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The Hispanic Americans Baseline Alcohol Survey (HABLAS): Predictors of alcohol attitudes and expectancies in Hispanic national groups

Britain A. Mills, PhD. and Raul Caetano, MD, PhD.

University of Texas School of Public Health, Dallas Regional Campus

Abstract

Background—Multiple theoretical frameworks identify attitudes and expectancies as important predictors of alcohol behavior. Few studies have examined demographic predictors of these evaluative and belief-based cognitive mediators in the general population, and none have examined them in large-scale studies of Hispanics, a group at higher risk for drinking behavior and problems. This study probes the extent to which dimensions of attitudes and expectancies share common demographic predictors in a large sample of Puerto Ricans, Cuban-Americans, Mexican-Americans, and South/Central Americans.

Methods—The 2006 Hispanic Americans Baseline Alcohol Survey (HABLAS) used a multistage cluster sample design to interview 5,224 individuals randomly selected from households in Miami, New York, Philadelphia, Houston, and Los Angeles. This study focused on 2,773 respondents self-identified as current drinkers. Multiple linear regression was used to identify predictors of positive and negative dimensions of attitudes and expectancies, controlling for various background variables.

Results—Religious affiliation selectively predicted alcohol attitudes, with Catholics having more positive and fewer negative attitudes than other religious groups. Hispanic group selectively predicted alcohol expectancies, with Cuban-Americans having less positive and less negative expectancies than other groups. Being U.S.-born or male predicted more positive attitudes and expectancies, but birthplace and gender did not predict negative dimensions of attitudes or expectancies. Higher acculturation and more education were linked to a decreased tendency to agree with any item. Age was positively and negatively associated with negative expectancies and positive attitudes, respectively, and having never been married, higher income, and unemployment were each linked to fewer negative attitudes.

Conclusions—Although there is some overlap, attitudes and expectancies are influenced by different sociodemographic variables. Positive and negative dimensions of those constructs also show distinct patterns of relations. Prevention and treatment programs targeting cognitive mediators of behavior should be mindful of these differential determinants and future modeling endeavors should incorporate them.

Keywords

Hispanic groups; alcohol attitudes; alcohol expectancies

INTRODUCTION

Across many domains, theoretical models of behavior identify several important cognitive variables that mediate the influence of background characteristics and social context on behavior. Attitudes – defined as an evaluative precursor of intentions to act (e.g., Fishbein and Ajzen, 1975) are one of the most important and studied of these mediator variables. In the alcohol literature, alcohol expectancies – defined as the anticipated consequences of alcohol use (Brown et al., 1980) – have received a comparable, perhaps larger, amount of attention. Whereas attitudes concern valuation of an outcome or behavior, expectancies concern beliefs about the likelihood of an outcome. As in traditional models of judgment and decision-making (Edwards, 1961) these distinct dimensions are combined multiplicatively in some frameworks (Ajzen, 1991), or they are simply entered as separate predictors in other modeling contexts (Leigh, 1989). Despite such technical differences in theoretical specifications, there is a general consensus that both of these mediating variables play an important role in shaping drinking behavior (Stacy et al., 1990).

A substantial amount of evidence exists showing that both attitudes and expectancies predict many types of drinking behavior across varied populations. In general population surveys, decreases in permissive alcohol attitudes during the early 1980's paralleled decreases in drinking behavior during that period (Hilton, 1991), and attitudes were found to be strong predictors of alcohol behavior in separate surveys conducted in 1984 and 1995 (Caetano and Clark, 1999). Other studies (e.g., Lintonen and Konu, 2003; Marcoux and Shope, 1997; Murgraff et al., 2001; Norman et al., 1998) have reported similar relations. Likewise, alcohol expectancies have been shown to predict social and problem drinking behavior among various adult populations (Brown et al., 1985), college students (Brown, 1985), and adolescents (Christiansen et al., 1982). For example, they appear to mediate the influence of variables related to social context (such as advertising) on drinking behavior for some groups (Fleming et al., 2004). Importantly, expectancies have been shown to be a separable construct from attitudes, and each explains unique variance in alcohol behavior (Burden and Maisto, 2000; Leigh, 1989; Wall et al., 1998).

To properly understand the role of these influential cognitive mediators in the context of other variables, and to facilitate the identification of potential targets for treatment and intervention programs, it is important to identify variables that predict them. Attitudes have been shown to be sensitive to sociodemographic variables such as age, gender, religion, birthplace, socioeconomic status, marital status, and acculturation (Caetano, 1987a; Caetano and Clark, 1999; Crawford, 1987; Markides et al., 1990; Mills et al., 2010). Younger people, males, non-Protestants, people born in the U.S., people who have never been married, and those who are more acculturated generally have more permissive attitudes about alcohol, whereas variables linked to socioeconomic status (such as education, income, and employment) show less consistent relations.

Although expectancies concern anticipated physiological effects of alcohol, they appear to be influenced substantially by non-pharmacological factors such as social context and role models such as family, peers, and mass media (Brown et al., 1985; Christiansen et al., 1982), and emerge before people have any experience with alcohol. Although the literature on demographic correlates of alcohol expectancies is somewhat sparse, as with attitudes, studies have reported differences in alcohol expectancies between males and females (Gustafson, 1993; McMahon et al., 1994; Leigh, 1987). A recent large-sample study (Greenfield et al., 2009) found that males and people who were never married were more likely to expect global positive outcomes, more educated respondents were more likely to expect negative outcomes, and older respondents were less likely to expect either type of outcome. In addition, several studies by Marín and colleagues have shown that expectancies

are sensitive to acculturation to U.S. society. For example, Marín et al. (1993) found that more acculturated Hispanics were less likely to expect effects associated with emotional or behavioral impairment and social extraversion.

With respect to the goals of the present study, alcohol attitudes are known to differ across Hispanic subgroups, and evidence suggests that alcohol expectancies may differ as well. More liberal attitudes towards drunkenness have been documented in Mexican-Americans relative to Cuban-Americans or Puerto Ricans (Caetano, 1988), and although specific comparisons of alcohol expectancies between Hispanic subgroups have not been a major focus of research to date, comparisons of effects across studies (Vélez-Blasini, 1997; Corbett et al., 1991; Gilbert et al., 1994) suggests that alcohol expectancies may differ between some Hispanic subgroups in baseline endorsement rates and in how strongly they relate to behavioral criteria.

Effects of acculturation on alcohol behavior – and therefore potentially on attitudes and expectancies – may also be qualified by other background variables. For example, separate studies have shown that acculturation has a stronger liberalizing effect on drinking behavior for females than for males (Caetano, 1987b; Markides, 1990). Furthermore, because the process of acculturating to life in the United States has a common “endpoint” for all Hispanic groups, variation in some criterion variable between Hispanic groups at lower levels of acculturation (due to factors such as geographical proximity to the United States or cultural differences in drinking norms) would be expected to “converge” at differential rates as respondents acculturate. Such differences in slopes can be represented by interaction effects between gender and acculturation, and between Hispanic group and acculturation, respectively, and both types of effects are assessed in the present report.

In sum, the major objective of the present study is to identify and compare the demographic predictors of alcohol attitudes and expectancies across four major Hispanic groups. This objective directly addresses limitations of past research. Much of the research on alcohol attitudes and expectancies has been theoretically fragmented, with many studies focusing selectively on either attitudes or expectancies. When both are assessed, known demographic predictors of behavior are not included in the models. This is more of a limitation than a flaw: Since cognitive mediators are more proximal to behavior than sociodemographic variables, it makes sense that research would first be directed towards relating behavior to variables that exert direct (or near-direct) influences on behavior. However, the need for comprehensive models of alcohol behavior necessitates examination of variables throughout the causal chain, and the present study represents the only large-sample study to date that has assessed predictors of both alcohol attitudes and expectancies among current Puerto Rican, Cuban-American, Mexican-American, and South/Central American drinkers. Hispanics – especially Mexican-Americans and Puerto Ricans – are at a higher risk for drinking and drinking problems (Caetano and Clark, 1998a; Caetano and Clark, 1998b; Ramisetty-Mikler et al., 2010; Vaeth et al., 2009), and there is a need for research that identifies important predictors of behavioral mediators in these groups to inform comprehensive, theoretically-motivated treatment and intervention designs.

A two dimensional structure for both attitudes and expectancies has been suggested in past work on different samples (Christiansen et al., 1982; Green et al., 1993; Leigh and Stacy, 1993) as well as current analyses on the HABLAS sample (Mills et al., 2010; Mills et al., 2012). Using this approach, the present study probed the extent to which positive and negative dimensions of alcohol attitudes and expectancies share common predictors. Based on the literature and considerations reviewed above, we expect to replicate past findings about how demographic variables relate to attitudes and expectancies. For example, males should hold more liberal attitudes than females (i.e., higher positive and lower negative

attitudes), and should expect more positive outcomes. In addition, since attitudes are more closely linked to values than expectancies, we also anticipate that religion should be more likely to relate to attitudinal measures than expectancy measures. Mexican-Americans should also hold more liberal attitudes than Cuban-Americans or South/Central Americans, although comparable rates of drinking among Puerto Ricans and Mexican-Americans in the HABLAS sample (Ramisetty-Mikler et al., 2010) suggests that Mexican-Americans and Puerto Ricans may hold similar attitudes. The Marín et al. (1993) study found no differences between Mexican-Americans and Central Americans in alcohol expectancies, a finding we expect to replicate with our South/Central American group, although for the same reasons we expect specific group differences in attitudes (e.g., different drinking behavior), we expect Mexican-Americans and Puerto Ricans to differ from Cuban-Americans on both expectancy measures. Acculturation should have a liberalizing effect on attitudes and a negative relation with both measures of expectancies, and for attitudes, these effects should be stronger for females.

METHODS

The HABLAS employed a multistage cluster sample design in five metropolitan areas of the U.S in 2006. The areas – Miami, New York, Philadelphia, Houston, and Los Angeles – were selected for their relatively large Hispanic subpopulations. Upon providing written consent to participate in the study, 5,224 individuals were interviewed for a weighted response rate of 76%. The present analyses are restricted to 2,773 of those respondents who were current drinkers (had had at least one standard drink in the past 12 months) and were asked questions about their attitudes towards alcohol and effects they expected as a result of consuming alcohol. Following weighting, respondents are a representative sample of the Hispanic civilian non-institutionalized population aged 18 and older in the sites where data collection took place. Trained bilingual (English/Spanish) interviewers conducted face-to-face Computer Assisted Personal Interviews (CAPI), lasting one hour on average, in respondents' homes. The Spanish version of the questionnaire incorporated subtle variations in language used by the different Hispanic national groups, and the English version was translated into Spanish and independently back-translated into English. A total of 70% of the interviews were conducted in Spanish, and a \$25 incentive was provided for participating. The Committee for the Protection of Human Subjects of the University of Texas Health Science Center at Houston approved this study.

Measures

Ethnicity and Hispanic national origin—One adult was randomly selected to be interviewed from households screened for the presence of an adult Hispanic. Respondents confirmed their ethnicity through self-identification. Specifically, respondents were asked: “Which of these groups best describes your own ethnic identification: Puerto Rican, Cuban, Cuban-American, Mexican, Mexican-American (including Chicano/a), Dominican, South American, or Central American?” For analyses in the present paper, Cubans are grouped with Cuban-Americans, Mexicans are grouped with Mexican-Americans, and Dominicans are grouped with South and Central Americans.

Demographic variables—These variables were selected based on past findings of relations with cognitive mediators (e.g., Crawford, 1987) or findings that they predicted alcohol behavior in previous analyses of the HABLAS data (e.g., Caetano et al., 2008). In addition to self-reported age and gender, the following demographic information was queried: *Religion*: Three religious classifications were used in this study: (1) Catholic (reference group), (2) Protestant, and (3) Jewish/Other; *Employment status*: Four categories of employment status were used: (1) employed full-time or part-time (reference group), (2)

unemployed (temporary illness, unemployed, looking/not looking for a job, or in school), (3) retired or homemaker, and (4) disabled, never worked, or other; *Birthplace*: Respondents were classified into one of two groups corresponding to their place of birth: (1) foreign-born respondents were those born in a country other than the United States or in a U.S. territory, including Puerto Rico (reference group) and (2) U.S.-born; *Marital status*: Three groups were used: (1) married and living with someone or not married and living with someone (reference group), (2) married and not living with spouse, separated, divorced, or widowed, and (3) never married or never lived with someone; *Education status*: Respondents were placed into one of four education categories: (1) never finished high school (reference group), (2) high school (HS) diploma/GED, (3) some college or technical/vocational school, and (4) 4-year college degree/graduate/professional school; *Income*: Respondents identified their approximate total household income from a list of 12 categories, beginning with < \$4,000 through >\$100,000. Nearly 20% of the total sample (n = 1,069) refused to provide or did not know their income. The Markov Chain Monte Carlo method (Schafer, 1997) was used to multiply impute log-transformed responses on these missing values using SAS PROC MI¹. Imputed values were transformed back to the 12 original response categories for all analyses. A single imputation based on the mean of the 10 log-transformed imputed values of income was created for preliminary model testing, and all estimates reported in this paper were obtained from final analyses on the fully imputed dataset with the Stata prefix command *mim* for analyzing multiply imputed data (Carlin et al., 2008).

Acculturation—Developed by Caetano (1987b), this measure is derived from 12 items covering daily use of and ability to speak, read, and write English and Spanish; preference for media (books, radio, and T.V.) in English or Spanish; ethnicity of people with whom respondents interact with at church, at parties, the neighborhood in which respondents currently live and lived while growing up; and finally, questions about values thought to be characteristic of the Hispanic lifestyle. With the exception of language use items, all items are coded in a four-point Likert scale (strongly agree to strongly disagree). The scale's reliability was assessed with Cronbach's Alpha (0.91) and the split-half method (0.87, Guttman split-half coefficient). The scale correlates positively with being U.S.-born, number of years of life in the U.S., drinking and alcohol problems, and it correlates negatively with age. These correlations are in the expected direction and empirically confirm the scale's construct validity. A continuous score of acculturation was computed and the subjects were grouped into three categories - low, medium, and high acculturation levels - using tertiles.

Alcohol attitudes—Respondents provided disagree/agree responses (coded zero one) to eight positive attitudinal items and four negative attitudinal items (Caetano, 1988; Caetano and Clark, 1999), with higher scores reflecting more agreement for both scales. The items address several facets of alcohol attitudes that have been a focus of general studies (e.g., alcohol as a social lubricant; Caetano, 1988) as well as past research on Hispanic populations (e.g., Neff et al., 1991). Consistent with the recommendation of some researchers to differentiate the positive and negative components of attitudes (e.g., Green et al., 1993), current psychometric work (Mills et al., 2010) has suggested that these 12 items form moderately reliable positive and negative subscales (Cronbach's $\alpha=.74$ and $.61$, respectively) and exhibit measurement invariance over Puerto Ricans, Cuban-Americans, Mexican-Americans, and South/Central Americans. That aggregation scheme is employed in the present study. The positive items were "Getting drunk is just an innocent way of having fun," "A real man can hold his liquor," "People who drink have more fun than people who

¹Ten imputed values were generated based on the respondent's employment status, education, marital status, household size, metropolitan area of residence, age, Hispanic nationality, whether the respondent was born in the United States, how long the respondent had lived in the United States, acculturation, whether the respondent had driven an automobile in the past year, and annual wage and salary data.

don't," "People who drink have more friends than people who don't," "A party isn't really a party unless alcoholic beverages are served," "Having a drink is one of the pleasures of life," "Having a drink with someone is a way of being friendly," and "It does some people good to get drunk once in a while." The negative items were "There is nothing good to be said about drinking," "People would lose respect for a woman who spends any time in bars," "People would lose respect for a man who spends any time in bars," and "Drinking alcohol often brings out the worst in people."

Alcohol expectancies—Eighteen items were adapted from previous studies (Leigh and Stacy, 1993; Marín et al., 1993). Respondents rated the extent to which various effects occurred as a consequence of alcohol use on four point Likert-type scales with response options ranging from "almost never" to "almost always," coded zero to three. As with the measures of alcohol attitudes, previous work with other samples (Leigh and Stacy, 1993) and current work with the HABLAS sample (Mills et al., 2012) has suggested that positive and negative dimensions underlie responses to these items (Cronbach's $\alpha=.87$ and $.92$, respectively), and those scales exhibit measurement invariance over the four Hispanic groups analyzed in this study. Positive effects were prefaced with "You will ..." and included the following effects: laugh more, become more talkative, happier, more relaxed, become romantic, friendly, sexually aroused, and become more independent. Likewise, negative effects were prefaced with "You will ..." and included the following effects: become louder, become aggressive, lose control, become careless, lose coordination, become argumentative, become more emotional, become sleepy, become sad, and have difficulties thinking.

Statistical Analyses

All analyses were conducted with Stata 10 (StataCorp., 2007). Analyses were conducted on data weighted to correct for unequal probabilities of selection into the sample, and a poststratification weight was applied to correct for nonresponse and adjust the sample to known Hispanic population distributions on demographic variables. Mean scores on attitude and expectancy subscales across Hispanic national groups were derived from baseline regression models with no covariates. Four sets of multiple linear regression analyses were performed to compare differences among Hispanic subgroups on positive attitudes, positive expectancies, negative attitudes, and negative expectancies, adjusting for differences in demographic covariates. Linear combinations of coefficients were formed to test additional hypotheses not explicitly provided by the model parameterizations. Preliminary models were fit using the average of the 10 imputed income values, and final model estimates were obtained by combining estimates from analyses on each of the 10 imputed datasets using Rubin's rules (Carlin et al., 2008; Rubin, 1987).

RESULTS

Demographic characteristics of the HABLAS sample, by Hispanic national group, can be found in Table 1. National groups differed in their mean age, religious affiliation, birthplace, acculturation, marital status, employment status, education, and mean income. The groups also differed in unadjusted scores on positive attitude and expectancy measures, and marginally differed on negative expectancies (Table 2). Cuban-Americans had significantly fewer positive attitudes than Puerto Ricans and Mexican-Americans, and Mexican-Americans had significantly more positive attitudes than South/Central Americans. For positive expectancies, Cuban-Americans expected significantly fewer positive outcomes than all other groups, and both Mexican-Americans and Puerto Ricans expected significantly more positive outcomes than South/Central Americans. Cuban-Americans expected marginally fewer negative outcomes than did Mexican-Americans.

Predictors of alcohol attitudes and expectancies

Parameter estimates from the four multiple linear regression analyses can be found in Table 3. Multiple correlation coefficients for the positive attitudes, positive expectancies, negative attitudes, and negative expectancies models were .30, .26, .36, and .23, respectively. In the following discussion of results, linear combinations of coefficients were formed to test specific contrasts of interest that are not provided by the initial parameter estimates; those contrasts appear at the bottom of Table 3. For positive attitudes, gender, age, birthplace, religion, acculturation, and education were significant predictors. Being male or U.S. born predicted increased positive attitudes, while being older, Jewish (relative to Catholic), highly acculturated (relative to low acculturation or moderate acculturation), or having at least some college or technical/vocational education (relative to no high school diploma) predicted decreased positive attitudes. For positive expectancies, Hispanic subgroup, gender, birthplace, and acculturation were found to be significant predictors. Being Puerto Rican, Mexican-American, or South/Central American (relative to Cuban-American), male, or U.S.-born predicted a greater expectation of positive outcomes, while both moderate and high acculturation (relative to low acculturation) were linked to lower expectations of positive outcomes.

Religion, income, acculturation, education, employment status, and marital status were significant predictors of negative attitudes. Being Protestant predicted increased negative attitudes relative to being Catholic and marginally increased negative attitudes relative to Jewish/other religions, as did being retired or a homemaker relative to being unemployed. Income, high acculturation (relative to low acculturation or moderate acculturation), and having never been married (relative to married and living with spouse or married but separated/divorced) predicted less negative attitudes. In addition, there was a negative association between education and negative attitudes: Respondents with at least some college had significantly less negative attitudes than respondents with no high school diploma or those with only a high school diploma, and likewise, respondents with at least a four-year college degree had significantly less negative attitudes than respondents with no high school diploma or those with only a high school diploma. Finally, for negative expectancies, Hispanic subgroup, age, acculturation, and education were significant predictors. Being Mexican-American (relative to being Cuban-American) or of older age was linked to increased expectations of negative outcomes, while being moderately or highly acculturated (relative to low acculturation) and having some college education were linked to decreased expectations of negative outcomes.

Several interaction effects were also examined separately. Specifically, gender by birthplace, gender by acculturation, Hispanic subgroup by birthplace, and Hispanic subgroup by acculturation interaction terms were separately assessed by examining their ability to improve the fit of the models reported in Table 3². Across the four criterion variables, the only interaction to reach statistical significance was Hispanic subgroup by acculturation for the positive attitude model [$F(6, 249) = 2.53, p < .05$]: There was a negative relation between acculturation and positive attitudes for Puerto Ricans and Mexican-Americans, but no relation for Cuban-Americans and South/Central Americans. However, this interaction was not retained for two reasons. First, the results in Table 3 show a particular symmetry within positive and negative domains, with increasing acculturation tending to decrease both negative attitudes and expectancies as well as positive attitudes and expectancies. With respect to this overall trend, the key implication of the significant interaction – that the effect does not hold for two Hispanic subgroups on one of the four criteria – is a null finding. Second and perhaps more importantly, the improvement in model fit by adding this

²Interactions with birthplace were also explored because of this variable's relevance to the acculturative process.

interaction, although statistically significant in this large sample of respondents, was minimal (the change in R^2 was less than .01).

DISCUSSION

Out of 10 predictor variables assessed, two variables consistently related to either attitudes or expectancies, two variables consistently related to the positive dimension, and two variables consistently related to criteria on each dimension (attitudes/expectancies and positive/negative). Hispanic subgroup was a significant predictor of both positive and negative expectancies, with Cuban-Americans consistently expecting the fewest and Mexican-Americans consistently expecting the most outcomes, whether positive or negative. The finding that differences in expectancies remained after controlling for demographic covariates suggests that other variables not included in this model may account for observed differences across Hispanic groups. Since behavioral differences in drinking behavior beget variation in observed drinking consequences, and since these groups do differ in drinking behavior (Caetano, 1988; Caetano et al., 2009), it is possible that variation across Hispanic groups in such observed consequences (and, because of a shared social context, descriptive norms) might explain these residual differences. In addition, expectancies differ in sensible directions: Since the likelihood or intensity of many of the specific outcomes mentioned on both expectancy scales increase with higher alcohol intake, it is not surprising that the groups that consistently had the highest positive and negative expectancies – Mexican-Americans and Puerto Ricans – also consistently report higher amounts of alcohol intake than other groups (Caetano, 1988; Caetano et al., 2009; Dawson, 1998; Marin and Posner, 1995).

Results of the expectancy models stand in contrast to the finding for attitudes, where, consistent with ongoing analyses on the HABLAS sample (Mills et al., 2010), pre-existing attitudinal differences among the Hispanic subgroups were eliminated upon controlling for demographic covariates. Instead, religion consistently predicted attitudes – but not expectancies – in both positive and negative domains. This is consistent with the fact that whereas attitudes involve an evaluative component, expectancies involve – relatively speaking – more objective beliefs about whether specific outcomes will obtain. In other words, it makes sense that values cultivated in religious traditions should more readily transfer to the kinds of valuations of behavior (e.g., is something good or bad) queried in attitudinal items.

Two variables – birthplace and gender – selectively predicted positive criterion variables: Males and U.S.-born respondents had higher positive attitudes and expectancies than females and foreign-born respondents, respectively. For gender, clues to a potential source of this effect can be found in the judgment and decision-making literature, where judgments of risk and benefits bear a close resemblance to the types of ratings made in this study. Specifically, risk (or benefit) perception involves an evaluative component – the severity of the potential outcome must be judged – as well as a likelihood component corresponding to the perceived likelihood that an outcome will obtain. Decreased risk and increased benefit perception among males is a common finding across a majority of domains including health decisions (Weber et al., 2002). Importantly, benefits also tend to outweigh risks across a majority of those domains (Reyna and Farley, 2006) in predicting risk behavior, and therefore it is sensible that the most likely domain in which to see gender effects would be in the positive domain. The selective relation of birthplace to the positive dimension is one of a series of complex relations between acculturation-related variables and attitudes/expectancies documented in this report. Since birthplace captures geographic elements of the acculturation construct, the results suggest that such elements may be important to

understanding positive attitude and expectancy formation. Future research is needed to shed light on why this effect is restricted to the positive domain.

Variables that predicted attitudes and expectancies across valence dimensions were acculturation and education. The findings illustrate an important qualification to past reports that acculturation has a liberalizing effect on cognitive mediators of behavior (Black and Markides, 1993; Caetano, 1987a; Caetano, 1987b; Caetano, 1987c; Caetano and Medina Mora, 1988; Marín et al., 1993). Since increases in acculturation were linked to decreases in negative – but not positive – attitudes and expectancies, the liberalizing effect appears to be restricted to the negative domain. In contrast, a non-liberalizing effect was observed for positive attitudes and expectancies, where increases in acculturation predicted decreases in each of those criterion variables. This pattern of results reveals a potentially informative insight into the nature of acculturation and its relation to important predictors of drinking behavior: Whereas geographic components of acculturation may be primarily responsible for liberalizing effects, psycholinguistic and/or social components – which were tapped by the acculturation measure used in this study – exhibit a more complex relation that depends of the valence of the cognitive mediator. Education showed a similar overall pattern, with higher levels tending to predict less positive attitudes, but more negative attitudes and expectancies (for positive expectancies, effects were non-significant but trending in a direction consistent with this pattern). As discussed below, the common pattern of education and acculturation effects may be linked to a common cause.

Psychometric studies of response tendencies on Likert-type items have identified particular response styles that are associated with variables such as education and acculturation. For example, extreme response bias – a tendency to use the endpoints of the scale more than the midpoints – has been documented in Hispanic groups and it has been shown to decrease with acculturation to U.S. society (Marin et al., 1992). However, the same study suggested that it may have a psycholinguistic underpinning, linking the extreme response tendency among less acculturated Hispanics to *simpatía*, a Latino cultural script that promotes a desire for sincerity and avoidance of ambiguous linguistic qualifications to statements during communication. However, an item-level extreme response-bias explanation is not applicable to measures of attitudes used in this study, which involved aggregating responses to a series of dichotomous items. An alternative explanation is that acculturation and education generally temper respondents' tendency to agree with items on each of these scales. Social collectivism (a characteristic of Hispanic, relative to American, culture; Marín and Triandis, 1985) and lower education are known predictors of acquiescence or yea-saying on survey instruments (Marin et al., 1992; Meisenberg and Williams, 2008), and this would explain why acculturation and education were consistently associated with decreases in agreement tendencies across all four dependent measures.

Four variables were identified as significant predictors of attitudes or expectancies but showed inconsistent patterns of effects across valence and domain dimensions. Although older respondents had lower positive attitudes and higher negative expectancies, age did not predict negative attitudes or positive expectancies. The remaining three variables selectively predicted differences involving negative attitudes: Respondents who were never married and respondents who were retired or a homemaker had more negative attitudes than married or working respondents, respectively, and increasing income was associated with less negative attitudes.

Conclusions

The present study represents the first large-scale examination of the demographic precursors of distinct dimensions of alcohol attitudes and expectancies in four Hispanic national

groups. Although multidimensional structures of both attitudes and expectancies have been proposed (Gonzalez, 1990; Leigh and Stacy, 1993; Marín et al., 1993), the focus of much of that work has been either psychometric or concerned primarily with models describing relations with behavioral variables (e.g., Leigh, 1989). Other studies have treated the constructs as unitary, obscuring potentially informative differential patterns of relations between predictors and constructs. By assessing multiple dimensions of attitudes and expectancies, the findings reveals potentially important insights into how those dimensions are differentially influenced by important background variables in Hispanics.

With one major exception, hypothesized effects were generally observed or trending in anticipated directions. As expected, Mexican-Americans and Puerto Ricans had more liberal attitudes than Cuban-Americans and expected more outcomes (whether positive or negative), and religion selectively predicted attitudes but not expectancies. Also as expected, males had more liberal positive attitudes and expected more positive outcomes than females, although effects of gender were not observed for the two negative cognitive mediators. As discussed next, the major deviation from anticipated findings involved effects of acculturation.

Effects of acculturation on alcohol expectancies – overall decreases at higher levels of acculturation – were consistent with previous reports (e.g., Marin, 1996). However, the results clarify the complex role of acculturation in alcohol attitudes among Puerto Ricans, Cuban-Americans, Mexican-Americans, and South/Central Americans by showing that increasing acculturation is linked to decreases in cognitive mediators that oppose drinking behavior (negative attitudes), but also to decreases in mediators that support drinking behavior (positive attitudes). Since positive aspects of alcohol use typically involve immediate, short-term benefits whereas negative aspects typically involve more delayed – but also more severe – long-term risks, the practical implications of the acculturation effects are consistent with past reports: Acculturation is associated with an increasing tendency to adopt more permissive attitudes towards the most problematic aspects of drinking behavior.

The limited support for various moderation hypotheses is consistent with ongoing analyses on the HABLAS data (Mills et al., 2010), which show that sociodemographic predictors of alcohol attitudes operate similarly across Hispanic subgroups; the present study extends this finding by demonstrating that they also operate similarly across gender, birthplace, and acculturation level, for both alcohol attitudes and alcohol expectancies. Most importantly, since moderating effects of Hispanic subgroup (Caetano et al., 2008) and gender (Caetano, 1987b; Markides et al., 1988; Markides et al., 1990) have been documented on the relation between acculturation and alcohol behavior/problems, the results also suggest that the theoretical mechanism governing these moderating effects may involve pathways separate from these cognitive mediators. Structural modeling approaches that link other demographic, mediator, and behavioral variables together will shed additional light on this question.

It is important to note that acculturation is a complex process, and alternative approaches to measuring this construct have been proposed. The present study employed a unidimensional and *bipolar* measure of acculturation that assesses the extent to which Hispanics “trade off” or relinquish Hispanic linguistic and cultural traditions in favor of more Americanized ones. Relative reliance on such traditions is a measurable quantity that has repeatedly been shown to predict risky drinking behavior (Caetano, 1987b, Caetano, 1987c; Caetano and Medina-Mora, 1988, Caetano et al., 2008). However, measures that independently assess adherence to distinct cultural norms (e.g., Oetting and Beauvais, 1990) have the potential to clarify acculturative influences even further in future research. For example, evidence shows that drinking patterns of Mexican-Americans in the U.S. retains key aspects of drinking in

Mexico, such as the relatively frequent rate of drinking 5 or more drinks on occasion (Caetano and Medina-Mora, 1988). In other words, problematic drinking behavior in Mexican-Americans may be a consequence of adopting more liberal norms and attitudes towards drinking in the United States while simultaneously retaining the predisposing behavioral patterns associated with their original culture. Future studies are needed to test the interesting theoretical prediction that such *bicultural* patterns of acculturation – adhering to elements of both cultures – should actually put these types of individuals at higher risk for problematic drinking behavior than preferentially adhering to one tradition over the other.

Finally, the results also support the validity of positive and negative dimensions of attitudes and expectancies and suggest novel avenues for future research to explore. Since distinct variables differentially predicted attitudes and expectancies of each valence, the results go beyond informing our theoretical understanding of alcohol behavior by providing clues as to how treatment or intervention approaches can be tailored for maximal impact, depending on characteristics of the group in question. For example, since religion selectively predicted attitudes, relevant personal values could be targeted in groups with attitudes that promote risky drinking behavior. Along with injunctive and descriptive norms, values are important mediators of various forms of risk behavior, and interventions that promote values clarification and/or adjustments in normative perceptions have been successful in other domains [e.g., reducing achievement gaps for low-income ethnic minorities (Cohen et al., 2009); reducing sexual risk taking in adolescence (Mills, 2009)].

This study has two key limitations. First, the design is cross-sectional, and problems with drawing causal inferences about effects in such designs are well known. These concerns are partially mitigated by the fact that most demographic characteristics temporally precede the development of attitudes and expectancies, and in cases where they do not (e.g., acculturation), there are no a priori theoretical reasons to expect that attitudes or expectancies specifically about alcohol behavior should shape a general construct such as acculturation. Second, collective influences of demographic characteristics on the four cognitive mediators of this study were relatively small, a common finding when predicting psychological constructs. Clearly, attitudes and expectancies are shaped by additional factors beyond acculturation and demographic background characteristics. Nevertheless, those characteristics are known to influence drinking behavior: Whether those influences occur through cognitive pathways is therefore a necessary research question that can aid in the refinement of theoretical models of drinking behavior.

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Table 1

Demographic Information for Drinkers in the HABLAS Sample

Variable	Puerto Rican (n = 724)	Cuban- American (n = 660)	Mexican- American (n = 660)	S/C American (n = 729)
Female	58	56	64	58
Age (mean) [‡]	38.1	45.0	36.4	38.4
Religion [‡]				
Catholic	61	63	78	73
Protestant	10	6	3	6
Jewish/other	30	30	19	21
Born in United States [‡]	51	18	35	13
Acculturation [‡]				
Low acculturation	11	32	31	29
Moderate acculturation	22	33	30	34
High acculturation	67	35	38	36
Marital Status [‡]				
Married/living with spouse/living with someone	42	62	56	54
Married not living with spouse/legally separated/divorced/widowed	19	19	15	20
Never married/never lived with someone	39	19	29	26
Employment Status [‡]				
Full/part-time employment	50	68	75	74
Unemployed	22	10	10	12
Retired/homemaker	14	14	10	10
Disabled/never worked/other	14	7	5	3
Education [‡]				
4-year college degree, graduate/professional school	5	18	9	18
Some college or technical/vocational school	25	25	22	30
High school diploma/GED	43	31	28	27
Never finished high school	27	25	41	25
Income (mean) [‡]	\$25.3K	\$35.3K	\$29.4K	\$31.8K

Note 1. Values are percentages unless otherwise noted.

Note 2. S/C = South/Central; GED = General Education Development;

* $p < .001$.

Table 2
Unadjusted Differences in Attitudes and Expectancies between Hispanic Subgroups

Hispanic Subgroup	Positive Attitudes*	Positive Expectancies [†]	Negative Attitudes	Negative Expectancies
Puerto Rican	0.30 (0.27–0.33)	1.33 (1.26–1.41)	0.55 (0.52–0.59)	0.93 (0.85–1.01)
Cuban-American	0.25 (0.23–0.28)	1.00 (0.89–1.12)	0.60 (0.56–0.65)	0.83 (0.71–0.94)
Mexican-American	0.33 (0.30–0.36)	1.34 (1.23–1.45)	0.58 (0.54–0.62)	0.96 (0.87–1.05)
South/Central American	0.28 (0.25–0.30)	1.15 (1.06–1.24)	0.60 (0.56–0.63)	0.85 (0.75–0.96)

Note 1. Cell values are mean (95% confidence interval).

Note 2. For negative expectancies, Mexican-Americans were marginally higher than Cuban-Americans ($p=.06$).

* $p<.05$;

[†] $p<.01$.

Table 3

Linear Regression Parameter Estimates for Alcohol Attitude and Expectancy Models

Variable	Positive Attitudes	Positive Expectancies	Negative Attitudes	Negative Expectancies
Hispanic Subgroup (Ref: Cuban-American)				
Puerto Rican	.024 (.020)	.273 (.071) [‡]	-.008 (.029)	.115 (.070)
Mexican-American	.034 (.021)	.273 (.086) [‡]	-.014 (.031)	.163 (.070)*
S/C American	.015 (.018)	.155 (.066)*	.018 (.025)	.095 (.070)
Male (Ref: Female)	.094 (.015) [‡]	.195 (.048) [‡]	.013 (.018)	.026 (.046)
Age ^a	-.001 (.001)*	-.001 (.001)	.001 (.001)	.008 (.002) [‡]
Income ^a	.000 (.000)	.000 (.000)	-.001 (.0003) [‡]	-.001 (.001)
Religion (Ref: Catholic)				
Protestant	-.041 (.030)	-.071 (.086)	.090 (.030) [‡]	.029 (.077)
Jewish/other	-.034 (.015)*	.048 (.052)	.026 (.019)	.000 (.050)
U.S.-born (Ref: Foreign-born)	.060 (.017) [‡]	.186 (.062) [‡]	-.031 (.025)	.110 (.059)
Acculturation (Ref: Low)				
Moderate acculturation	-.035 (.020)	-.210 (.066) [‡]	-.016 (.021)	-.258 (.063) [‡]
High acculturation	-.082 (.020) [‡]	-.151 (.071)*	-.084 (.023) [‡]	-.158 (.067)*
Employment Status (Ref: Full/part-time employed)				
Unemployed	.028 (.023)	.019 (.064)	-.049 (.028)	.043 (.064)
Retired/homemaker	.002 (.024)	-.052 (.082)	.030 (.027)	.009 (.083)
Disabled/never worked/other	.018 (.032)	.066 (.090)	-.019 (.032)	.050 (.104)
Education (Ref: No HS diploma)				
HS diploma/GED	-.034 (.017)	-.112 (.073)	-.031 (.023)	-.056 (.062)
Some college or tech/vocational school	-.043 (.017)*	-.096 (.075)	-.086 (.025) [‡]	-.130 (.055)*
4-year college degree, grad/prof school	-.045 (.022)*	-.087 (.089)	-.125 (.034) [‡]	-.080 (.080)
Marital Status (Ref: Married & living with spouse)				
Married not living with/separated/divorced/widowed	-.005 (.016)	-.016 (.059)	-.026 (.023)	.009 (.064)
Never married/never lived with someone	.029 (.016)	.052 (.062)	-.081 (.021) [‡]	-.029 (.051)
Intercept	.325 (.034)	1.04 (.120)	.682 (.048)	.682 (.120)
Significant/marginally significant linear contrasts				
High vs. moderate acculturation	-.047 (.015) [‡]	-	-.068 (.021) [‡]	-
Protestant vs. Jewish/Other	-	-	.064 (.033)	-
Retired/homemaker vs. Unemployed	-	-	.079 (.036)*	-
Never married/never lived vs. Married not living with/separated/divorced/widowed	-	-	-.055 (.025)*	-
Some college or tech/vocational school vs. HS diploma/GED	-	-	-.055 (.023)*	-
4-year college degree, grad/professional school vs. HS diploma/GED	-	-	-.095 (.030) [‡]	-

Note 1. Ref = Reference; S/C = South/Central; HS = high school; grad = graduate; prof = professional.

Note 2. Cell values are: Unstandardized parameter estimate (*standard error*).

^aContinuous variable

*
 $p < .05$;

†
 $p < .01$;

‡
 $p < .001$.