Associations Between Acculturation and Alcohol Consumption of Latino Men in the United States*

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ABSTRACT. Objective: This study examined the relationship between acculturation and six distinct drinking outcomes. We expected high levels of acculturation to be associated with higher odds of being a drinker and, among drinkers, with lower frequency of drinking, less alcohol consumption per year, less heavy drinking, fewer episodes of drunkenness, and fewer dependence symptoms. **Method:** The data consisted of a nationally representative sample of Latino men ages 18 and older ($N = 784$) from the 2005 National Alcohol Survey. The men were predominantly Mexican and Mexican American (64%), and most were born outside the United States (68%). Analyses included both bivariate and multivariate regression models using weights to adjust for sampling and

nonresponse. **Results:** The hypotheses were partially supported. Men at high levels of acculturation were more likely than their peers at low levels of acculturation to be drinkers but only if they had above-average incomes. Counter to expectations, among drinkers there was a protective effect of medium, rather than high, levels of acculturation on frequency of drinking, volume of alcohol consumed, drinking to drunkenness, and dependence symptoms, with a protective effect approaching significance for heavy drinking. **Conclusions:** The findings have implications for future research and public health programs designed to reach Latino men in the United States. (*J. Stud. Alcohol Drugs* 70: 27-31, 2009)

THROUGH THE ACCULTURATION PROCESS, immigrants exposed to new values and opportunities begin to adopt the traditions and practices of the dominant culture in the host country. Such changes may involve increased alcohol and drug use, as acculturation may expose foreign-born Latinos to social mores more favorable to substance use than those of their native countries. Among Latina women, greater acculturation is associated with higher odds of being a drinker and higher levels of alcohol consumption (Caetano, 1987; Caetano and Medina-Mora, 1988; Marks et al., 1990; Zemore, 2005). Among Latino men, the nature of the relationship between acculturation and drinking is less clear: Studies have suggested positive (Cherpitel, 1999; Marks et al., 1990), negative (Hines and Caetano, 1998; Markides et al., 1988; Neff et al., 1987), and curvilinear (Caetano, 1987; Caetano and Clark, 2003; Polednak, 1997) relationships between acculturation and other drinking outcomes, as well as null results (Alaniz et al., 1999; Caetano and Medina-Mora, 1988; Ye et al., 2005; Zemore, 2005; for a review, see Zemore, 2007).

Simultaneous with the process of changing social mores, acculturating Latinos also may be climbing in socioeconomic status (Zemore, 2005). National studies in the United States have shown that income is an established predictor of drink-

er status (Dawson et al., 1995; Mulia et al., 2006). Higher socioeconomic status signifies both greater access to alcohol and, in all likelihood, contact with cultural norms favoring a pattern of frequent light drinking (Mulia et al., 2006). Changes in income thus may interact with acculturation's effects to determine the likelihood and amount of drinking. For those with higher socioeconomic status (and thus who are able to afford frequent light consumption of alcohol, if interested), higher acculturation may be related to higher odds of drinking and higher frequency of consumption. For those with lower socioeconomic status (and thus less likely to be able to afford frequent light consumption), acculturation may not be related to drinking. An interaction between acculturation and socioeconomic status may partially explain the inconsistent findings across prior studies of acculturation's effects on Latino men's drinking. Because the effects of acculturation on alcohol use by Latinos seem to vary by gender and because other research using the current dataset has focused on Latina women (Zemore, 2005), this study is limited to Latino men to examine whether income moderates the relationship between acculturation and men's alcohol consumption.

We used data from a large national sample of English- and Spanish-speaking Latinos to examine the relationship between acculturation and six distinct drinking outcomes (drinker status, frequency, volume, heavy drinking, getting drunk, and dependence symptoms). We expected that relationships between acculturation and drinking would vary by outcome and might be nonlinear. More specifically, based on the findings from nationally representative samples of Latino

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men living in the United States (Caetano, 1987; Caetano and Clark, 2003; Zemore, 2007), we expected drinker status (vs abstinence) to be more common among men at high levels of acculturation than among men at low or medium levels of acculturation. We also expected that this relationship would be moderated by income. That is, for those with high income, higher acculturation would be related to higher odds of drinking, but for those with low income, acculturation would not be related to drinker status. Based on studies examining acculturation's effects on drinking among drinkers only (Neff et al., 1987), we expected that the drinking men in our sample who were at high levels of acculturation would drink less often, consume less alcohol, engage in less heavy drinking, and have lower odds of dependence than their peers at low or medium levels of acculturation. We also tested exploratory hypotheses that income would moderate the associations between acculturation and the behavior of drinkers based on the assumption that income is associated with normative influences that may be related to drinking outcomes among drinkers.

Method

The data were from the 2005 National Alcohol Survey, which involved computer-assisted telephone interviews with a national probability sample of adults ages 18 and older selected through single-stage random-digit dialing that was augmented with oversamples from sparsely populated U.S. states and of black and Latino populations (response rate approximately 56%). For detailed discussion of the National Alcohol Survey methodology, see Clark and Hilton (1991), Kerr and colleagues (2004), and Midanik and Greenfield (2003a). Of the total sample of 6,919 respondents, 23.3% self-identified as Hispanic or Latino. The current analyses are restricted to Latino men (unweighted $N = 784$), of whom 62.8% were interviewed in Spanish.

Acculturation was measured using eight items about language use from Caetano's (1987) composite scale. The items assessed whether the respondent speaks mostly English; mostly Spanish; or both languages about equally with friends, family members, and acquaintances ($\alpha = .70$, calculated using data from bilingual respondents). Responses were averaged, and the score was converted into a categorical variable using a tertile split. High acculturation equated with speaking mostly English across a variety of social interactions, medium acculturation with speaking both English and Spanish, and low acculturation with speaking mostly Spanish. Previous research has established that language use represents a unique dimension of acculturation that more consistently predicts drinking and drug use outcomes among Latinos than a composite score including other dimensions of acculturation (Kulis et al., 2007; Neff and Hoppe, 1992; Zemore, 2005); additional studies have found that language

use explains the majority of the variance in acculturation scales (Lara et al., 2005).

Drinker status was measured using a dichotomous variable indicating whether the respondent had consumed at least one whole alcoholic beverage (including wine, beer, distilled spirits, or wine coolers) in the past 12 months. The frequency and volume of drinking were derived using a graduated quantity–frequency approach (Greenfield, 2000; Rehm et al., 1999). Because of skewness, the frequency and volume scores were log-transformed after adding a constant. Heavy drinking was a dichotomous variable indicating whether the respondent had drunk five or more drinks on a single day in the past 12 months. Getting drunk was measured with a dichotomous variable indicating whether the respondent had consumed enough alcohol to feel drunk at least one time in the past 12 months. Alcohol dependence in the past 12 months was measured using a dichotomous variable indicating whether the respondent had experienced symptoms from at least three of the seven domains identified by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (American Psychiatric Association, 1994).

All analyses used weights based on age, gender, race, income, U.S. nativity, and region to adjust for the sampling strategy and nonresponse bias to approximate the demographic characteristics of the U.S. population. Bivariate analyses included unadjusted logistic and linear regression. Multivariate regression models controlled for key predictors of alcohol use that also may be related to acculturation status (age, income, education, marital status, and foreign nativity). We tested interactions of acculturation with income to examine whether the relationship between acculturation and drinker status varied across levels of income. To reduce collinearity in the interaction models, income was centered at the mean (Aiken and West, 1991). Analyses of the outcomes other than drinker status included drinkers only ($n = 493$, 62.9%).

Results

The men primarily self-identified as Mexican or Mexican American (64.2%), but 5.8% were from Puerto Rico, 4.4% from Cuba, 15.0% from elsewhere in Latin America, and 10.6% identified as "other Hispanic" (unweighted data). Most men were born outside the United States (68.4%). The average (SE) age was 38.5 (0.51) years. Two thirds (65.3%) of the men had a high school education or less, and 64.2% indicated that their household income in 2004 was \$30,000 or less. In the United States in 2000, 40% of Latinos were foreign born; the average age of Latino men age 18 and older was 37.0 years; 71% of Latino men age 25 and older had a high school education or less; and the median household income for Latinos was \$33,676 (Bureau of the Census, 2002).

TABLE 1. Relationship between acculturation and drinking outcomes among Latino men in the United States

Variable	Current drinker OR (95% CI)	Freq. of drinking ^a B (95% CI)	Average volume ^a B (95% CI)	Heavy drinking ^a OR (95% CI)	Got drunk ^a OR (95% CI)	Dependence ^a OR (95% CI)
Bivariate relationships						
Medium acculturation ^b	1.29 (0.84-1.98)	-0.42 [§] (-0.91-0.07)	-0.66* (-1.27-0.05)	0.45 [†] (0.26-0.79)	0.43 [†] (0.25-0.75)	0.30 [†] (0.13-0.70)
High acculturation ^b	2.25 [†] (1.45-3.49)	0.32 (-0.10-0.74)	0.09 (-0.43-0.61)	0.71 (0.43-1.18)	0.82 (0.49-1.36)	0.45* (0.20-1.01)
Obs. (wtd. <i>n</i>)	784 (844)	485 (557)	485 (557)	483 (554)	486 (555)	493 (567)
Multivariate relationships						
Medium acculturation ^b	1.00 (0.55-1.80)	-0.58* (-1.14-0.01)	-0.70* (-1.39-0.02)	0.51 [§] (0.25-1.02)	0.50* (0.25-0.99)	0.34* (0.12-1.00)
High acculturation ^b	0.94 (0.41-2.14)	-0.09 (-0.86-0.69)	-0.08 (-1.02-0.87)	1.14 (0.43-3.04)	1.58 (0.59-4.23)	0.84 (0.27-2.65)
Age	0.98 [†] (0.96-0.99)	-0.02* (-0.04-0.00)	-0.03 [†] (-0.05-0.01)	0.95 [†] (0.93-0.97)	0.95 [†] (0.93-0.97)	0.93 [†] (0.89-0.97)
Income	1.13 (0.85-1.52)	-0.01 (-0.12-0.15)	-0.01 (-0.17-0.16)	1.09 (0.91-1.29)	0.91 (0.76-1.08)	1.11 (0.85-1.45)
Education	1.16 (0.74-1.84)	0.01 (-0.49-0.52)	-0.03 (-0.67-0.61)	0.62 (0.32-1.19)	0.96 (0.50-1.82)	0.69 (0.28-1.68)
Marital status	1.03 (0.66-1.62)	0.15 (-0.26-0.57)	0.10 (-0.40-0.61)	0.81 (0.48-1.36)	0.77 (0.45-1.32)	0.44* (0.20-0.94)
Foreign nativity	0.84 (0.43-1.64)	-0.43 (-1.06-0.19)	-0.34 (-1.09-0.41)	1.39 (0.66-2.94)	1.42 (0.67-2.99)	2.23 [§] (0.86-5.76)
Income × Medium ACC	0.96 (0.66-1.38)	—	—	—	—	—
Income × High ACC	1.55* (1.08-2.24)	—	—	—	—	—
Variance explained ^c	9.0%	6.4%	7.5%	9.8%	11.9%	14.7%
Obs. (wtd. <i>n</i>)	684 (745)	429 (498)	429 (498)	428 (496)	431 (498)	436 (507)

Notes: Freq. = frequency; OR = odds ratio; CI = confidence interval; obs. = number of observations in unweighted sample; wtd. *n* = weighted sample size; ACC = acculturation. ^aPast-year, among drinkers only; ^breference group = low acculturation; ^cproportion of variance explained (R^2 for linear regression; pseudo R^2 for logistic regression).

[§] $p < .10$; * $p < .05$; [†] $p < .01$.

In accordance with the hypotheses, bivariate models (Table 1) showed that men at high levels of acculturation were significantly more likely to be drinkers than men at low levels of acculturation. The multivariate results showed that, consistent with our expectations, there was a significant interaction between acculturation and income when predicting drinker status. The positive association between acculturation and odds of being a drinker was seen only at high income levels. Men at high levels of acculturation were more likely than their peers at low levels of acculturation to be drinkers but only if they had above-average incomes. An opposite association was seen for men with below-average incomes: High acculturation was associated with *lower* odds of being a drinker for men with low incomes. Counter to expectations, the multivariate models showed that, among drinkers, there was a protective effect of medium, rather than high, levels of acculturation on frequency of drinking, volume of alcohol consumed, drinking to drunkenness, and dependence symptoms. A protective effect of medium levels of acculturation approached significance for heavy drinking ($p = .06$). There were no significant interactions of income and acculturation when predicting outcomes other than drinker status.

Discussion

The results partially supported our hypotheses and were similar to other studies that have documented a protective effect of low levels of acculturation on drinker status in bivariate (Caetano and Clark, 2003; Vega et al., 1993) and multivariate (Caetano, 1987) analyses. However, multivariate models indicated that the effect of acculturation on drinker status was modified by income. Men at high levels of acculturation were more likely than their peers to be drinkers only if they had above-average incomes. In contrast, men

with below-average incomes at high levels of acculturation were *less* likely than their peers to be drinkers. Amaro and colleagues (1990) noted statistically significant interactions between acculturation and socioeconomic status when predicting past-year marijuana and cocaine use, but they found that high acculturation (also measured by language use) was more strongly associated with drug use for Mexican Americans and Puerto Ricans with low—rather than high—socioeconomic status (measured by levels of education). In the case of income as an indicator of socioeconomic status, the moderation effect may be related to disposable income that is available to be spent on alcohol (Droomers et al., 1999). The impact of income on drinking behavior also could be the result of increases in leisure time or cultural norms favorable to drinking in higher economic classes, but this explanation seems less plausible, because we detected no interaction effects for outcomes other than drinker status. Additional research into the mechanisms by which income and acculturation interact to predict drinker status is warranted, and longitudinal studies tracking changes in income, acculturation, and drinking behavior over time also would be illustrative.

In contrast to our expectations, men at medium levels of acculturation drank significantly less alcohol per year and were significantly less likely to engage in heavy drinking than their less acculturated peers. Our findings are counter to studies of biculturalism and substance use, as prior research has suggested that biculturalism may be detrimental, rather than beneficial (Caetano and Clark, 2003; Polednak, 1997; Vega et al., 1993). Language use only partially represents biculturalism, and it is possible that other aspects of the acculturation process have different relationships with substance use outcomes. Our results also deviate from general research on drinking among U.S. Latinos (Ye et al., 2005;

Zemore, 2005). However, these prior studies used continuous measures of acculturation and did not examine nonlinear effects.

Our study has many strengths that lend confidence to the results and distinguish our study from previous work. We used data from a large, nationally representative sample of English- and Spanish-speaking Latinos. We included drinking outcomes that represented a continuum of involvement with alcohol, and we limited most analyses to drinkers to parse out effects of acculturation on drinker status from the effects on drinking behavior among drinkers (Zemore, 2007). We also used a multi-item measure of acculturation that has been validated in other studies (Zemore, 2005). There also are limitations to our study. We defined acculturation by language-use behaviors, which only captures one dimension of cultural orientation (Lara et al., 2005; Oetting and Beauvais, 1990-1991). All of our analyses were cross-sectional, which does not permit us to understand the temporal relationship between changes in acculturation and alcohol use. Another limitation pertains to the low response rate. Although the response rate was lower than those of many face-to-face surveys, it is typical of recent U.S. telephone surveys (Midanik and Greenfield, 2002), and comparisons of telephone and in-person interviews suggest that alcohol consumption measures are not unduly impacted by nonresponse (Greenfield et al., 2000; Midanik and Greenfield, 2003b). The generalizability of the findings may be limited to similar samples of predominantly Mexican-origin, foreign-born Latinos, however.

These findings have implications for public health programs designed to reach Latino men in the United States. Our multivariate models explained little of the variance in drinking outcomes. Future research is needed to examine other factors that might influence drinking, either independently of or in concert with acculturation.

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