatic events among ethnic minority combat veterans, including Hispanics. The experience of previous trauma was a stronger predictor of the severity and course of symptoms than ethnicity (Frueh, Brady, & de Arellano, 1998). Interestingly, Parson (1985) suggested that the high incidence of PTSD among Hispanic combat veterans may be a function of living in two cultures, negotiating racism, and negotiating traumas.

There is concern that Hispanic Americans may not seek services according to need after experiencing a trauma. For example, in New York after September 11, Hispanic Americans did not seek services for PTSD at the rate of Whites (Boscarino et al., 2004). In addition, PTSD may have a somewhat different presentation of symptoms among Hispanic Americans than among non-Hispanic Whites. PTSD among Hispanics may be typified by avoidance rather than arousal (more typical of non-Hispanic Whites; Norris, Perilla, & Murphy, 2001). An avoidance presentation, as opposed to arousal, could potentially cause an under-diagnosis of PTSD among Hispanic adults and an under-treatment of symptoms (Scott, Lefley, & Hicks, 1993).

### **Mexican Americans Living in Colonias**

Colonias are typically isolated and impoverished communities, home to hundreds of thousands of residents, populated by mostly by Mexican Americans along the U.S.-Mexico border. Previous research in the colonias that are the focus of the present study found that approximately 73% of residents were married, 62% had not finished high school, 66% of the households made less than \$20,000 per year, 77% were uninsured, and fewer sought treatment than a geographically proximal urban comparison group (Spence, Wallisch, & Smith, 2007). Virtually nothing is known about the levels of anxiety, hopelessness, and traumatic stress in these communities. There is considerable health risk to these communities due to factors such as unsafe living conditions, low educational attainment, high unemployment, comparatively high rates of the spread of communicable illness, lack of access to health care, and poverty (e.g., Ortiz, Arizmendi, & Cornelius, 2004; Vincent & Guinn, 2001). A recent study comparing substance use patterns in borderland communities found colonia residents evidenced the highest rates of binge drinking and alcohol dependence (Wallisch & Spence, 2006). Given the level of exposure to a number of health risks and stressors and the already documented high level of alcohol abuse among colonia residents, one would expect a high level of comorbidity of anxiety, stress, and alcohol use in these communities. However, the relationship of alcohol

use disorders with acculturation, anxiety, hopelessness, and post-traumatic stress among colonia residents has not been investigated. The purpose of this study is to investigate those relationships. The relationships of anxiety, hopelessness, and post-traumatic stress with alcohol use disorders will be examined individually to understand the discrete relationships then modeled together to understand how the constructs in concert may be associated with alcohol use disorders. It is hypothesized that there will be significant comorbidity, that anxiety, hopelessness, and post-traumatic symptoms will predict the severity of the alcohol use disorders of participants.

## 1. Method

### 1.1 Participants

The sample was constituted by non-randomly selected volunteers who were recruited at various community locations in the colonias where residents were likely to gather, such as fruit stands and corner stores. One hundred colonia residents in the southwestern United States ages 15 to 80 of both genders who reported heavy alcohol use were recruited yielding a study sample that was mostly male ( $n = 61$ ; 61%). In order to ensure a heavy drinking sample, alcohol use was determined by means of a positive screen (one positive response or more) to the CAGE questionnaire (Ewing, 1984). People who exhibited signs of psychotic behavior were excluded. After a complete description of the study was described to the study subjects, written informed consent was obtained

### 1.2 Measures

Questions from the Structured Clinical Interview for DSM-IV Axis I disorders (SCID; First, Spitzer, Gibbon, & Williams, 2002) were used to assess alcohol abuse and dependence, and acute stress and posttraumatic disorders. The SCID is the gold standard for assessing DSMIV diagnostic criteria (American Psychiatric Association, 2000), including psychiatric and substance use disorders.

The Short Acculturation Scale for Hispanics (SASH) is a 12 item questionnaire assessing the degree of acculturation into Anglo American culture that has been shown to have good psychometric properties when used with Mexican Americans in addition to several other Hispanic groups (Marín, Sabogal, VanOss Marín, Otero- Sabogal, Pérez-Stable, 1987). The SASH was chosen because it is a brief assessment of acculturation and has been used successfully with Spanish speaking populations.

The PTSD Symptom Scale-Self Report (PSS-SR; Foa, Riggs, Dancu, & Rothbaum, 1993) is a 17 item instrument that assesses symptoms of trauma commonly experienced by people with PTSD. This measure has been found to have good internal consistency, test-retest reliability, and construct and concurrent validity (Foa et al., 1993; Foa & Tolin, 2000) and was chosen because of its brevity. For each item, participants report how many times in a week they are bothered by the symptom described. Response options range from 0 (not at all) to 3 (5 or more times per week/almost always). Summed scores indicate severity of PTSD symptoms being experienced.

The Beck Hopelessness Scale (BHS) is a 20 item measure that assesses hopelessness for the future and has been found to have good psychometric properties (Beck, Weissman, Lester, & Trexler, 1974). It is composed of 11 negatively phrased items and 9 positively phrased items, which are evaluated using a true-false format. Responses to the 20 items are each assigned a score of 0 or 1 and then summed to give a total score. Possible total scores range from 0 to 20. Scores from 0 to 3 indicate that someone is asymptomatic, scores from 4-8 represent mild

symptoms, totals from 9-14 indicate moderate symptoms, and scores above 14 are demonstrative of severe symptoms of hopelessness.

The Beck Anxiety Inventory (BAI) is a 21 item measure that assesses an individual's severity of anxiety symptoms. The BAI has been found to have good psychometric properties (Beck, Epstein, Brown, & Steer, 1988). Items on this 21 item, self-report measure consist of a list of anxiety symptoms (e.g., hands trembling). Participants are asked to rate each symptom based on how problematic it has been for them in the past week; response options range from 0 (not at all) to 3 (severely-I could barely stand it). The summed scores of all items on the BAI provide an estimate of the severity of anxiety symptoms and range from 0 to 63 (Beck et al., 1988). A summed score value ranging between 0 and 21 is interpreted as demonstrating low anxiety, whereas a value ranging between 22 and 35 suggests an individual is experiencing a moderate level of anxiety. A summed score value meeting or exceeding 36 is interpreted as experiencing a high level of anxiety that may warrant great concern.

All measures were translated with the help of community members (promotoras; community health educators) into Spanish for use in the study. Following this translation, measures were back translated into English and compared with the original versions. Differences between the original back translated measures were compared and found to fall within an acceptable range, with the translated items retaining the semantic meaning of original items. Cronbach's alpha values for the SASH (.91), BHS (.74), BAI (.93), and PSS-SR (.94) were in the good to excellent range for this study sample.

### 1.3 Procedure

The study was developed and carried out using the community-based participatory model in that key community stakeholders were involved in advising the research team. Participants were administered the measures in the following order of administration: demographic variables; SASH; SCID alcohol use disorders module questions; BHS; BAI; SCID PTSD module questions; and the PSS-SR. Immediately following completion of the study participants were compensated with a \$25 gift card to a local market and thanked for their time in the study. The study protocol was approved by the appropriate institutional review boards.

## 2. Results

The mean participant age was 40.31 years. Analysis of variance did not find significant mean age differences for participants by DSM-IV alcohol use disorder diagnostic category ( $F = 0.679$ ;  $p = .51$ ). Although all participants were of Mexican descent, three participants reported belonging to more than one ethnic group. Most of the study participants chose to have their assessments conducted in Spanish ( $n = 68$ , 68%). The typical participant had finished almost 11 years of formal education ( $SD = 3.65$ ). As shown in Table 1, most of the participants met criteria for a DSM-IV alcohol use disorder ( $n = 83$ ; 83%), and 25 (25%) participants met DSM-IV criteria for the assessed anxiety disorders (i.e., acute stress disorder and PTSD).

Table 1 also shows the descriptive results for the measures of interest in the study by gender. For the SASH, the mean score in this sample was 2.51, which suggests that many participants were in the lower range of acculturation. Most participants had lived a substantial proportion of their lives in the U.S. (Mean = .79). The participants had mean scores of 10.79 out of 20 for the BHS, 10.91 out of 63 for the BAI, and 13.54 out of 51 for the PSS-SR. The mean BHS score fell within the range of moderate symptoms of hopelessness and the BAI mean indicated low anxiety.

Multinomial logistic regression analyses were conducted to test the study hypotheses. The first analysis tested whether percentage of years lived in the U.S., SASH scores, gender, and total

BHS scores was significantly associated with the alcohol use diagnoses of study participants (0 = no diagnosis, 1 = alcohol abuse, 2 = alcohol dependence). As shown in Table 2, the full regression model was found to be statistically significant (Nagelkerke's  $R^2 = .20$ ;  $p = .029$ ) and a good fit for the data. However, no individual variable of interest in the study was significantly associated with DSM-IV alcohol use diagnosis.

The second analysis tested whether the percentage of years lived in the U.S., SASH scores, gender, and total BAI scores were significantly associated with the alcohol use diagnoses of study participants (Table 3). The full regression model was statistically significant (Nagelkerke's  $R^2 = .45$ ;  $p < .001$ ) and a good fit for the data. Total BAI scores were found to be significantly associated with DSM-IV alcohol use diagnosis in the full regression model, but no other variables of interest were found to be significant. This indicated that participants with no alcohol use disorder or alcohol abuse experienced less anxiety than those who met criteria for alcohol dependence. The third analysis tested whether the percentage of years lived in the U.S., SASH scores, gender, and DSM-IV Traumatic Stress Disorders diagnoses were significantly associated with the alcohol use diagnoses of study participants. The full model was not statistically significant ( $p = .076$ ).

The fourth analysis tested whether the percentage of years lived in the U.S., SASH scores, gender, and total PSS-SR scores were significantly associated with the alcohol use diagnoses of study participants. As Table 4 shows, the full regression model was found to be statistically significant (Nagelkerke  $R^2 = .26$ ;  $p = .003$ ) and a good fit for the data. Total PSS-SR scores were found to be significantly associated with DSM-IV alcohol use diagnosis in the full regression model, but no other variables of interest were found to be significant. Therefore when compared to those with alcohol dependence, individuals with no alcohol use diagnosis experienced fewer PTSD symptoms.

A final analysis was conducted to investigate whether BAI, BHS, and PSS-SR scores would significantly predict DSM-IV alcohol diagnoses when examined together. When the percentage of years lived in the U.S., SASH scores, gender, and total BAI, BHS, and PSS-SR scores were entered (see Table 5), the regression model was found to be statistically significant (Nagelkerke  $R^2 = .50$ ;  $p < .001$ ) and a good fit for the data. However, of the variables of interest, only BAI scores were found to be significantly associated with DSM-IV alcohol use diagnosis in the full regression model.

### 3. Discussion

Results of this study partially support the study hypotheses and provide information about alcohol use, acculturation, hopelessness, anxiety, and PTSD in Mexican American colonia residents. The large percentage of participants meeting diagnostic criteria for an alcohol use disorder supports findings from other data collected in U.S. colonias suggesting elevated rates of disordered drinking among residents of these regions (Wallisch & Spence, 2006). These rates are higher than those found in either the NESARC or the HSDUH (Grant et al., 2004; Grucza et al., 2007), but meaningful comparisons with these population based epidemiological studies cannot be made since a positive CAGE screen was required for inclusion in the present study. Also, the finding that one quarter of the sample met criteria for PTSD or acute stress disorder is similar to results reported in other studies with Mexican origin participants (Cervantes et al., 1989; Hien & Bukszpan, 1999; Vega et al., 1998) and indicates that a relatively high rate of Mexican origin colonia residents may be at risk for these disorders.

Scores at the upper end of the range for low acculturation and high percentages of years lived in the U.S. show that this sample was moderately acculturated, although somewhat surprisingly acculturation was not significantly associated with alcohol use disorders. This finding suggests

a complex relationship between acculturation and drinking and demonstrates that this relationship may be different among colonia residents.

While the relationship between alcohol use disorders and hopelessness was not clear, anxiety and PTSD symptoms were found to differ significantly based on diagnosis. Compared to individuals with alcohol dependence, other participants were less likely to experience symptoms of anxiety and PTSD. Therefore the relationship between PTSD and alcohol use that has been found in majority population samples may exist in Mexican origin colonia residents as well. The association of anxiety with alcohol use in this group was further supported by the finding that BAI was significantly associated with alcohol use disorders.

Study limitations included a cross-sectional design that precludes causal inferences regarding the variables of interest in this study, non-random sampling that limits the ability to generalize results, and the limited number of participants. Despite limitations, this study describes an at-risk and rapidly growing population that has received relatively little attention in research. The study findings that demonstrate high levels of comorbid alcohol use and anxiety illustrate the need for greater access to treatment of these co-occurring disorders, as well increased prevention efforts, among Mexican origin colonia residents. Researchers will want to collaborate with community stakeholders to develop and test prevention programs that intervene upon the environmental sources of stress (such as poverty) and risk (such as alcohol misuse, traumatic accidents, and victimization). Further research is needed to better understand the relationships between acculturation, PTSD, hopelessness, anxiety, and alcohol use among colonia residents in order to effectively develop culturally relevant programs to alleviate symptoms of anxiety and alcohol use disorders simultaneously.

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## References

- Abraído-Lanza AF, Chao MT, Flórez KR. Do healthy behaviors decline with greater acculturation?: Implications for the Latino mortality paradox. *Social Science & Medicine* 2005;61:1243–1255. [PubMed: 15970234]
- Alderete E, Vega WA, Kolody B, Aguilar-Gaxiola S. Lifetime prevalence of the risk factors for psychiatric disorders among Mexican migrant farmworkers in California. *American Journal of Public Health* 2000;90:608–614. [PubMed: 10754977]
- American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. Vol. 4th ed.. Author; Washington, DC: 2000. text-revision
- Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology* 1988;56:893–897. [PubMed: 3204199]
- Beck AT, Weissman A, Lester D, Trexler L. The measurement of pessimism: The hopelessness scale. *Journal of Consulting and Clinical Psychology* 1974;42:861–865. [PubMed: 4436473]
- Boscarino JA, Galea S, Adams RE, Ahern J, Resnick H, Vlahov D. Mental health service and medication use in New York City after the September 11, 2001, terrorist attack. *Hospital & Community Psychiatry* 2004;55:274–283.
- Caetano R. Acculturation and drinking patterns among U.S. Hispanics. *British Journal of Addictions* 1987;82:789–799.
- Cervantes RC, Salgado de Snyder VN, Padilla AM. Posttraumatic stress in immigrants from Central America. *Hospital and Community Psychiatry* 1989;40:615–619. [PubMed: 2737629]
- Cherpitel CJ. Drinking patterns and problems and drinking in the injury event: An analysis of emergency room patients by ethnicity. *Drug and Alcohol Review* 1998;17:423–431. [PubMed: 16203509]

- Escobar JI. Immigrants and mental health: Why are immigrants better off? *Archives of General Psychiatry* 1998;55:781–782. [PubMed: 9736003]
- Ewing JA. Detecting alcoholism: The CAGE questionnaire. *Journal of the American Medical Association* 1984;252:1905–1907. [PubMed: 6471323]
- First, MB.; Spitzer, RL.; Gibbon, M.; Williams, JBW. *Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition (SCID-I/P)*. Biometrics Research, New York State Psychiatric Institute; New York: 2002.
- Foa EB, Riggs DS, Dancu CV, Rothbaum BO. Reliability and validity of a brief instrument for assessing posttraumatic stress disorder. *Journal of Traumatic Stress* 1993;6:459–473.
- Foa EB, Tolin DF. Comparison of the PTSD Symptom Scale-Interview Version and the Clinician-Administered PTSD Scale. *Journal of Traumatic Stress* 2000;13:181–191. [PubMed: 10838669]
- Frueth BC, Brady KL, de Arellano MA. Racial differences in combat-related PTSD: Empirical findings and conceptual differences. *Clinical Psychology Review* 1998;18:287–305. [PubMed: 9564582]
- Glover SH, Pumariega AJ, Holzer CE, Wise BK, Rodriguez M. Anxiety symptomatology in Mexican-American adolescents. *Journal of Child and Family Studies* 1999;8:47–57.
- Golding JM, Potts MK, Anehensel CS. Stress exposure among Mexican-Americans and non-Hispanic Whites. *Journal of Community Psychology* 1991;19:37–59.
- Grant BF, Dawson DA, Stinson FS, Chou SP, Dufour MC, Pickering RP. The 12-month prevalence and trends in DSM-IV alcohol abuse and dependence: United States, 1991-1992 and 2001-2002. *Drug and Alcohol Dependence* 2004;74:223–234. [PubMed: 15194200]
- Grant BF, Stinson FS, Hasin DS, Dawson DA, Chou SP, Anderson K. Immigration and lifetime prevalence of DSM-IV psychiatric disorders among Mexican Americans and Non-Hispanic Whites in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Archives of General Psychiatry* 2004;61:1226–1233. [PubMed: 15583114]
- Gruzca RA, Abbacchi AM, Przybeck TR, Gfroerer JC. Discrepancies in estimates of prevalence and correlates of substance use and disorders between two national surveys. *Addiction* 2007;102:623–629. [PubMed: 17309538]
- Grzywacz JG, Quandt SA, Arcury TA, Marin A. The work-family challenge and mental health: Experiences of Mexican immigrants. *Community, Work & Family* 2005;8:271–279.
- Hien D, Bukszpan C. Interpersonal violence in a “normal” low-income control group. *Women and Health* 1999;29:1–16.
- Hovey JD, Magaña C. Psychosocial predictors of anxiety among immigrant Mexican migrant farmworkers: Implications for prevention and treatment. *Cultural Diversity & Ethnic Minority Psychology* 2002;8:274–289. [PubMed: 12143104]
- Karel MJ, Moyer J. Assessing depression in medically ill elderly male veterans: Item-scale properties across and within racial groups. *Journal of Mental Health and Aging* 2002;8:121–138.
- Lira LR, Koss MP, Russo NF. Mexican American women's definitions of rape and sexual abuse. *Hispanic Journal of Behavioral Sciences* 1999;21:236–265.
- Marín G, Sabogal F, VanOss Marín B, Otero-Sabogal F, Pérez-Stable EJ. Development of a short acculturation scale for Hispanics. *Hispanic Journal of Behavioral Sciences* 1987;9:183–205.
- Myers HF, Lesser I, Rodriguez N, Mira CB, Hwang WC, Camp C, Anderson D, Lucy E, Wohl M. Ethnic differences in clinical presentation of depression in adult women. *Cultural Diversity & Ethnic Minority Psychology* 2002;8:138–156. [PubMed: 11987591]
- National Center for Injury Prevention and Control. Leading causes of death reports. 2006. Retrieved June 16, 2007, from <http://webapp.cdc.gov/sasweb/ncipc/leadcaus10.html>
- Norris FH, Perilla JL, Murphy AD. Postdisaster stress in the United States and Mexico: A cross-cultural test of the multicriterion conceptual model of posttraumatic stress disorder. *Journal of Abnormal Psychology* 2001;110:553–563. [PubMed: 11727945]
- Ortega AN, Rosenheck R. Posttraumatic stress disorder among Hispanic Vietnam veterans. *American Journal of Psychiatry* 2000;157:615–619. [PubMed: 10739422]
- Ortiz L, Arizmendi L, Cornelius LJ. Access to health care among Latinos of Mexican descent in colonias in two Texas counties. *The Journal of Rural Health* 2004;20:246–252. [PubMed: 15298099]



- Parson, E. Ethnicity and traumatic stress: The intersecting point in psychotherapy. In: Figley, C., editor. *Trauma and its wake: The study of the treatment of PTSD*. Brunner/Mazel; New York: 1985. p. 314-337.
- Pole N, Best SR, Metzler T, Marmar CR. Why are Hispanics at greater risk for PTSD? *Cultural Diversity and Ethnic Minority Psychology* 2005;11:144–161. [PubMed: 15884985]
- Scott CS, Lefley HP, Hicks D. Potential risk factors for rape in three ethnic groups. *Community Mental Health Journal* 1993;29:133–141. [PubMed: 8500286]
- Spence R, Wallisch L, Smith S. Treatment seeking in populations in urban and rural settings on the border. *Alcoholism: Clinical and Experimental research* 2007;31:1002–1011.
- United States Census Bureau. Nation's population one-third minority. 2006. Retrieved June 16, 2007, from <http://www.census.gov/Press-Release/www/releases/archives/population/006808.html>
- United States Department of Health and Human Services. *Mental health: Culture, race, and ethnicity*. Author; Rockville, MD: 2001. A supplement to *Mental Health: A report to the surgeon general*.
- Vega WA, Kolody B, Aguilar-Gaxiola S, Aldrete E, Catalano R, Caraveo-Anduaga J. Lifetime prevalence of DSM-III-R psychiatric disorders among urban and rural Mexican Americans in California. *Archives of General Psychiatry* 1998;55:771–778. [PubMed: 9736002]
- Vega WA, Sribney WM, Aguilar-Gaxiola S, Kolody B. 12-Month prevalence of DSM-III-R psychiatric disorders among Mexican Americans: Nativity, social assimilation, and age determinants. *Journal of Nervous and Mental Disease* 2004;192:532–541. [PubMed: 15387155]
- Vincent V, Guinn R. Effectiveness of a colonia educational intervention. *Hispanic Journal of Behavioral Sciences* 2001;23:229–238.
- Wallisch LS, Spence RT. Alcohol and drug use, abuse, and dependence in urban areas and colonias of the Texas-Mexico border. *Hispanic Journal of Behavioral Sciences* 2006;28:286–307.
- Wilcox JA, Briones DF, Suess L. Substance abuse, post-traumatic stress, and ethnicity. *Journal of Psychoactive Drugs* 1991;23:83–84. [PubMed: 1941368]

**Table 1**  
Number and Percentage of Participants with DSM-IV Disorders by Gender

Diagnosis	Males (n = 61) n (% of males)	Females (n = 39) n (% of females)	Total (n = 100) n (% of total)
Alcohol use disorders	51 (83.6)	32 (82.1)	83 (83%)
Alcohol abuse	10 (16.4)	4 (10.3)	14 (14%)
Alcohol dependence	41 (67.2)	28 (71.8)	69 (69%)
Anxiety disorders	13 (21.3)	12 (30.8)	25 (25%)
Acute stress	3 (4.9)	3 (7.7)	6 (6%)
Post-traumatic stress	10 (16.4)	9 (23.1)	19 (19%)

  

Variable	Males Mean (SD)	Females Mean (SD)	Total Mean (SD)
SASH (acculturation)	2.38 (.85)	2.70 (.94)	2.51 (.90)
BHS (hopelessness)	11.50* (3.27)	9.69* (2.35)	10.79 (3.06)
BAI (anxiety)	9.22* (11.66)	13.77* (9.36)	10.91 (11.03)
PSS-SR (PTSD symptoms)	10.80* (13.06)	17.82* (12.87)	13.54 (13.37)

\* *Note.*  $p < .05$ .

**Table 2**  
Multinomial Regression Model Predicting DSM-IV Alcohol Use Diagnosis (N = 97)

Variable	No diagnosis Odds ratio (95% CI)	Alcohol abuse Odds ratio (95% CI)
% of years lived in U.S.	16.32 (.05, 5583.23)	1.52 (.08, 29.14)
Gender	.64 (.18, 2.25)	.42 (.11, 1.59)
SASH	2.56 (.93, 7.08)	1.07 (.41, 2.77)
BHS	.93 (.71, 1.21)	.87 (.67, 1.12)

*Note.* Nagelkerke  $R^2 = .20$ ;  $p = .029$  for the full model. Odds ratios and 95% confidence intervals for each regression coefficient listed are for the full model, in comparison to alcohol dependence.

**Table 3**  
Multinomial Regression Model Predicting Alcohol Use Diagnosis (N = 92)

Variable	No diagnosis Odds ratio (95% CI)	Alcohol abuse Odds ratio (95% CI)
% of years lived in U.S.	4.20 (.04, 492.47)	2.08 (.06, 68.43)
Gender	3.94 (.64, 24.20)	1.45 (.30, 7.08)
SASH	2.24 (.59, 8.55)	1.07 (.44, 3.83)
BAI	.69* (.56, .85)	.87* (.79, 1.00)

*Note.* Nagelkerke  $R^2 = .45$ ;  $p < .001$  for the full model. Odds ratios and 95% confidence intervals for each regression coefficient listed are for the full model, in comparison to alcohol dependence.

\*  $p < .05$ .

**Table 4**  
Multinomial Regression Model Predicting Alcohol Use Diagnosis (N = 98)

Variable	No diagnosis Odds ratio (95% CI)	Alcohol abuse Odds ratio (95% CI)
% of years lived in U.S.	4.30 (.05, 397.54)	1.68 (.07, 40.94)
Gender	2.02 (.67, 6.11)	1.10 (.40, 3.00)
SASH	1.07 (.27, 4.25)	.73 (.18, 2.99)
PSS-SR	.90* (.83, .97)	.96 (.90, 1.01)

*Note.* Nagelkerke  $R^2 = .26$ ;  $p = .003$  for the full model. Odds ratios and 95% confidence intervals for each regression coefficient listed are for the full model, in comparison to alcohol dependence.

\*  $p < .05$ .

**Table 5**  
Multinomial Regression Model Predicting Alcohol Use Diagnosis (N = 91)

Variable	No diagnosis Odds ratio (95% CI)	Alcohol abuse Odds ratio (95% CI)
% of years lived in U.S.	10.58 (.02, 6128.33)	1.50 (.04, 50.81)
Gender	3.69 (.56, 24.54)	1.22 (.23, 6.37)
SASH	3.60 (.81, 15.93)	1.32 (.44, 3.95)
BAI	.59* (.41, .84)	.90 (.77, 1.04)
BHS	.77 (.49, 1.21)	.86 (.64, 1.17)
PSS-SR	1.10 (.95, .128)	.99 (.90, 1.08)

*Note.* Nagelkerke  $R^2 = .50$ ;  $p < .001$  for the full model. Odds ratios and 95% confidence intervals for each regression coefficient listed are for the full model, in comparison to alcohol dependence.

\*  $p < .05$ .