J Relig Health (2013) 52:18–31
DOI 10.1007/s10943-012-9640-7

ORIGINAL PAPER

Religion and Selected Health Behaviors Among Latinos in Texas

Ginny Garcia · Christopher G. Ellison · Thankam S. Sunil · Terrence D. Hill

Published online: 22 August 2012

Abstract Though research has shown that religion provides a protective influence with respect to a number of health-related outcomes, little work has examined its influence on patterns of alcohol (especially binge drinking) and tobacco consumption among Latinos in Texas. Thus, we used a probability sample of Texas adults to test this relationship via logistic regression. Our results revealed that clear distinctions emerge on the basis of both denomination and frequency of attendance. Specifically, Protestants who regularly attend religious services are significantly more likely to be abstainers and to have never smoked, while those with no religious affiliation exhibit relatively unfavorable risk profiles. These findings persist despite a range of socio-demographic controls. Our study supports the assertion that religion may serve as an important protective influence on risky health behaviors.

Keywords Religion · Latino · Health · Alcohol · Tobacco

Introduction

Tobacco use and heavy alcohol consumption are considered to be leading contributors to preventable early mortality in the United States (Grucza and Bierut 2006; Mokdad et al. 2004). Alcohol dependence is associated with elevated risk of cirrhosis and other forms of liver disease, various types of cancers, as well as fatal vehicle crashes, partner violence, and harmful effects on maternal and child health. Smoking increases mortality risk as well, primarily via various forms of cancers (e.g., lung, tongue, esophagus, pancreas, cervix) and

G. Garcia (✉)
Department of Sociology, Portland State University, Portland, OR 97207-0751, USA
e-mail: ginny.garciaalexander@pdx.edu

C. G. Ellison · T. S. Sunil
Department of Sociology, University of Texas at San Antonio, San Antonio, TX 78249-0655, USA

T. D. Hill
Department of Sociology, Florida State University, Tallahassee, FL 32306-2270, USA

cardiovascular disease (Grucza and Bierut 2006). With respect to smoking and nicotine dependence, current smokers are more likely to report mental health problems and activity limitations than non-smokers (Hodge et al. 2007). In addition, the societal costs attributed to alcohol and tobacco consumptions are substantial, and they encompass health care and law enforcement expenditures as well as productivity losses (Hodge et al. 2007).

Given these facts, researchers have increasingly focused on examining patterns and correlates of drinking—especially heavy drinking or "binge" drinking—and smoking, with an eye toward identifying factors that may protect against these risky health behaviors. Research on these issues may be particularly important among the Latino (Hispanic) population, for at least two reasons. First, the Latino population has grown at an explosive rate over the past two decades, and Latinos now constitute the single largest minority population in the USA, having recently surpassed African-Americans in population size (Saenz 2010). Second, and perhaps even more importantly, the available evidence indicates that Hispanics[1] may be disproportionately affected by adverse outcomes related to alcohol misuse (Galvan and Caetano 2003; Worby and Organista 2007) and nicotine dependence (Falk et al. 2006).

A number of variables have been linked with alcohol and tobacco consumption patterns, including socioeconomic status and other demographic characteristics (Bobo and Husten 2000; Falk et al. 2006; Galvan and Caetano 2003; Nielsen 2000; Wallace et al. 2003), gender and marital status (Ellison et al. 2008), and acculturation (Chartier and Caetano 2010), among others. However, with just a few notable exceptions (e.g., Levin and Markides 1985, 1988), very little research has examined the role of religion in shaping health outcomes among Latinos in particular. This pioneering research illustrates the need for continuing examination given the clear linkages between religion and health as well as the variations in outcomes. Fewer still have focused on outcomes related to alcohol and tobacco usage (for exceptions, see Ford (2006) and Turner et al. (1994). Our study addresses this gap in the literature by (a) briefly reviewing the literature on social costs of heavy drinking and smoking among Latinos, (b) outlining several arguments linking religious affiliation and practice with these health risk behaviors, and (c) exploring these issues using data from the Hispanic subsample of the Survey of Texas Adults (SoTA), a 2004 statewide telephone sample of adults residing in Texas. Results are discussed in terms of the broader religion–health literature, as well as the small but growing body of work being conducted among Latinos. We identify several study limitations and promising directions for further inquiry.

Background Issues

Adverse Outcomes Associated with Alcohol and Tobacco Use Among Latinos

Rates of alcohol-related problems have increased significantly among Hispanic men in recent decades, while remaining relatively stable among African-Americans and non-Hispanic whites (Galvan and Caetano 2003). Although Hispanics are less likely to develop alcohol dependence in their lifetime, investigators have found that once dependence

[1] Variation by ethnic subgroup has been evidenced and indicates that, among Hispanics, Mexican Americans have higher rates of alcohol-related problems than Cubans and Puerto Ricans (Galvan and Caetano 2003). Our study is based on Texas, which is overwhelmingly Mexican in its composition (88 % of Hispanics). Thus, we do not differentiate between Hispanic subgroups.

occurs, Hispanics have a higher rate of recurrent or persistent alcohol dependence than non-Hispanic whites (Dawson et al. 2005; Galvan and Caetano 2003). In addition, recent research on generational differences in risky health practices reveals a disconcerting trend: Although Hispanic immigrants tend to live healthier lifestyles than their US-born counterparts, these behavioral advantages decline with length of residence in the United States (Lara et al. 2005). For example, US-born women of Mexican descent display higher rates of alcohol dependence than those born outside the USA (Galvan and Caetano 2003).

Patterns such as these are especially important because heavy alcohol use is a precursor to various physical health problems, most directly liver disease. Indeed, Hispanics face elevated risk of liver disease compared with other racial-ethnic subgroups of the US population (Flores et al. 2008). A comparison of age-adjusted death rates from alcohol-related cirrhosis across race-ethnic and gender groups revealed that Hispanic men have the highest rates (12.6) of any group; among women, Latinas rank second (2.2) behind African-Americans (Stinson et al. 2001). In addition to such risks of disease, high rates of alcohol use and abuse among Hispanics are associated with other problems, such as driving under the influence (DUI) and intimate partner violence (IPV) (Chartier and Caetano 2010). These issues disproportionately affect Hispanic males. According to one study, US-born Hispanic men are three times more likely than their African-American or non-Hispanic white counterparts to engage in DUI, and they also had significantly higher rates of DUI-related arrest (Galvan and Caetano 2003). In recent years, however, young Hispanic women aged 18–29 have emerged as a new at-risk population for DUI and IPV (Chartier and Caetano 2010). Further, Hispanics experience particularly high rates of fatal vehicle injuries and alcohol-related accidents (Worby and Organista 2007).

Cigarette smoking is associated with a host of health problems including lung cancer, heart disease, and stroke, and smokers have mortality rates that are 30–80 % higher than non-smokers (CDC 2010a; Koenig et al. 1998). Indeed, among Hispanics, lung cancer is the leading cause of death (CDC 2010a). It is particularly troubling that among the younger age categories, Hispanics display some of the highest rates of cigarette smoking. For example, in a 2009 survey, 19.2 % of Hispanic high school students and 6.7 % of Hispanic middle school students reported that they were current cigarette smokers (CDC 2010a, b). In smoking rates, Hispanics rank second behind non-Hispanic whites at the high school level, and they display the highest rates among race-ethnic subgroups at the middle school level (CDC 2010a). Perhaps these figures should not be surprising, since studies have shown that tobacco products are marketed disproportionately to Hispanics and other ethnic minorities (CDC 1998). The importance of such findings lies in the mounting evidence that persons who begin smoking at an early age are more likely to become adult smokers and to experience increased risk of related health problems in adulthood (CDC 1994). Finally, smoking at an early age is also associated with elevated risk of problematic alcohol behavior, the use of other (including illicit) drugs, and high-risk sexual conduct (CDC 2010a; Myers and Kelly 2006).

Religion and Health Behaviors Among Latinos

A growing body of literature documents salutary links between various dimensions of religious involvement and a wide array of mental and physical health outcomes, including mortality risk (Hummer et al. 2004; Rogers et al. 2010; Sullivan 2010). Although a number of explanations for these patterns have been advanced—for example, reduced exposure to stress, increased social support, positive psychological orientations, adaptive coping responses—one important mechanism underlying the religion-health connection is the

tendency of more religious persons to embrace positive health behaviors (e.g., moderation, preventive care use) while eschewing risky practices (Benjamins et al. 2011; Ellison and Levin 1998).

Several studies have documented inverse associations between regular attendance at religious services and negative behaviors such as smoking and heavy drinking, among many others (Ellison et al. 2008a, b; Gillum 2005; Gillum and Holt 2010; Hill et al. 2006; Koenig et al. 1998). There are several mechanisms via which religious attendance may deter such unhealthy practices (Hoffmann and Bahr 2006; Regnerus and Smith 2005). For example, regular attendees may receive moral messages with health implications (e.g., regarding alcohol use and abuse) through formal means (e.g., sermons) as well as informal interactions with coreligionists. Those who are known to deviate from religious norms concerning these issues may receive encouragement to change and may also be the subject of mild social sanctions, ranging from frowns to overt criticism from fellow members (Benjamins et al. 2011; Krause et al. 2011). To the extent that these health behaviors are linked with core religious tenets, regular attenders—who are often the most religiously committed members—may internalize these norms and values and may incur feelings of psychological discomfort at the prospect of violating these standards. Religious attenders may seek to emulate the lifestyles of role models within the congregation, that is, persons who are regarded as examples of wholesomeness and righteousness (Cochran et al. 1988). Finally, for those persons who participate in congregational affairs at high levels, there may be reduced opportunity to engage in negative behaviors without detection by coreligionists.

Moreover, specific denominations can differ sharply in their attitudes and emphasis on these practices, particularly regarding alcohol use. On one hand, some groups—notably the Roman Catholic Church and many mainline Protestant bodies (e.g., Episcopal, ELCA Lutheran, Presbyterian Church USA)—have a long tradition of accepting the consumption of alcohol by members. Indeed, these religious groups use wine regularly in religious rituals, for celebrating the Eucharist (or Holy Communion) (Ellison et al. 2008b). By contrast, most conservative, that is, fundamentalist and evangelical, Protestant churches and sectarian groups uphold strong norms against the consumption of alcohol. This is the case not only because of specific scriptural injunctions against "drunkenness," but also due to concerns that alcohol indulgence will increase the risk of other harmful or immoral behaviors, such as sexual misconduct or interpersonal violence (Cochran et al. 1988; Ellison et al. 2008a).

Research on the role of religious factors in alcohol and tobacco use may be especially germane to Latinos in the USA. Briefly, although the Latino population has traditionally been—and remains—heavily Catholic, there are clear signs that Protestantism is gaining adherents among Latinos in the USA and throughout Latin America (e.g., Cleary and Steigenga 2007). Recent studies estimate that between 20 and 25 % of US Latinos identify as Protestants and that the vast majority of Latino Protestants belong to fundamentalist or evangelical groups (Espinosa et al. 2003; Perl et al. 2006). Such congregations are thought to provide greater social, emotional, and spiritual intimacy among church members, as well as greater access to clergy, than most Catholic parishes (Dolan and Deck 1994; Leon 1998). Further, for many Latinos, Catholic identity is inextricably linked with a vibrant religio-ethnic popular culture, more so than with institutional or doctrinal Catholics (Espin 1994; Fernández 2007). Thus, for some Latinos, this identity partly reflects ethnic solidarity and family loyalties, participation in life-cycle events, national-origin festivals, and other events, many of which may involve significant alcohol consumption. Indeed, these aspects of Catholic identity may be more important for some Latinos than regular

participation in sacraments or local parish affairs (Fernández 2007; Matovina 2005). Partly for these reasons, compared with Latino Catholics, Latino Protestants express greater religious devotion and attend religious services more often (Ellison et al. 2005). Previous research has demonstrated the protective effects of religion on alcohol and tobacco use. More specifically, regularly attending Protestants are far less likely to smoke or engage in heavy drinking. Thus, given the lack of information on denominational variations in these outcomes among Latinos along with their generally higher levels of religious devotion, there exists an important understudied possibility that there are significant variations in alcohol and tobacco use on the basis of religious affiliation and attendance in the Latino population.

To be sure, a small but growing literature explores the role of religious factors in health and aging among Latinos (Ellison et al. 2009; Krause and Bastida 2009, 2010; Maldonado 1995). However, despite the growing interest in (a) race-ethnic health disparities in general, and Hispanic health practices in particular, and (b) the role of religion in shaping health behaviors, the link between religious factors, and alcohol and tobacco use patterns among Latinos remains understudied. Indeed, outside the research conducted by Levin and Markides in the 1980s on the relationship between various health outcomes and religion among Mexican Americans, the lone exception to this neglect is a study by Ford (2006), based on data from the Fighting Back project, a community-based substance use intervention program funded by the Robert Wood Johnson Foundation. Briefly, Ford combined data from 12 intervention sites—medium-sized cities with relatively large minority populations and relatively high rates of substance use and related problems– and 29 control sites, collected across three waves. She found that among Hispanics (national-origin group unspecified), Protestants were less prone to have consumed alcohol within the past year or to have engaged in binge drinking within the preceding 30 days. Our study builds on this previous work, focusing on a sample of Hispanic adults residing in Texas, which is home to the largest concentration of Mexican Americans in the USA, except for California. In addition to confirming and extending many of Ford's (2006) findings, this study also explores religious variations in smoking as well.

Methods

Data

The analyses performed herein utilize the 2004 SoTA: a statewide probability sample of 1,504 community-dwelling adults in Texas aged 18 and older (Musick 2004). The survey is aimed at learning more about the lives of adults living in Texas and contains information on physical and mental health status, health behaviors, religious activities and beliefs, and general demographics, among other aspects. Surveys were conducted via telephone using a CATI system administered by the Office of Survey Research at the University of Texas at Austin over the period from November 5, 2003, to January 29, 2004. Each interview lasted approximately 30–35 min. The response rates were 37 % at the household level and 89 % at the respondent level. Surveys were administered in Spanish for those respondents who preferred this language ($n = 124$). The analytic sample for this investigation is restricted to the Latino population, thus yielding a final sample size of 345 after adjustments for missing data due to non-response. Though a weighting scheme was developed, it is only appropriate in analyses that utilize the full sample. Thus, we do not apply weights in our models. Analyses were conducted using SAS software.

Measures and Analysis

Our health outcomes of interest are related to both alcohol and tobacco consumption, and four binary measures were created. The first measure was intended to capture non-use of alcohol and was based on the following query: "In the past 12 months, have you had at least 12 drinks of any alcoholic beverages?" Those who reported no were coded as 1; all others were coded as 0. Our second measure assessed problematic or binge drinking (as defined by the CDC) and was based on the following: "In the past 30 days, what is the largest number of drinks you had in a single day?" Men who reported 5 or more and women who reported 4 or more were coded as 1; all others were coded as 0. Next we created measures for current smoking and non-smoking based on the following question: "Are you a current smoker, a former smoker, or have you never smoked?" For current smoking, those who reported in the affirmative were coded as 1; all others were coded as 0. For non-smoking, those who reported that they had never smoked were coded as 1; all others were coded as 0.

Logistic regressions are used to examine the probability of the specified outcome occurring. For example, what are the odds that an individual will report binge drinking when one takes into account the effects of the independent variables? This is the appropriate methodology given that logistic regressions provide models in which the predicted probability is within the bounds of one and zero (Long and Freese 2003). Thus, we are able to consider the underlying propensity for being a binge drinker, etc.

Religion is the main predictor of interest in our study, and we consider two aspects: affiliation and attendance. Affiliation was determined by responses to the following question: "What is your religious preference?" For those who specified Protestant, we were able to ascertain specific denomination via the question: "What specific Protestant denomination, if any?" Responses from these variables were coded into three categories: Catholic, Protestant, and no religion. With respect to attendance, we based our variable on the following: "How often do you attend religious services? Would you say never, less than once a month, 1–3 times a month, once a week, or several times a week?" From this, we distinguished between regular attendees and non-regular attendees, that is, those who attend weekly services or more are considered regular attendees. Following the rationale of religious scholars (Ellison et al. 2005, 2011; Espin 1994), we combined affiliation and attendance to construct the following categories: Regularly Attending Catholic (Catholics with attendance of once per week or more), Regularly Attending Protestant/Sectarian[2] (Protestants with attendance of once per week or more), Non-Regularly Attending Protestant/Sectarian (Protestants with attendance of 1–3 times per month or fewer), No Religion (reference group: Non-Regularly Attending Catholic).

The analyses also control for a number of known correlates of religious involvement and health behaviors. These measures include gender (1 = female, 0 = male), age (18–24, 25–44, 45–64, 65+), marital status (1 = married/partnered, 0 = otherwise), citizenship (1 = non-citizen, 0 = otherwise), level of education (less than high school education, high school diploma or GED, college and beyond), income[3] (1 = less than $15,000 per year,

[2] Protestant/Sectarian groups include Christian, Mormon, Jehovah's Witness, Evangelical, Conservative Protestant, or Other. This grouping contains a nominal amount of sectarians, that is, Mormons and Jehovah's Witness. The majority of respondents in this category are Conservative Protestant.

[3] Analyses were conducted based on multiple measures of income yielding no appreciable difference. This measure was created based on the survey question: "Please tell me the total income of all members of your family living in your house in 2002."

0 ≥ $15,000 per year), and region (1 = border county resident, 0 = non-border county resident). These measures were chosen on the basis of the work of previous scholars who have demonstrated variations in health outcomes on the basis of gender (Ellison et al. 2008a; Levin et al. 1996; Turner et al. 1994), level of education (Levin et al. 1996), marital status (Ellison et al. 2008a), and income (Bobo and Husten 2000). We additionally control for citizenship status and residence along the border given the impact of such factors on our population of interest.

Results

The following provides a summary of the descriptive statistics for our sample of Latinos[4] (see Table 1). The highest rates of binge drinking and current smoking were observed for those who reported no religion (44.74, 34.21 %). In comparison, the lowest rates observed for binge drinking and current smoking were for regularly attending Protestant and sectarians (6.82, 6.82 %). Overall, males were twice as likely to report binge drinking and current smoking as females. For example, approximately 40 % of men reported binge drinking compared to slightly fewer than 18 % of women. Those in the youngest age category, that is, 18–24 displayed the highest rates of binge drinking at 39.66 %, and the rates diminished with each increase in age category. The reverse trend is evidenced for alcohol abstaining. Those aged 45–64 reported the highest rates of current smoking at 20.24 %, though they were not significantly different from the other age groups in smoking behavior. Married or partnered respondents had lower rates of binge drinking and significantly lower rates of current smoking than their counterparts at 22.86 and 11.90 %, respectively (non-married/partnered rates were 33.33 and 25.93 %). Additionally, non-citizens had lower rates of binge drinking and current smoking than citizens, and a significantly greater percentage reported abstaining from alcohol (65.93 vs. 49.21 %). With respect to education, a positive association was observed with binge drinking (Less than High School: 20.24 %, High School/GED: 28.67 %, College and Beyond: 29.66 %), and there was a negative association for current smoking (22.62, 16.08, 15.25 %). For income, those who made less than $15,000 had significantly lower rates of binge drinking than those who made more (13.64 % compared to 28.90 %). Finally, border residents evidenced higher rates of binge drinking (29.23 vs. 25.58 %) and lower rates of current smoking (15.38 vs. 18.60 %) than non-border residents.

Table 2 displays the results of logistic regression models estimating the net effects of religious variables and controls on indicators of alcohol and tobacco use. Cell entries are odds ratios. We present two models for each of the four outcomes: one with only religious predictors and one with socio-demographic control variables added. Several findings are noteworthy. According to Model 1, the risk of binge drinking is decreased by 77 % (OR = 0.23, $p < .01$) for regularly attending Protestants and sectarians as compared with their irregularly attending Catholic counterparts (the modal category in our sample), while the odds of binge drinking are 110 % greater (OR = 2.10, $p < .05$) for religiously unaffiliated respondents. When control variables are included in Model 2, the net effect for

[4] The vast majority of the sample is Mexican (82.57 %); other choices for Hispanic descent included Puerto Rican (1.07 %), Cuban (0.27 %), Latin American (4.02 %), Central American (3.75 %), Spanish (7.24 %), and other (1.07 %). This is slightly different from the national composition of Hispanics, though Mexican Americans still comprise the majority of Latinos. The 2010 census indicates the following: Mexican (63.0 %), Puerto Rican (9.2 %), Cuban (3.5 %), Dominican (2.8 %), Central American (excluding Mexican) (7.9 %), South American (5.5 %), Spanish (1.3 %), and other (1.3 %).

Table 1 Descriptive statistics for selected health behaviors and socio-demographic characteristics between religious groups among Latinos, survey of Texas adults, 2004 ($n = 345$)

	Binge drinking	Alcohol abstaining	Current smoking	Never smoked
Catholic, regular attendance	25.24	54.37	14.56	61.17
Catholic, non-regular attendance	28.03	53.79	18.94	56.82
Protestant/sectarian, regular attendance	6.82*	79.55*	6.82*	75.00*
Protestant/sectarian, non-regular attendance	37.04	40.74	11.11	55.56
No religion	44.74*	28.95*	34.21*	47.37
Gender (%)				
Male	39.86*	40.56*	25.87*	46.15*
Female	17.82*	62.87*	11.39*	68.32*
Age				
18–24	39.66*	41.38*	18.97	62.07
25–44	28.33*	52.22*	16.11	61.67
45–64	21.43*	59.52*	20.24	50.00
65+	4.35*	73.91*	13.04	65.22
Marital status (%)				
Married/partnered	22.86*	56.19	11.90*	62.38
All others	33.33*	49.63	25.93*	54.07
Citizenship (%)				
Non-citizen	24.18	65.93*	13.19	60.44
Citizen	27.95	49.21*	18.90	58.66
Education (%)				
<HS	20.24	64.29	22.62	52.38
HS/GED	28.67	48.95	16.08	58.04
College+	29.66	51.69	15.25	65.25
Income (%)				
<$15,000	13.64*	75.00*	15.91	59.09
$15,000+	28.90*	50.50*	17.61	59.14
Border county resident (%)				
Border resident	29.23	51.54	15.38	60.77
Non-border res.	25.58	54.88	18.60	58.14

* χ^2 value is statistically significant at the .05 level or below

regularly attending Protestants is increased slightly (OR = 0.13, $p < .01$), while the net effect for religious non-affiliation is reduced to near statistical insignificance. Turning to the models for alcohol abstaining, Model 1 indicates that the odds of abstention are over 200 % higher (OR = 3.29, $p < .01$) for regularly attending Protestants and sectarians when only religious variables are considered. By contrast, the odds of abstention are 65 % lower (OR = 0.35, $p < .01$) for Latinos with no religious affiliation. When control variables are added (Model 2), the difference in the odds of abstention between regularly attending Protestants and irregularly attending Catholics increases substantially

Table 2 Estimated net effects of religious denomination/attendance and covariates on selected health behaviors among Latinos, survey of Texas adults, 2004 ($n = 345$ after listwise deletion)

	Binge drinking		Alcohol abstaining		Current smoking		Never smoked	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Catholic, regular attendance	0.88 (*−0.13*)	0.68 (*−0.39*)	1.01 (*0.01*)	1.33 (*0.28*)	0.70 (*−0.35*)	0.60 (*−0.52*)	1.22 (*0.20*)	1.32 (*0.28*)
Protestant/sectarian, regular attendance	0.23** (*−1.66*)	0.13** (*−2.01*)	3.29** (*1.19*)	4.40*** (*1.48*)	0.30^{+} (*−1.20*)	0.24* (*−1.42*)	2.32* (*0.84*)	2.54* (*0.93*)
Protestant/sectarian, non-regular attendance	1.30 (*0.42*)	1.37 (*0.31*)	0.58 (*−0.54*)	0.74 (*−0.31*)	0.51 (*−0.66*)	0.35^{+} (*−1.05*)	0.97 (*−0.03*)	0.98 (*−0.02*)
No religion (versus Catholic, non-regular attendance)	2.10* (*0.74*)	1.86^{+} (*0.62*)	0.35** (*−1.06*)	0.42* (*−0.86*)	2.14^{+} (*0.76*)	2.45* (*0.90*)	0.70 (*−0.36*)	0.64 (*−0.45*)
Female	–	0.29*** (*−1.24*)	–	2.81*** (*1.03*)	–	0.30*** (*−1.20*)	–	2.76*** (*1.02*)
Age	–	0.59** (*−0.52*)	–	1.49** (*0.40*)	–	1.12 (*0.12*)	–	0.81 (*−0.20*)
Married/partnered	–	0.54* (*−0.61*)	–	1.31 (*0.27*)	–	0.30*** (*−1.19*)	–	1.62* (*0.48*)
Non-citizen	–	1.04 (*0.04*)	–	1.91* (*0.65*)	–	0.65 (*−0.43*)	–	1.13 (*0.13*)
Education	–	1.18 (*0.16*)	–	0.98 (*−0.02*)	–	0.58** (*−0.54*)	–	1.50** (*0.40*)
Under $15,000 per year	–	0.30** (*−1.19*)	–	3.67*** (*1.30*)	–	0.68 (*−0.38*)	–	1.21 (*0.19*)
Border county resident	–	1.45 (*0.37*)	–	0.73 (*−0.31*)	–	0.88 (*−0.13*)	–	0.98 (*−0.02*)
Constant	−0.95	0.69	0.17	−1.42	−1.41	0.53	0.26	−0.87
Pseudo R^2	0.04	0.16	0.05	0.14	0.04	0.13	0.02	0.07

Cell entries are odds ratios. Coefficients are presented in italics below odds ratios

*** $p < .001$; ** $p < .01$; * $p < .05$; $^{+}$ $p < .10$

(OR = 4.40, $p < .001$), while the estimated net effect of religious non-affiliation is reduced somewhat (OR = 0.42, $p < .05$).

With regard to current smoking, Model 1 reveals that the odds of smoking are 70 % lower (OR = 0.30, $p < .10$) for regularly attending Protestants and sectarians as compared with irregularly attending Catholics. Religious unaffiliates are more likely to be current smokers (OR = 2.14, $p < .10$). In Model 2, this net effect increases slightly (OR = 0.24, $p < .05$), while the odds of smoking are increased to 145 % (OR = 2.45, $p < .05$) for religiously unaffiliated persons as compared with irregularly attending Catholics. Our results also indicate that regularly attending Protestants are substantially more likely than irregularly attending Catholics to have never smoked (OR = 2.32, $p < .05$ in Model 1, OR = 2.54, $p < .05$ in Model 2).

Finally, given the dearth of information about other predictors of Latino health behaviors, we should note that several of our covariates are reliable predictors of alcohol

and tobacco use in this sample. Specifically, women are much more likely to abstain from alcohol and to have never smoked than men, and thus, not surprisingly, they are disinclined to be current smokers or binge drinkers. The risk of binge drinking is reduced with increases in age categories, and correspondingly, the odds of abstaining from alcohol are higher as age increases. Married persons, or those in stable unions, are much less likely than others to be binge drinkers or current smokers. Non-citizens and persons making less than $15,000 per year are more prone to avoid alcohol, perhaps due in part to the cost and the elevated risk of legal troubles associated with heavy drinking.

Discussion and Conclusion

Despite the burgeoning literature on the religion-health connection, few studies in this area have focused on US Latinos, and even fewer have centered on the possible role of religious factors in shaping health behaviors such as smoking and heavy drinking within this population. This oversight is important for several reasons. First, the Latino population has recently surpassed African-Americans to become the largest single minority population in the USA (Saenz 2010). Second, as we noted earlier, alcohol and tobacco use pose particular problems for the health of Latinos, including comparatively high rates of liver disease and lung cancer, as well as other social costs due to these risky behaviors (CDC 2010a; Worby and Organista 2007). Third, a number of studies link religious involvement, often measured in terms of the frequency of attendance at services, with avoidance of risky health behaviors and the adoption of healthy practices in the general population (Benjamins et al. 2011; Gillum 2005; Hill et al. 2006, 2007). Fourth, religion plays a particularly important role in the lives of many Latino individuals and communities, and although Catholicism remains the dominant religious group among Latinos, evangelical Protestantism also appears to be gaining adherents (De La Torre 2008; Espinosa et al. 2003). This study augments the limited body of work on religion and health among Latinos by examining the association between denomination/attendance categories and several indicators of drinking behavior (e.g., abstention, binge drinking) and smoking among a statewide sample of Latinos in Texas.

Our findings demonstrate that, compared to Catholics who do not attend services regularly (the modal category in our sample), regularly attending Protestants—nearly all of whom belong to evangelical or sectarian groups—exhibit distinctive patterns of drinking and smoking behavior. Specifically, these regularly attending Protestants are much more likely to be abstainers from alcohol and to have never smoked, and they are much less likely to engage in binge drinking or to be current smokers. By contrast, there are no distinctive patterns involving either (a) irregularly attending Protestants or (b) regularly Catholics. Latinos reporting no religious affiliation tend to exhibit comparatively high risks of binge drinking and current smoking. Our findings persist despite controls for a number of socio-demographic variables that could potentially confound the association between religion and health practices.

Taken together, these patterns may reflect several factors. For example, Catholicism has typically held relatively permissive norms regarding the consumption of alcohol, which is used in the celebration of the Eucharist. For many Latino Catholics, religion may be bound up with ethnic cultural activities, life-cycle observances, and other events that can include the consumption of alcohol. By contrast, evangelical Protestant and sectarian groups tend to embrace conservative views regarding certain types of health-related conduct, especially alcohol use and abuse (Ellison et al. 2008a). These norms may have particular influence

among regularly attending evangelicals and sectarians, who may be the most committed members in those groups. Conformity to religious group norms may be produced through several mechanisms, including: (a) regular exposure to moral messages via sermons and other formal pronouncements, as well as informal interaction with fellow members; (b) internalization of group-specific norms; (c) emulation of role models within the church, who are likely to avoid alcohol and tobacco; and (d) greater risk of detection and negative social sanctions (e.g., expressions of disapproval), among those evangelicals and sectarians who are most involved in their churches and embedded within coreligionist networks (Hoffmann and Bahr 2006; Regnerus and Smith 2005). In addition, some studies suggest that Latinos' conversion to evangelical or sectarian religions can be part of a broader personal transformation, one that involves abandoning negative lifestyles such as alcohol or drug addiction or other problematic behaviors, and involvement in social and spiritual networks that will affirm and support "turning over a new leaf" (e.g., Smilde 2007).

The findings reported here are important for at least two reasons. First, they contribute to the literature linking religious factors with health behavior, and to the small but growing body of work on the religion-health connection among Latinos in the USA. Although a host of topics in the broader religion–health literature have yet to be examined among Latinos, our results suggest that closer attention to differences between Catholicism, which remains the dominant religion, and smaller evangelical and sectarian bodies may be warranted in such studies. In light of the differences in health practices observed in this study, it would be useful to explore possible religious variations in health practices and outcomes across Latino subgroups and to investigate religious effects on rates of morbidity and mortality among Latinos.

Second, the results reported here may be valuable for public health professionals and others seeking to design interventions aimed at deterring smoking and heavy drinking among Latinos. Religious leaders and congregations have played important roles in disseminating health information, conducting health education and screening programs, and undertaking other health education efforts among underserved populations (e.g., African-Americans) (Campbell et al. 2007). Given the key role of Catholicism within the Latino population, closer alliances between Catholic leaders and the public health community may pay dividends by encouraging Catholic laypersons to avoid risky behaviors, practice better health vigilance, and enact healthier lifestyles overall. Additional research is needed to clarify the micro-level congregational dynamics within evangelical and sectarian groups that yield such low levels of smoking and binge drinking (Benjamins et al. 2011; Krause et al. 2011). For example, such research might shed light on their mechanisms of socialization and conformity and could offer additional insights into the role of religion in shaping health behavior and the potential for interventions in other faith communities.

Limitations

Like all research, our study is characterized by several limitations. First, despite the usefulness of the SoTA for research on religion and health among diverse race-ethnic groups, we have a relatively small sample of Latinos, resulting in very modest numbers of (a) evangelical Protestants and sectarians and (b) non-religious persons. Although these small subsample sizes probably inflate the standard errors associated with the estimates, thereby "stacking the deck" against finding statistically significant religious group differentials, it is noteworthy that our results reveal clear and consistent evidence of such differences. Nevertheless, our small sample size precludes careful examination of subgroup

variations in the associations between religious factors and health behaviors (e.g., by gender, age/cohort, SES, nativity, acculturation).

Second, the data come from only one state, Texas, and the vast majority of Latinos in that state are of Mexican descent. To be sure, Mexican Americans currently represent approximately two-thirds of the Latino population in the USA (Saenz 2010), yet it is unclear whether the findings reported here can be generalized to other regions of the US or other Latino national-origin groups. Third, the SoTA dataset lacks items that measure processes of conformity, modeling, or other mechanisms via which regular attendance in evangelical or sectarian congregations may deter drinking and smoking. Exploring these issues should be a priority for investigators in the future.

Despite the aforementioned limitations, we believe that our study has made a significant original contribution to the literature on religion and health practices among US Latinos, documenting distinctive patterns among regularly attending evangelicals and sectarians. Given the role of religion and the evidence of religious ferment among the growing Latino population, it is vitally important for religion–health researchers to devote greater attention to Latinos. Future studies along the lines sketched above are needed to illuminate the role of religious factors in shaping health behaviors and outcomes within this understudied and underserved population.

References

Benjamins, M. R., Ellison, C. G., Krause, N. M., & Marcum, J. P. (2011). Religion and preventive service use: Do congregational support and religious beliefs explain the relationship between attendance and utilization? *Journal of Behavioral Medicine,*. doi:10.1007/s10865-011-9318-8.

Bobo, J. K., & Husten, C. (2000). Sociocultural influences on smoking and drinking. *Alcohol Research & Health: The Journal of the National Institute on Alcohol Abuse and Alcoholism, 24*(4), 225–232.

Campbell, M. K., Hudson, M. A., Resnicow, K., Blakeney, N., Paxton, A., & Baskin, M. (2007). Church-based health promotion interventions: Evidence and lessons learned. *Annual Review of Public Health, 28*(1), 213–234.

CDC. (1994). *Preventing tobacco use among young people: A report of the US surgeon general*. Atlanta, GA: Centers for Disease Control and Prevention.

CDC. (1998). *Tobacco use among U.S. racial/ethnic minority groups—African Americans, American Indians, Asian Americans and Pacifica Islanders, and Hispanics: A report of the surgeon general*. Atlanta, GA: Centers for Disease Control and Prevention.

CDC. (2010a). *Smoking and tobacco use*. Atlanta, GA: Centers for Disease Control and Prevention/Office on Smoking and Health.

CDC. (2010b). Tobacco use among middle and high school students—United States, 2000–2009. *Morbidity and Mortality Weekly Report, 59*(33), 1063–1068.

Chartier, K., & Caetano, R. (2010). Ethnicity and health disparities in alcohol research. *Alcohol Research & Health: The Journal of the National Institute on Alcohol Abuse and Alcoholism, 33*(1&2), 152–161.

Cleary, E. L., & Steigenga, T. J. (2007). *Conversion of a continent: Contemporary religious change in Latin America*. New Brunswick, NJ: Rutgers University Press.

Cochran, J. K., Beeghley, L., & Bock, E. W. (1988). Religiosity and alcohol behavior: An exploration of reference group theory. *Sociological Forum, 3*(2), 256–276.

Dawson, D. A., Grant, B. F., Stinson, F. S., Chou, P. S., Huang, B., & Ruan, W. J. (2005). Recovery from DSM-IV alcohol dependence: United States, 2001–2002. *Addiction, 100*(3), 281–292.

De La Torre, M. A. (2008). Religion and religiosity. In H. Rodríguez, R. Saenz, & C. Menjívar (Eds.), *Latinas/os in the United States: Changing the face of América*. New York: Springer.

Dolan, J. P., & Deck, A. F. (1994). *Hispanic Catholic culture in the U.S.: Issues and concerns*. Notre Dame, IN: University of Notre Dame Press.

Ellison, C. G., Acevedo, G. A., & Ramos-Wada, A. I. (2011). Religion and attitudes toward same-sex marriage among U.S. Latinos. *Social Science Quarterly, 92*(1), 35–56.

Ellison, C. G., Barrett, J. B., & Moulton, B. E. (2008a). Gender, marital status, and alcohol behavior: The neglected role of religion. *Journal for the Scientific Study of Religion, 47*(4), 660–677.

Ellison, C. G., Bradshaw, M., Storch, J. E., Rote, S., & Trevino, M. (2008b). Religion and alcohol use among college students: Exploring the role of domain-specific religious salience. *Journal of Drug Issues, 38*, 821–846.

Ellison, C. G., Echevarria, S., & Smith, B. (2005). Religion and abortion attitudes among U.S. Hispanics: Findings from the 1990 Latino national political survey. *Social Science Quarterly, 86*(1), 192–208.

Ellison, C. G., & Levin, J. S. (1998). The religion-health connection: Evidence, theory, and future directions. *Health Education & Behavior: The Official Publication of the Society for Public Health Education, 25*(6), 700–720.

Ellison, C. G., Ryan, D. N., Finch, B. K., & Salinas, J. J. (2009). Religious involvement and depressive symptoms among Mexican-origin adults in California. *Journal of Community Psychology, 37*(2), 171–193.

Espin, O. O. (1994). Popular Catholicism among Latinos. In J. P. Dolan & A. F. Deck (Eds.), *Hispanic Catholic culture in the U.S.: Issues and concerns* (pp. 308–359). Notre Dame, IN: University of Notre Dame Press.

Espinosa, G., Elizondo, V. P., & Miranda, J. (2003). *Hispanic churches in American public life: Summary of findings*. Notre Dame, IN: Institute for Latino Studies, University of Notre Dame.

Falk, D. E., Yi, H., & Hiller-Sturmhofel, S. (2006). An epidemiologic analysis of co-occurring alcohol and tobacco use disorders. *Alcohol Research & Health: The Journal of the National Institute on Alcohol Abuse and Alcoholism, 29*(3), 162–171.

Fernández, E. C. (2007). *Mexican-American Catholics*. New York: Paulist Press.

Flores, Y. N., Yee, H. F., Leng, M., Escarce, J. J., Bastani, R., Salmerón, J., et al. (2008). Risk factors for chronic liver disease in Blacks, Mexican Americans, and Whites in the United States: Results from NHANES IV, 1999–2004. *American Journal of Gastroenterology, 103*(9), 2231–2238.

Ford, J. M. (2006). Some implications of denominational heterogeneity and church attendance for alcohol consumption among Hispanics. *Journal for the Scientific Study of Religion, 45*(2), 253–267.

Galvan, F. H., & Caetano, R. (2003). Alcohol use and related problems among ethnic minorities in the United States. *Alcohol Research & Health: The Journal of the National Institute on Alcohol Abuse and Alcoholism, 27*(1), 87–94.

Gillum, R. F. (2005). Frequency of attendance at religious services and cigarette smoking in American women and men: The third national health and nutrition examination survey. *Preventive Medicine, 41*(2), 607–613.

Gillum, R. F., & Holt, C. L. (2010). Associations between religious involvement and behavioral risk factors for HIV/AIDS in American women and men in a national health survey. *Annals of Behavioral Medicine, 40*(3), 284–293.

Grucza, R. A., & Bierut, L. J. (2006). Co-occurring risk factors for alcohol dependence and habitual smoking. *Alcohol Research & Health: The Journal of the National Institute on Alcohol Abuse and Alcoholism, 29*(3), 172–203.

Hill, T. D., Burdette, A. M., Ellison, C. G., & Musick, M. A. (2006). Religious attendance and the health behaviors of Texas adults. *Preventive Medicine, 42*(4), 309.

Hill, T. D., Ellison, C. G., Burdette, A. M., & Musick, M. A. (2007). Religious involvement and healthy lifestyles: Evidence from the survey of Texas adults. *Annals of Behavioral Medicine, 34*(2), 217–222.

Hodge, D. R., Andereck, K., & Montoya, H. (2007). The protective influence of spiritual-religious lifestyle profiles on tobacco use, alcohol use, and gambling. *Social Work Research, 31*(4), 211–219.

Hoffmann, J. P., & Bahr, S. J. (2006). Crime/deviance. In H. R. Ebaugh (Ed.), *Handbook of religion and social institutions* (pp. 241–263). Berlin: Springer.

Hummer, R. A., Ellison, C. G., Rogers, R. G., Moulton, B. E., & Romero, R. R. (2004). Religious involvement and adult mortality in the United States: Review and perspective. *Southern Medical Journal, 97*(12), 1223–1230.

Koenig, H. G., George, L. K., Cohen, H. J., Hays, J. C., Larson, D. B., & Blazer, D. G. (1998). The relationship between religious activities and cigarette smoking in older adults. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences, 53*(6), 426–434.

Krause, N., & Bastida, E. (2009). Religion, suffering, and health among older Mexican Americans. *Journal of Aging Studies, 23*(2), 114–123. doi:10.1016/j.jaging.2008.11.002.

Krause, N., & Bastida, E. (2010). Religion and health among older Mexican Americans: Exploring the influence of making mandas. *Journal of Religion and Health*, 1–13. doi:10.1007/s10943-010-9389-9.

Krause, N., Shaw, B., & Liang, J. (2011). Social relationships in religious institutions and healthy lifestyles. *Health Education & Behavior, 38*(1), 25–38.

Lara, M., Gamboa, C., Kahramanian, M. I., Morales, L. S., & Bautista, D. E. (2005). Acculturation and Latino health in the United States: A review of the literature and its sociopolitical context. *Annual Review of Public Health, 26*, 367–397.

Leon, L. (1998). Born Again in East L.A.: The congregation as border space. In S. Warner & J. G. Wittner (Eds.), *Gatherings in diaspora: Religious communities and the new immigration*. Philadelphia, PA: Temple University Press.

Levin, J. S., & Markides, K. S. (1985). Religion and health in Mexican Americans. *Journal of Religion and Health, 24*(1), 60–69.

Levin, J. S., & Markides, K. S. (1988). Religious attendance and psychological well-being in middle-aged and older Mexican Americans. *Sociology of Religion, 49*(1), 66–72. doi:10.2307/3711104.

Levin, J. S., Markides, K. S., & Ray, L. A. (1996). Religious attendance and psychological well-being in Mexican Americans: A panel analysis of three-generations data. *The Gerontologist, 36*(4), 454–463. doi:10.1093/geront/36.4.454.

Long, J. S., & Freese, J. (2003). *Regression models for categorical dependent variables using STATA*. College Station, TX: STATA Press.

Maldonado, D. (1995). Religiosity and religious participation among Hispanic elderly. *Journal of Religious Gerontology, 9*(1), 41–61.

Matovina, T. (2005). *Guadalupe and her faithful: Latino Catholics in San Antonio, from colonial times to the present*. Baltimore, MD: Johns Hopkins University Press.

Mokdad, A., Marks, J., Stroup, D., & Gerberding, J. (2004). Actual causes of death in the United States, 2000. *Journal of the American Medical Association, 291*(10), 1238–1245.

Musick, M. A. (2004). *Survey of Texas adults*. Austin, TX: University of Texas at Austin.

Myers, M. G., & Kelly, J. F. (2006). Cigarette smoking among adolescents with alcohol and other drug use problems. *Alcohol Research & Health: The Journal of the National Institute on Alcohol Abuse and Alcoholism, 29*(3), 221–227.

Nielsen, A. L. (2000). Examining drinking patterns and problems among Hispanic groups: Results from a national survey. *Journal of Studies on Alcohol, 61*(2), 301–310.

Perl, P., Greely, J. Z., & Gray, M. M. (2006). What proportion of adult Hispanics are Catholic? A review of survey data and methodology. *Journal for the Scientific Study of Religion, 45*(3), 419–436.

Regnerus, M. D., & Smith, C. (2005). Selection effects in studies of religious influence. *Review of Religious Research, 47*(1), 23–50.

Rogers, R. G., Everett, B. G., Onge, J. M. S., & Krueger, P. M. (2010). Social, behavioral, and biological factors, and sex differences in mortality. *Demography, 47*(3), 555–578.

Saenz, R. (2010). Latinos in the United States 2010. *Population Bulletin Update*, December 2010.

Smilde, D. (2007). *Reason to believe: Cultural agency in Latin American evangelicalism*. Berkeley: University of California Press.

Stinson, F. S., Grant, B. F., & Dufour, M. C. (2001). The critical dimension of ethnicity in liver cirrhosis mortality statistics. *Alcoholism, Clinical and Experimental Research, 25*(8), 1181–1187.

Sullivan, A. R. (2010). Mortality differentials and religion in the United States: Religious affiliation and attendance. *Journal for the Scientific Study of Religion, 49*(4), 740–753.

Turner, N. H., Ramirez, G. Y., Higginbotham, J. C., Markides, K., Wygant, A. G., & Black, S. (1994). Tri-ethnic alcohol use and religion, family, and gender. *Journal of Religion and Health, 33*(4), 341–352.

Wallace, J. M., Brown, T. N., Bachman, J. G., & LaVeist, T. A. (2003). The influence of race and religion on abstinence from alcohol, cigarettes and marijuana among adolescents. *Journal of Studies on Alcohol, 64*, 843–848.

Worby, P. A., & Organista, K. C. (2007). Alcohol use and problem drinking among male Mexican and Central American im/migrant laborers: A review of the literature. *Hispanic Journal of Behavioral Sciences, 29*(4), 413–455.