Published in final edited form as:

J Ethn Subst Abuse. 2013 ; 12(4): 308–320. doi:10.1080/15332640.2013.830942.

Acculturation Stress and Drinking Problems Among Urban Heavy Drinking Latinos in the Northeast

Christina S. Lee, Ph.D. [Assistant Professor]

Bouvé College of Health Sciences Northeastern University 431 International Village, Boston MA 02116

Suzanne M. Colby, Ph.D. [Associate Professor (Research)]

Brown University, Department of Psychiatry and Human Behavior Center for Alcohol and Addiction Studies 121 South Main Street, Providence, RI 02912

Damaris J. Rohsenow, Ph.D. [Professor (Research)]

Providence Veterans Affairs Medical Center Brown University, Center for Alcohol and Addiction Studies 121 South Main Street, Providence, RI 02912

Steven R. López, Ph.D. [Professor]

Department of Psychology, SGM 501 University of Southern California 3620 South McClintock Avenue, Los Angeles, CA 90089

Lynn Hernández, Ph.D. [Assistant Professor (Research)]

Brown University, Center for Alcohol and Addiction Studies 121 South Main Street, Providence, RI 02912

Raul Caetano, M.D., Ph.D. [Professor and Regional Dean]

University of Texas School of Public Health, Dallas Regional Campus, 6011 Harry Hines Blvd, Room V8.112, Dallas, TX 75390

Abstract

This study investigates the relationship between level of acculturation and acculturation stress, and the extent to which each predicts problems related to drinking. Hispanics who met criteria for hazardous drinking completed measures of acculturation, acculturation stress, and drinking problems. Sequential multiple regression was used to determine whether levels of self-reported acculturation stress predicted concurrent alcohol problems after controlling for the predictive value of acculturation level. Acculturation stress accounted for significant variance in drinking problems while adjusting for acculturation, income, and education. Choosing to drink in response to acculturation stress should be an intervention target with Hispanic heavy drinkers.

Hispanic-Americans will constitute nearly 29% of the U.S. population by 2050 (Census Bureau, 2003). The burden of illness and of negative social consequences related to hazardous alcohol use is disproportionately greater for Hispanics compared to other racial/ethnic groups in the U.S. (Caetano et al., 1998; Caetano et al., 2008a; Grant et al., 2004; Mulia et al., 2009; Sutocky et al., 1993). Therefore, it is important to identify modifiable risk factors for hazardous drinking among Hispanics in an effort to address alcohol-related health disparities in this population.

Acculturation refers to the affective, cognitive, or behavioral changes that result from sustained contact with another culture as people adjust to differences in their new social environment (Berry et al., 1987). While the relationship between acculturation and drinking behaviors has been widely examined, findings have not been uniform across gender or Hispanic national groups. First, greater acculturation is more consistently associated with increased drinking for women than for men, possibly because drinking tends to be less normative in Latin countries of origin and is more normative in the U.S. Thus, the observed increases in drinking among women may be part of adjustment to a new social environment (Caetano, 1987; Gilbert, 1987; Markides et al., 1990; Pearson et al., 2009; Saitz et al., 1999; Zemore 2005, 2007).

Second, the relationship between acculturation and drinking in the U.S. also varies across Hispanic national groups. Length of U.S. residency is often used as a proxy for level of acculturation. Although the range of acculturation within groups varies, Puerto Ricans and Cuban-Americans are arguably on average among the more acculturated Hispanic national groups given their greater exposure to the U.S. relative to other Hispanic national groups (Puerto Ricans have been U.S. citizens since 1917 and many Cuban-Americans immigrated as political refugees to the U.S. in the 1960s). Of note, Puerto Ricans report a higher volume of alcohol consumption and greater problems related to drinking, including higher rates of alcohol dependence, than Cuban-Americans (Alegria et al., 2008a; Caetano et al., 2008a; Caetano et al., 2009).

The variability of findings among Hispanic national groups suggests that drinking behavior among Hispanics cannot be understood solely by examining acculturation level. For example, the contexts of migration may be more stable for Cubans compared to other Hispanic national groups, such as Puerto Ricans. Cubans (Miami) have long-established ethnic enclaves characterized by large social networks (Gil and Vega, 1996) that provide important emotional and economic resources, enforce protective norms against substance use (Portes and Zhou, 1993) and buffer against discrimination. In contrast, despite years of U.S. residency, Puerto Ricans reside in ethnically-mixed, impoverished neighborhoods (New York City, Boston) (Community Service Society, 2010). The context of migration and country of origin are factors that may influence the acculturative process and whether it is experienced as stressful or not (Gil and Vega, 1996; Goldston et al., 2008). Social stressors that occur in the context of acculturation should be an increasingly important focus.

Acculturation stress theory, based on the Lazarus Stress and Coping model (Lazarus and Folkman, 1984), hypothesizes that when events are appraised to overwhelm one's ability to cope, stress results (Berry and Kim, 1988; Berry, 2003; Collazos et al., 2008; Deren et al., 2011b; Ehlers et al., 2009; Joiner and Walker, 2002). Further, avoidant coping strategies, such as drinking and drug use (e.g., emotional disengagement from the stressor), are preferred when stressors are perceived to be insurmountable or not under one's control (Carver et al., 1989a; Crockett et al., 2007). Therefore, an important extension application of acculturation stress theory to alcohol use among Hispanic groups is that alcohol misuse is ineffective coping in response to acculturation stressors that are perceived to be chronic and insurmountable. Changes in the social context, such as the increasingly anti-immigrant attitudes and policy changes of the past two decades (e.g., the Immigration Reform act of 1996), have been associated with reported increases in acculturation stress (Arbona et al., 2010; Cervantes et al., 2012; Cervantes et al., 1991).

Consistent with predictions, the effects of chronic, invisible, and damaging effects of perceived discrimination, social isolation, the loss of valued social networks, unfair treatment in the U.S., and family conflict related to acculturation changes within families, have been associated with increased alcohol and substance use (Blume et al., 2009; Caetano

et al., 2007; Conway et al., 2007; Ehlers et al., 2009; Ortega et al., 2000; Paradies, 2006; Williams et al., 2003; Williams et al., 1997; Zemore et al., 2011) and problems related to use (Zemore et al., 2011). Interestingly, gender differences in coping (Carver et al., 1989b; Folkman and Lazarus, 1980; Scheier et al., 1986) were replicated in a 2006 analysis of the HABLAS data, where only men reported drinking to cope with acculturation stress (Vaeth et al., 2012).

Last, emerging evidence suggests that acculturation stress affects individuals of all acculturation levels, though perhaps through different pathways. For example, less acculturated individuals report stress due to the language barrier, feeling socially isolated, working in dangerous jobs, lacking documentation, or being separated from their families (Finch et al., 2003; Hovey, 2000). In contrast, more highly acculturated individuals, such as Hispanic college students, report greater stress due to their increasing awareness of feeling stigmatized or discriminated against in work or college settings where they have greater exposure to the mainstream and to social messages that stereotyped them, which led to feelings of marginalization and disempowerment (Grove and Ziwi, 2006).

To summarize, it is plausible that stressors related to acculturation are more strongly predictive of hazardous alcohol use and related problems than acculturation is. The evidence suggests that acculturation stress can affect individuals across varying acculturation levels. In line with these findings, we hypothesized that acculturation stress would be predictive of concurrent drinking problems and that acculturation stress would predict drinking problems even after controlling for acculturation level, education and income level.

Method

Participants and Procedures

Participants who were Hispanic, bilingual (Spanish/English) and met criteria for heavy drinking (≥ 5 drinks/ episode or >14 drinks/week for men, and ≥ 4 drinks/ or >7 drinks/week for women (Wechsler and Nelson, 2001) were recruited from a New England state using community-based approaches. The study was advertised on Spanish newspapers, Spanish radio talk show, and research assistants approached potential volunteers in community setting (i.e., community based organizations). Non-treatment seeking participants were proactively recruited from the community for a brief alcohol intervention trial (Lee et al., 2011). After screening and informed consent, participants completed baseline measures of demographics, acculturation, acculturation stress, and drinking problems and were compensated \$60 in gift cards for their time. Only data at baseline are involved in these analyses so the rest of the clinical trial will not be described.

A trained, bi-lingual research assistant administered all assessments to participants following informed consent. All assessments were self-reported pencil and paper questionnaires. Research assessments took place in a private research office and participants were assured of the confidentiality of their self-report. The Institutional Review Board approved all procedures.

Measures

Demographics—Questions included nationality, age, gender, and marital status, total household income (continuously scored between \$10,000–\$70,000+/yearly income), and education level (continuously scored from Grade 9 to post graduate).

The Short Acculturation Scale for Hispanics (SASH)—(Marin et al., 1987) is a 12-item scale with higher scores reflecting greater levels of acculturation. The scale assesses

English or Spanish-speaking preference as well as behavioral dimensions (media preference, social relations) with good to excellent reliability and good criterion validity. The mean score ranges from 1 (less acculturated) to 5 (highly acculturated). Internal consistency in this sample was Cronbach's $\alpha = .88$.

Caetano Acculturation Stress Scale—(Caetano et al., 2007) measures acculturation stress with 11 items rated on Likert-type scales (1= extremely stressful, 5 = not at all stressful) covering topics such as negative reactions from friends and family, changing values, and difficulty with the language barrier. It has demonstrated construct validity (Caetano et al., 2007; Caetano et al., 2009; Caetano et al., 2009) and excellent reliability (Ehlers et al., 2009). It includes items from the Social, Attitudinal, Familial, and Environmental Acculturative Stress Scale (Mena et al., 1987; Padilla et al., 1985), and items that include perceived discrimination, an acculturation stressor (Vega et al., 1993). Sample items include, “Close family members and I have conflicting expectations about my future”, and “Because of my ethnic background, I feel that others often exclude me from participating in their activities”. Internal consistency in this sample was Cronbach's $\alpha = .82$.

Alcohol Use Disorders Identification Test (AUDIT)—is a very widely-used 10-item screening questionnaire asking about the quantity and frequency of alcohol use, alcohol-related negative consequences, and a few indices of dependence (Saunders et al., 1993). AUDIT scores > 8 (males) and > 6 (females) reflect probably hazardous drinking. This measure was used to describe participants' alcohol severity at baseline. Internal consistency in this sample was Cronbach's $\alpha = .82$.

Drinker Inventory of Consequences—(DrInC; Miller et al., 1995) is a 45-item self-report measure of drinking problems that asks about adverse consequences of alcohol use in five areas: interpersonal, physical, social responsibility, impulse control, and intrapersonal, with well-established psychometric properties (Miller et al., 1995). Higher total scores indicate a greater number of adverse consequences experienced. Internal consistency in this sample was Cronbach's $\alpha = .95$.

Data Analysis

Analysis was performed using SPSS REGRESSION for evaluation of assumptions. Frequency distributions were evaluated for normality and outliers adjusted (Tabachnick & Fidell, 2001). Tests of multicollinearity indicated that it was not an issue (tolerance = .91, .93, .88, and .91 for acculturation, level of education and income, and acculturation stress, respectively). The total DrInC score was log-transformed to correct for positive skew. Bivariate correlations were calculated among the SASH, CASS, education, income, gender, and DrInC. Next, we used multivariate regression analysis with SASH, gender, education, and income level entered in the first step as covariates, and CASS entered in the second step, as predictors of DrInC. After finding that both income and CASS were significant predictors, we conducted an additional analysis to test for possible interaction effects between these two variables by repeating the regression while adding a third step containing a term for the interaction of income with CASS.

Results

Participants

A total of 58 participants completed baseline assessments. Of those screened ($n=145$), 62% ($n=91$) qualified for the study. Of the 91 study-eligible participants, 67% ($n=61$) completed baseline. Approximately 56% were male. Over half (54%) were single and the average age was 35 years old ($SD = 12.35$). Educational attainment ranged from high school (grade 9) to

post graduate work. The average level of educational attainment was high school graduation or its equivalent (GED). Most (93%) were employed but working at lower wage jobs, such as: domestic care, janitor, and teacher aid. Nearly half of the participants reported an annual income of less than \$20,000/year. Consistent with demographic data for the Northeast, 56% identified as Puerto Rican and the remaining 44% were from: Columbia, Mexico, Guatamala, Venezuela, Peru, Ecuador, or Brazil. According to the SASH, participants represented the full range of acculturation levels, while average scores were at the moderate to high level (Mean [M] = 3.12, SD = .78, range = 1.33–5.00). Nearly 86% of participants met AUDIT criteria for possible alcohol use disorder.

Correlations between acculturation, acculturation stress, and drinking problems at baseline

Table 1 presents the means, standard deviations, and correlations for the predictor and dependent variables. Bivariate correlations ($n=54$, $n=4$ missing) revealed that acculturation (SASH) was not significantly correlated with level of education, income, or DrInC. Acculturation stress (CASS) did not correlate significantly with SASH, education, or income level but was positively correlated with DrInC ($r=.49$, $p < .001$), indicating a positive association between acculturation stress and alcohol problems at baseline. (see Table 1).

Acculturation stress as a predictor of drinking problems

Sequential multiple regression was employed to determine whether CASS scores improved the prediction of DrInC after controlling for variance accounted for by SASH, income, income and education. Step 1, with SASH, level of education and income in the equation, was significant, $F(4,51) = -2.25$, $p < .05$, with only income level a significant predictor of DrInC. Step 2, entering CASS, resulted in a significant change in $R^2 = 0.19$, $F(1,46) = 13.27$, $p < .01$. Income remained a significant predictor of DrInC when all variables were in the model, with a negative beta weight, suggesting that higher income predicted fewer alcohol problems. The significant change in R^2 attributed to CASS in the second step indicates that acculturation stress predicts unique variance in alcohol problems above that contributed by income alone. The additional regression testing the interaction of acculturation stress and income was not significant (change in $R^2 = 0.015$, $F(1,45) = 1.031$, $n.s.$).

Discussion

Consistent with our first hypothesis, we did not find a significant relationship between acculturation, and either acculturation stress or alcohol problems. This finding suggests that acculturation and acculturation stress are conceptually different and documents the importance of distinguishing between the two. It also supports the idea that acculturation level does not necessarily determine the level of acculturation stress experienced. People of all levels of acculturation may experience acculturation stress. Furthermore, acculturation stress was related to alcohol problems while acculturation alone was not.

We also found support for our second hypothesis, that even after controlling for acculturation level, income and educational attainment, greater acculturation stress was found to predict more alcohol problems. Our results suggest that acculturation stress may have more utility as an indicator of a potential for drinking problems among Hispanics. Of note, although higher income was found to predict fewer alcohol problems, acculturation stress predicted drinking problems over and above the effects contributed by income, suggesting that acculturation stress's effects on alcohol problems are independent of income level. The lack of significant interaction for acculturation stress and income further supports the idea that acculturation stress predicts alcohol problems across different levels of income.

These interrelationships were explored among heavy drinkers enrolled in a randomized clinical trial to receive a brief intervention to reduce their hazardous use. The strong linkage between acculturation stress and alcohol problems highlights the need to focus on acculturation stress in alcohol treatment studies. Our findings suggest that those who experience acculturation stress are at risk for drinking problems. The results lend credence to the observation that tailored behavioral interventions and research models need to address multiple sources of risk, including poverty, and discrimination, to enhance their relevance and efficacy (Mulia et al., 2008). In tailoring treatment, illustrating the stressors that might trigger alcohol use (an avoidant coping strategy), would be helpful. Interventions can include more effective proactive coping strategies to address identified stressors in ways that do not involve alcohol consumption. For example, Burrow-Sanchez, Martinez, Hopes, & (2011) developed a module on Ethnic Identity and Adjustment to assist Latino adolescents at risk for substance use. This model bolstered coping skills when confronting racism or discrimination, such as helping to recognize personal strengths and ways to challenge and to minimize negative stereotypic messages. Finally, documenting that more highly acculturated Hispanics are susceptible to acculturation stress as well supports the need to tailor treatments for individuals at all levels of acculturation. Addressing how social disadvantage and economic hardship influences alcohol use and problems (Mulia et al., 2008) will also help understand how alcohol-related health disparities are experienced and distributed among Hispanics of varying acculturation levels (Zemore et al., 2011).

Our study contributes to the growing need for alcohol research focused on Hispanic nationalities, such as Puerto Ricans, who have a higher prevalence of alcohol misuse and related problems relative to other Latin groups (Alegria et al., 2008b; Caetano, 1988; Caetano et al., 2008a, 2008b; Caetano et al., 2009; Dawson, 1998; Guarnaccia et al., 2007). Puerto Ricans, although U.S. citizens and not technically “immigrants” may experience acculturation stress as a result of ethnic minority status, attenuated aspirations, or an increased feeling of marginalization in the U.S. (Deren et al., 2011a; Treschan, 2010). It has been noted that Puerto Ricans, by virtue of their U.S. citizenship, may migrate to the U.S. with higher hopes and thus experience greater disappointment with reality than someone who lacks citizenship (Alegria et al., 2007).

Limitations include the study's small size and that participants were recruited for a randomized clinical study in a single urban area, rather than being representative of all U.S. Latino heavy drinkers. However, the data set did provide an opportunity to get a preliminary look at the inter-relationships between acculturation, acculturation stress, and drinking problems. Our study extends the literature by examining the effects of acculturation stress on heavy drinking Hispanics who are more highly acculturated and who reside in the Northeast. While the results are by no means definitive, they make a contribution by suggesting the need to target acculturation stress as a proximal risk factor for drinking behavior and perhaps a necessary focus in treatment studies designed for Hispanic national groups.

Acknowledgments

Sources of Funding: National Institute on Alcohol Abuse and Alcoholism, K23AA14905, PI: C. Lee, and a Senior Research Career Scientist Award from the Department of Veterans Affairs, awarded to the third author.

References

- Alegria M, Canino G, Shrout PE, Woo M, Duan N, Vila D, et al. Prevalence of Mental Illness in Immigrant and Non-Immigrant U.S. Latino Groups. *American Journal of Psychiatry*. 2008a:1–10. [PubMed: 18178747]

- Alegria M, Canino G, Shrout PE, Woo M, Duan N, Vila D, et al. Prevalence of mental illness in immigrant and non-immigrant U.S. Latino groups. *American Journal of Psychiatry*. 2008b; 165(3): 359–369. [PubMed: 18245178]
- Alegria M, Mulvaney-Day N, Torres M, Polo A, Cao Z, Canino G. Prevalence of psychiatric disorders across Latino subgroups in the United States. *American Journal of Public Health*. 2007; 97(1):68–75. [PubMed: 17138910]
- Arbona C, Olvera N, Rodriguez N, Hagan J, Linares A, Wiesner M. Acculturation stress among documented and undocumented Latino immigrants in the United States. *Hispanic Journal of Behavioral Sciences*. 2010; 32(3):362–384.
- Berry, J.; Kim, U. Acculturation and mental health. In: Dasen, P.; Berry, J.; Sartorius, editors. *Health and Cross-Cultural Psychology: Towards Application*. Sage; London: 1988. p. 207-236.
- Berry, JW. Conceptual approaches to acculturation. In: Chun, KM.; Organista, PB.; Marin, G., editors. *Acculturation: Advances in theory, measurement, and applied research*. American Psychological Association; Washington, D.C.: 2003. p. 17-37.
- Blume AW, Resor MR, Villanueva MR, Braddy LD. Alcohol use and co-morbid anxiety, traumatic stress, and hopelessness among Hispanics. *Addictive Behaviors*. 2009; 34:709–713. [PubMed: 19443127]
- Burrow-Sanchez JJ, Martinez CR, Hops H, Wrona M. Cultural accommodation of substance abuse treatment for Latino adolescents. *Journal of Ethnicity in Substance Abuse*. 2011; 10:202–225. [PubMed: 21888499]
- Caetano R. Acculturation, drinking and social settings among U.S. Hispanics. *Drug and Alcohol Dependence*. 1987; 19:215–226. [PubMed: 3595446]
- Caetano R. Alcohol use among Hispanic groups in the United States. *American Journal of Drug and Alcohol Dependence*. 1988; 14:293–308.
- Caetano R, Clark CL, Tam T. Alcohol consumption among racial/ethnic minorities: theory and research. *Alcohol health and research world*. 1998; 22:233–241. [PubMed: 15706749]
- Caetano R, Raimisetty-Mikler S, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey (HABLAS): Rates and predictors of alcohol abuse and dependence across Hispanic national groups. *Journal of Studies on Alcohol and Drugs*. 2008a; 69:441–448. [PubMed: 18432387]
- Caetano R, Raimisetty-Mikler S, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey (HABLAS): Rates and predictors of DUI across Hispanic national groups. *Accident; analysis and prevention*. 2008b; 40:733–741.
- Caetano R, Ramisetty-Mikler S, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey (HABLAS): The association between birthplace, acculturation and alcohol abuse and dependence across Hispanic national groups. *Drug and Alcohol Dependence*. 2009; 99:215–221. [PubMed: 18945554]
- Caetano R, Ramisetty-Mikler S, Vaeth PA. Acculturation stress, drinking, and intimate partner violence among Hispanic couples in the U.S. *Journal of Interpersonal Violence*. 2007; 22:1431–1447. [PubMed: 17925291]
- Caetano R, Vaeth PA, Ramisetty-Mikler S. The Hispanic Americans Baseline Alcohol Survey (HABLAS): Alcoholic beverage preference across Hispanic national groups. *Alcoholism: Clinical and Experimental Research*. 2009; 33:150–159.
- Caetano R, Vaeth PAC, Raimisetty-Mikler S, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey: Alcoholic beverage preference across Hispanic national groups. *Alcoholism: Clinical and Experimental Research*. 2009; 33:150–159.
- Carver CS, Scheier MF, Weintraub JK. Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*. 1989a; 56(2):267–283. [PubMed: 2926629]
- Carver CS, Scheier MF, Weintraub JK. Assessing coping strategies: a theoretically based approach. *Journal of Personality and Social Psychology*. 1989b; 56(2):267–283. [PubMed: 2926629]
- Census Bureau, U. S.. *Current Population Reports, Population Projections of the United States, by Age, Sex, Race, and Hispanic Origin: 1993 to 2050*. U.S. Census Bureau; Hyattsville, MD: 2003.
- Cervantes RC, Goldbach JT, Padilla AM. Using qualitative methods for revising items in the Hispanic Stress Inventory. *Hispanic Journal of Behavioral Sciences*. 2012; 34(2):208–230.

- Cervantes RC, Padilla AM, Salgado N. The Hispanic Stress Inventory: a culturally relevant approach to psychosocial assessment. *Psychological Assessment*. 1991; 3:438–447.
- Collazos F, Qureshi A, Antonin M, Tomas-Sabado J. Acculturative stress and mental health in the immigrant population. *Papeles del Psicologo*. 2008; 29(3):307–315.
- Conway KP, Swendsen JK, Dierker L, Canino G. Psychiatric Comorbidity and Acculturation Stress among Puerto Rican substance abusers. *American Journal of Preventative Medicine*. 2007; 32(6S):S219–S225.
- Crockett LJ, Iturbide MI, Torres Stone RA, McGinley M, Rafaelli M, Carlo G. Acculturative stress, social support, and coping: Relations to psychological adjustment among Mexican American College Students. *Cultural Diversity and Ethnic Minority Psychology*. 2007; 13(4):347–355. [PubMed: 17967103]
- Dawson DA. Beyond Black, White and Hispanic: race, ethnic origin and drinking patterns in the United States. *Journal of Substance Abuse*. 1998; 10:321–339. [PubMed: 10897287]
- Deren S, Shedlin M, Kang SY, Cortes D. HIV risk and prevention among Hispanic immigrants in New York: The salience of diversity. *Substance use and Misuse*. 2011a; 46:254–263. [PubMed: 21303245]
- Deren SM, Shedlin S, Kang Y, Cortes D. HIV risk and prevention among Hispanic immigrants in New York: The salience of diversity. *Substance Use and Misuse*. 2011b; 46:254–263. [PubMed: 21303245]
- Ehlers CL, Gilder DA, Criado JR, Caetano R. Acculturation stress, anxiety disorders, and alcohol dependence in a select population of young adult Mexican Americans. *Journal of Addiction Medicine*. 2009; 3:227–233. [PubMed: 20161543]
- Finch BK, Catalano RC, Novaco RW, Vega WA. Employment frustration and alcohol abuse/dependence among labor migrants in California. *Journal of Immigrant Health*. 2003; 5(4):181–186. [PubMed: 14574069]
- Folkman S, Lazarus RS. An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior*. 1980; 21:219–239. [PubMed: 7410799]
- Gil A, Vega W. Two different worlds: Acculturation stress and adaptation among Cuban and Nicaraguan families. *Journal of Social and Personal Relationships*. 1996; 13:435–456.
- Gilbert MJ. Alcohol consumption patterns in immigrant and later generation Mexican American women. *Hispanic Journal of Behavioral Sciences*. 1987; 9:299–313.
- Goldston DB, Molock SD, Whitbeck LB, Murakami JL, Zayas LH, Hall GN. Cultural considerations in adolescent suicide prevention and psychosocial treatment. *American Psychologist*. 2008; 63(1):14–31. [PubMed: 18193978]
- Grant BF, Hasin DS, Stinson FS, Dawson DA, Chou SP, Ruan WJ. Prevalence, correlates, and disability of personality disorders in the United States: Results from the National Epidemiologic Survey on Alcohol and related conditions. *Journal of Clinical Psychiatry*. 2004; 65:948–958. [PubMed: 15291684]
- Grove JN, Ziwi AB. Our health and theirs: forced migration, othering, and public health. *Social Science and Medicine*. 2006; 62(8):1931–1942. [PubMed: 16242227]
- Guarnaccia PJ, Martinez-Pincay I, Alegria M, Shrout PE, Lewis-Fernandez R, Canino G. Assessing diversity among Latinos: Results from the NLAAS. *Hispanic Journal of Behavioral Sciences*. 2007; 29(4):510–534. [PubMed: 19672330]
- Hovey JD. Acculturative stress, depression, and suicidal ideation in Mexican immigrants. *Cultural Diversity and Ethnic Minority Psychology*. 2000; 6(2):134–151. [PubMed: 10910528]
- Joiner RE, Walker RL. Construct validity of a measure of acculturative stress in African Americans. *Psychological Assessment*. 2002; 14(4):462–466. [PubMed: 12501571]
- Lazarus, RS.; Folkman, S. Stress, appraisal, and coping. Springer; New York: 1984.
- Lee CS, Lopez SR, Hernandez L, Colby SM, Caetano R, Borrelli B, et al. A cultural adaptation of motivational interviewing to address heavy drinking among Hispanics. *Cultural Diversity and Ethnic Minority Psychology*. 2011; 17(3):317–324. [PubMed: 21787064]
- Marin G, Sabogal F, Marin BV, Otero-Sabogal R, Perez-Stable EJ. Development of a Short Acculturation Scale for Hispanics. *Hispanic Journal of Behavioral Sciences*. 1987; 9(2):183–205.

- Markides K, Ray LA, Stroup-Benham CA, Trevino F. Acculturation and alcohol consumption in the Mexican American population of the Southwestern United States: Findings from HHANES 1982–1984. *American Journal of Public Health*. 1990; 80:42–46. [PubMed: 9187581]
- Mena FJ, Padilla AM, Maldonado M. Acculturative stress and specific coping strategies among immigrant and later generation college students. *Hispanic Journal of Behavioral Sciences*. 1987; 9:207–225.
- Miller, WR.; Tonigan, S.; Longabaugh, R. The drinker inventory of consequences (DrInC): An instrument for assessing adverse consequences of alcohol use: test manual. 1995.
- Mulia N, Ye Y, Greenfield TK, Zemore SE. Disparities in alcohol-related problems among white, black, and Hispanic Americans. *Alcoholism: Clinical and Experimental Research*. 2009; 33(4): 654–662.
- Mulia N, Ye Y, Zemore SE, Greenfield TK. Social disadvantage, stress, and alcohol use among black, Hispanic, and white Americans: Findings from the 2005 U.S. National Alcohol Survey. *Journal of Studies on Alcohol and Drugs*. 2008; (69):824–833. [PubMed: 18925340]
- Ortega AN, Rosenheck R, Alegria M, Desai RA. Acculturation and the lifetime risk of psychiatric and substance use disorders among Hispanics. *Journal of Nervous and Mental Disease*. 2000; 188(11): 728–735. [PubMed: 11093374]
- Padilla AM, Wagatsuma Y, Lindholm KJ. Acculturation and personality as predictors of stress in Japanese and Japanese Americans. *Journal of Social Psychology*. 1985; 125:295–305. [PubMed: 4079350]
- Paradies Y. A systematic review of empirical research on self-reported racism and health. *International Journal of Epidemiology*. 2006; 35:888–901. [PubMed: 16585055]
- Pearson WS, Dube SR, Nelson DE, Caetano R. Differences in patterns of alcohol consumption among Hispanics in the United States, by survey language preference, Behavioral Risk Factor Surveillance System, 2005. *Preventing Chronic Disease*. 2009; 6(2):A53. [PubMed: 19288996]
- Portes A, Zhou M. The new second generation: Segmented assimilation and its variants. 1993; 530(1): 74–96.
- Saitz R, Lepore MF, Sullivan LM, Amaro H, Samet JH. Alcohol abuse and dependence in Latinos living in the United States: Validation of the CAGE (4M) Questions. *Archives of Internal Medicine*. 1999; 159:718–724. [PubMed: 10218752]
- Saunders B, Aasland OG, Babor TF, DelaFuente JR, Grant M. Development of the Alcohol-Use Disorders Identification Test (AUDIT)-WHO Collaborative Project on Early Detection of persons with harmful alcohol consumption. *Addiction*. 1993; 88:791–804. [PubMed: 8329970]
- Scheier MF, Weintraub JK, Carver CS. Coping with stress: Divergent strategies of optimists and pessimists. *Journal of Personality and Social Psychology*. 1986; 51:1257–1264. [PubMed: 3806361]
- Sutocky JW, Shultz JM, Kizer KW. Alcohol-related mortality in California, 1980 to 1989. *American Journal of Public Health*. 1993; 83:817–823. [PubMed: 8498618]
- Tabachnick, BG.; Fidell, LS. Using Multivariate Statistics. 4th ed.. Allyn and Bacon; Boston: 2001.
- Treschan, L. Latino youth in New York City: School, work, and income trends for New York's largest group of young people. Community Service Society; New York: 2010.
- Vaeth PAC, Caetano R, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey (HABLAS): The association between acculturation, birthplace and alcohol consumption across Hispanic national groups. *Addictive Behaviors*. 2012; 37:1029–1037. [PubMed: 22613057]
- Vega WA, Gil AG, Warheit GJ, et al. Acculturation and delinquent behavior among Cuban American adolescents: Toward an empirical model. *American Journal of Community Psychology*. 1993; 21:113–125. [PubMed: 8213645]
- Wechsler H, Nelson RF. Binge drinking and the American College student: What's five drinks? *Psychology of Addictive Behaviors*. 2001; 15:287–291. [PubMed: 11767258]
- Williams DR, Neighbors HW, Jackson JS. Racial/ethnic discrimination and health: Findings from community studies. *American Journal of Public Health*. 2003; 93:200–208. [PubMed: 12554570]
- Williams DR, Yu Y, Jackson JS, Anderson NB. Racial differences in physical and mental health: Socio-economic status, stress and discrimination. *Journal of Health Psychology*. 1997; 2:335–351. [PubMed: 22013026]

- Zemore SE. Re-examining whether and why acculturation relates to drinking outcomes in a rigorous. National survey of Latinos. 2005; 29(12):2144–2153. 2005.
- Zemore SE. Acculturation and alcohol among Latino adults in the United States: A comprehensive review. Alcoholism: Clinical and Experimental Research. 2007; 31(12):1968–1990.
- Zemore SE, Karriker-Jaffe KJ, Keithly S, Mulia N. Racial prejudice and unfair treatment: interactive effects with poverty and foreign nativity on problem drinking. Journal of Studies on Alcohol and Drugs. 2011; 72:361–370. [PubMed: 21513672]

Table 1

Intercorrelations of acculturation, acculturation-related variables, acculturation stress, and DrInC at baseline (n=58)

Measure	1	2	3	4	5	6
1. SASH¹	--					
2. Education level	-.03	--				
3. Income	-.19	.25	--			
4. CASS²	.21	.20	.14	--		
5. DrInC	.03	-.28*	-.33*	-.45** ³	--	
6. Gender	.00	.03	-.05	-.07	-.13	----

Note:

* p .05,

** p .01,

*** p .001

¹ Short Acculturation Scale for Hispanics

² Caetano Acculturation Stress Scale

³ Caetano Acculturation Stress Scale is reverse scored (1=extremely stressful, 5 = not at all stressful), e.g., negative correlation means higher stress and higher DrInc score

Table 2

Multiple Regression Analysis predicting DrInC with acculturation variables and acculturation stress (CASS)

Model	R ² Change	Beta
Model 1	.157	
SASH ¹		-.017
Income		-.315*
Education		-.166
Gender		-.105
Model 2	.189**	
SASH ¹		.099
Income		-.264*
Education		-.084
Gender		-.127
CASS ²		-.460** ³

Note:

* p .05,

** p .01

¹ Short Acculturation Scale for Hispanics² Caetano Acculturation Stress Scale³ Caetano Acculturation Stress Scale is reverse scored (1=extremely stressful, 5 = not at all stressful)