



# Predictors of Alcohol Use Among Latinx Men in South Florida: Machismo as a Correlate of Alcohol Use Frequency and Quantity

Patria Rojas<sup>1,2,5</sup> · Weize Wang<sup>2,3</sup> · Mariana Sanchez<sup>1,2</sup> · Gira Ravelo<sup>2,5</sup> · Miguel Ángel Cano<sup>4</sup> · Gemma Galvez<sup>1</sup> · Tan Li<sup>3</sup> · Alvonee C. Penn<sup>1</sup> · Jose F. Colon-Burgos<sup>2</sup> · Mario De La Rosa<sup>2,5</sup> · Victoria Behar-Zusman<sup>5</sup>

Accepted: 8 November 2022 / Published online: 13 December 2022

© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2022

## Abstract

Previous studies have found Latinx cultural values to be positively associated with healthy behaviors. This study aims to examine socioeconomic and cultural correlates of alcohol use among Latinx adult men living in Miami-Dade County, Florida. The study sample included 122 Latinx adult men (mean age=44, SD=10), predominantly of South and Central American origin. Data was collected using REDCap. Interviews included the Timeline Follow-Back scale for alcohol use. Results indicate that Caribbean participants were significantly less likely to report drinking in the past 90 days (aOR=0.08, p=0.042) compared to their Venezuelan counterparts. Higher *machismo* scores were associated with low drinking frequency (aRR=0.67, p=0.043), while no significant associations were found between machismo and other drinking outcomes. Drinking quantity and frequency are significantly associated with higher income and authorized immigration status in the US among Latinx men in South Florida. Higher machismo scores were associated with low drinking frequency.

**Keywords** Latinx men · Alcohol · Drinking frequency · Machismo · Caballerismo · Latino men · South Florida

## Background

The etiology of alcohol use among adult Latinx men has

been primarily studied among Mexican American men who were born in the United States (U.S.) and elsewhere [1–3]. Castañeda [3] documented that cultural beliefs and values,

✉ Patria Rojas  
proja003@fiu.edu

Weize Wang  
wwang033@fiu.edu

Mariana Sanchez  
msanche@fiu.edu

Gira Ravelo  
gravelo@fiu.edu

Miguel Ángel Cano  
mcanojr@fiu.edu

Gemma Galvez  
ggalv006@fiu.edu

Tan Li  
tanli@fiu.edu

Alvonee C. Penn  
apenn021@fiu.edu

Jose F. Colon-Burgos  
jcolonbu@fiu.edu

Mario De La Rosa

delarosa@fiu.edu

Victoria Behar-Zusman  
vmitrani@miami.edu

<sup>1</sup> Department of Health Promotion and Disease Prevention, Robert Stempel College of Public Health and Social Work, Florida International University, 11200 SW 8th Street, Miami, FL 33199, USA

<sup>2</sup> CRUSADA, Robert Stempel College of Public Health and Social Work, Florida International University, 11200 SW 8th Street, Miami, FL 33199, USA

<sup>3</sup> Department of Biostatistics, Robert Stempel College of Public Health and Social Work, Florida International University, 11200 SW 8th Street, Miami, FL 33199, USA

<sup>4</sup> Department of Epidemiology, Robert Stempel College of Public Health and Social Work, Florida International University, 11200 SW 8th Street, Miami, FL 33199, USA

<sup>5</sup> CLaRO, University of Miami; School of Nursing and Health Studies, University of Miami, Coral Gables, FL 33124, USA

such as gender norms (e.g., *machismo* and *caballerismo*), have been linked to alcohol use behaviors among Latinx men of Mexican descent. Machismo is a traditional Latinx male gender norm that encompasses hyper-masculinity, aggression, and dominance, and it has been associated with alcohol use risk factors [4]. However, within a more broadened definition, machismo includes positive aspects such as family protection, responsibility, and hard work [5]. Conversely, caballerismo focuses on emotional connectedness, familial cohesion, and social responsibility, and it has been associated as a protective health factor for outcomes such as self-esteem [4, 5]. Yet, the influence of machismo and caballerismo on the alcohol use behaviors of men of South and Central American or Cuban descent living in the U.S. has not been widely studied. The present study investigates alcohol use among a diverse sample of Latinx men living in Miami-Dade County (MDC).

Several papers published between 2018 and 2021 examined the relationship between masculinity and substance misuse; results from one study indicated that the perception and endorsement of machismo norms was associated with alcohol misuse [6]. Moreover, a literature review that examined traditional gender roles among Latinxs men highlighted that, across studies, those who closely aligned with traditional machismo were likely to have a strong association with alcohol use [7]. Young men are more likely to endorse machismo [4] along with choosing to drink more because drinking is perceived as normal masculine behavior; but older Latinx men may refrain from hazardous drinking in order to maintain dignity and family responsibilities [5]. Moreover, alcohol misuse has been associated with a lower level of empathy and lack of pro-social behaviors [8]. Despite receiving alcohol detox treatments, men with problematic alcohol use report lower pro-social behaviors than men who do not use alcohol [8]. Lower empathy and moral compass were consistently low even after men who drank a moderate amount of alcohol were compared with a control group [9]. More recent studies using a multidimensional definition of machismo have included positive social behavioral aspects of machismo such as care and protection of the family, respect, dignity and hard work. In those studies machismo has not been significantly associated with alcohol use [5, 10, 11]. However, Perrotte and Zamboanga [7] discussed caballerismo and its relation to increased well-being and increased conflict resolution, which have been found to be associated with less alcohol consumption [12]. Using the theory of planned behavior, the present study examined the association between gender norms and alcohol use among a diverse group of South Florida Latinx men.

## Theoretical Framework

The Theory of Planned Behavior (TPB) has been utilized to predict human behavior particularly frequency of alcohol use. TPB components were not tested in this study, instead gender norms were predicted to be associated with drinking frequency. Thus, guided by TPB, the present study aimed to examine correlates of alcohol use frequency and quantity among Latinx adult men. Notably, in addition to their geographic distinctions, urban communities in MDC are predominantly composed of Latinx individuals of South American and Caribbean origin, whereas Latinx men in semirural areas of MDC are largely of Central American and Mexican origin. We hypothesized that machismo would be associated with higher alcohol use frequency and quantity for all participants.

## Methods

The present study is a secondary analysis of a National Institutes of Health (NIH) funded community based clinical study that investigated the effectiveness of an HIV prevention program targeting Latinx fathers and sons in MDC. Participants were recruited using conventional community outreach activities such as placing printed fliers in community organizations, participating in community meetings, social media advertisements, and word-of-mouth. Using only baseline data collected from the fathers, the study sample included 122 male participants aged 18–66 (Mean = 44, SD = 10). Most participants were born in Venezuela (25%), and the second largest group were from other Mexico (22%) (See Table 1). The eligibility criteria for fathers included: (a) being 18 years or older, (b) being the father, or father figure, of an adolescent between the ages of 11–17, (c) living or working in MDC, (d) self-identifying as Latinx, (e) and consenting to participate in one of two randomly assigned groups (i.e., intervention or control groups). Data were collected in Spanish using REDCap survey software, and phone interviews were facilitated by bilingual and bicultural trained interviewers. Measures that were not already available in Spanish were translated into Spanish via translation/back translation methods using a well-established translation protocol with institutional review board approval. Interviewers received a two-day training on the protocol administration and received Collaborative Institutional Training Initiative (CITI) human subjects research certifications. 92% (92%) of the interviews were completed via phone due to the Severe Acute Respiratory Syndrome Corona Virus-2019 (SARS COVID-19) pandemic. This study was approved by the institutional review board of a large private university in Miami, Florida.

**Table 1** Participants' baseline characteristics (N=122)

Variable	Mean (SD.)	Median	Range
Age in years	43.5 (9.8)	44.0	[18, 66]
Depressive symptoms	4.4 (3.6)	4.0	[0, 20]
Anxiety	2.9 (3.2)	2.0	[0, 16]
Years living in the U.S.	14.4 (11.6)	15.0	[1, 47]
Machismo	2.9 (1)	2.9	[1, 5.9]
Caballerismo	6 (0.7)	6.1	[3.3, 7]
Drinking frequency	7.7 (13.7)	3.5	[0, 90]
Drinking quantity	2.6 (2.8)	2.1	[0, 14]
Variable	n	%	
Reported drinking			
Yes	77	63.1	
No	45	36.9	
Binge drinking			
Yes	44	36.1	
No	78	63.9	
Living area			
Semi-rural	69	56.6	
Urban	53	43.4	
Country of origin			
Caribbean	11	9.0	
Central America	16	13.1	
Mexico	27	22.1	
Other South American Countries	22	18.0	
U.S.	15	12.3	
Venezuela	31	25.4	
Household income in the last month			
0-\$999	19	15.8	
\$1000-\$1999	41	34.2	
\$2000 or more	60	50.0	
Education			
Less than high school	33	27.1	
High school or GED	24	19.7	
Some college	29	23.8	
College/university degree	36	29.5	
Marital status			
In a domestic relationship	14	11.5	
Married	94	77.1	
Single or separated	14	11.5	
Employment status			
Employed	99	81.2	
Unemployed	23	18.9	
Immigration status			
Authorized	97	82.2	
Unauthorized	21	17.8	

Note.SD.=Standard deviation

## Measures

### Demographic Variables

The following demographics were included: age, number of years living in the U.S., country of origin, educational status, marital status, immigration status, the level of

urbanization of living area (urban vs. semirural), employment, and household income. Participants were asked to report their educational status, choosing from five categories ranging from “less than high school” to “college/graduate professional studies,” which we then recoded into three categories. Similarly, participants were asked to report their immigration status from 11 categories, ranging from “citizen” to “temporarily protected asylum seeker.” These categories were then recoded into a dichotomous variable of (1) authorized status or (2) unauthorized status. For the present study, marital status categories were recoded into (1) in a domestic relationship, (2) being married, (3) being single or separated, because most participants were married or had a romantic partner. Age was collected and analysed as a continuous variable, but household income in past month was recoded into three categories (0-\$999; \$1,000-\$1,999; \$2,000 or more).

### Gender Norms

Traditional gender norms were measured using the *Machismo and Caballerismo Scale*, a widely recognized and validated 20-item bi-dimensional scale that measures machismo and caballerismo on two separate subscales [4]. Sample items for the machismo subscale include: ‘it’s important not to be the weakest man in a group’ and ‘real men never let their guard down.’ Items on the caballerismo subscale include ‘men should be affectionate to their children’ and ‘family is more important than the individual’ [7]. Items were measured using a 7-point Likert-type scale ranging from 1 (*not at all*) to 7 (*very much so*). Subscale scores were measured by calculating mean values, with higher values indicating greater adherence to traditional gender norms [4]. Good reliability was reported with a Cronbach’s alpha of 0.80 overall. Cronbach’s alphas in the present study were 0.85 in both the machismo and caballerismo subscales.

*Alcohol use* was measured using the Timeline Follow-Back method [13]. Participants reported their alcohol use frequency and quantity in the last 90 days. To assist participants in remembering their drinking behaviors, special dates such as holidays were used as anchor points. Initially, participants indicated their drinking behavior during the last 30 days; they then subsequently indicated their drinking behavior during the 60 days preceding the initial 30-day period. Quantity of alcohol was measured using standard serving sizes of drinks, such as a 12 oz beer bottle or can, or a 1 oz. hard liquor shot. Participants reported the number of drinks consumed per day. The reliability of this scale has been validated with similar populations. A dichotomous variable of alcohol consumption (yes/no) was created based on reported drinking in the past 90 days. Alcohol use frequency was the total number of days alcohol was consumed,

**Table 2** Estimates for drinking outcomes among adult Latin x men living in urban and semirural areas of Miami-Dade County, Florida

Predictors	Drinking Status	Drinking Frequency	Drinking Quantity	Binge Drinking
	aOR <sup>a</sup> [95% CI]	aIRR <sup>b</sup> [95% CI]	Estimate <sup>c</sup> [95% CI]	aOR <sup>a</sup> [95% CI]
Age in years	1.03 [0.96, 1.1]	1.02 [0.97, 1.07]	0.99 [0.97, 1.02]	0.99 [0.94, 1.05]
Years living in the U.S.	0.96 [0.91, 1.02]	0.97 [0.94, 1.01]	0.99 [0.96, 1.01]	0.99 [0.94, 1.05]
Machismo	--	0.67 [0.46, 0.99]*	--	--
Household income				
\$1000-\$1999 vs. 0-\$999	0.06 [0.01, 0.37]**	0.31 [0.11, 0.89]*	0.49 [0.27, 0.9]*	0.49 [0.11, 2.12]
\$2000 or more vs. 0-\$999	0.24 [0.04, 1.35]	0.68 [0.24, 1.94]	0.81 [0.45, 1.45]	0.79 [0.18, 3.55]
Marital status				
In a domestic relationship vs. Married	3.26 [0.51, 21.04]	1.89 [0.55, 6.51]	3.42 [1.85, 6.31]***	6.18 [1.19, 32.01]
Single or separated vs. Married	0.55 [0.06, 4.77]	0.44 [0.12, 1.55]	1.77 [0.88, 3.58]	2.3 [0.34, 15.45]
Country of origin				
Caribbean vs. Venezuela	0.08 [0.01, 0.91]*	0.54 [0.15, 1.96]	0.36 [0.14, 0.92]*	0.7 [0.09, 5.16]
Central America vs. Venezuela	0.23 [0.03, 2.02]	0.73 [0.21, 2.54]	1.32 [0.69, 2.52]	1.1 [0.18, 6.91]
Mexico vs. Venezuela	0.51 [0.04, 6.81]	2.51 [0.59, 10.67]	0.84 [0.38, 1.87]	0.86 [0.09, 7.96]
Other South American countries vs. Venezuela	0.79 [0.09, 6.92]	1.11 [0.36, 3.44]	0.96 [0.5, 1.85]	1.32 [0.25, 6.93]
U.S. vs. Venezuela	0.16 [0, 6.13]	0.41 [0.04, 4.43]	0.55 [0.03, 9.44]	0.55 [0.01, 27.75]
Employment status: Employed vs. Unemployed	6.57 [1.43, 30.07]*	2.8 [1.04, 7.55]*	1.85 [0.96, 3.58]	5.71 [1.19, 27.33]*
Education				
High school or GED vs. Less than high school	0.58 [0.12, 2.68]	0.43 [0.15, 1.26]	1.09 [0.59, 2]	0.59 [0.14, 2.57]
Some college vs. Less than high school	0.21 [0.04, 1.19]	0.14 [0.05, 0.43]***	0.66 [0.32, 1.35]	0.34 [0.07, 1.67]
College/university degree vs. Less than high school	0.27 [0.04, 1.89]	0.13 [0.04, 0.37]***	0.97 [0.47, 2.02]	1.29 [0.24, 6.8]
Immigration status: Authorized vs. Unauthorized	2.97 [0.55, 16.03]	3.16 [1.12, 8.9]*	3.2 [1.32, 7.8]*	1.9 [0.39, 9.36]
Living area: Urban vs. Semi-rural	3.62 [0.7, 18.74]	2.47 [0.95, 6.37]	1.12 [0.57, 2.17]	1.04 [0.25, 4.32]
Depressive symptoms	1.15 [0.98, 1.34]	--	1.02 [0.96, 1.08]	--

a. Estimates are adjusted odds ratios (aORs) from multiple logistic regression

b. Estimates are adjusted incident risk ratios (aIRRs) from negative binomial regression

c. Estimates are exponential correlation coefficients from log-normal regression

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

and alcohol use quantity was the average number of standard drinks consumed in the past 90 days. Binge drinking was recoded into a dichotomous variable (yes/no) that indicated whether a participant had five or more drinks on any occasion.

## Mental Health

Depressive symptoms were measured using the Patient Health Questionnaire-9 (PHQ-9), which is an adaptation of the Patient Health Questionnaire (PHQ-59 items). The tool has shown criteria validity [14]. The questionnaire has shown good diagnostic validity with comparable sensitivity

and specificity for major depression symptoms among adults [15]. We used the Generalized Anxiety Disorder scale (GAD-7), which is a 7-item measure (4-point Likert-type scale) that assesses anxiety among participants in the past 2 weeks [16]. The Cronbach's alpha for the PHQ-9 and GAD-7 scales was 0.79 and 0.85 respectively in this study.

## Statistical Analysis

Descriptive statistics of participant demographic and alcohol use characteristics are presented in Table 1. The sample mean, standard deviation, median, minimum, and maximum were used to describe the continuous variables. Counts and

percentages were used to describe categorical variables. We used logistic regression for alcohol consumption and binge drinking in the past 90 days. We performed negative binomial regression to predict drinking frequency due to its right-skewed count measure. We applied generalized linear model with a log-link function for predicting drinking quantity. To examine the association between the independent variables (machismo, caballerismo, and mental health) and the drinking outcomes, bivariate regression models for each drinking outcome were performed. Independent variables with a *p*-value at 0.1 or less were included in the multiple regression models, controlling for demographics, including participants' age, years living in the U.S., household income, marital status, country of origin, employment status, education, immigration status, and living area. The Statistical Analysis System (SAS) 9.4 was used for all data analyses [17]. A statistical significance level of 0.05 was used to reject the null.

## Results

### Sociodemographic Characteristics

The present analysis included data from 122 Latinx men with a mean age of 44 years (*SD*=10). Most men were authorized immigrants (82%), employed (81%), and married (77%) at the time of assessment. Only 12% of the participants were U.S.-born, while other participants immigrated from South America (43%), Mexico (22%), Central America (13%), and the Caribbean (9%). More than half of the participants (57%) were from semirural areas. Half of the participants (50%) had a household income of \$2,000 or more in the last month. The mean number of years living in the U.S. was 14 (*SD*=12).

### Alcohol Use

63% (*n*=77) of the participants reported alcohol consumption in the past 90 days. Machismo, caballerismo, or anxiety were not significantly associated with alcohol consumption in the past 90 days, according to results from the bivariate analysis. Thus, the scale scores were excluded from the multiple logistic regression for predicting drinking in the past 90 days. Results show that, compared to participants with a household income of 0-\$999 in the past month, those with the household income in the \$1,000-\$1,999 range were 94% less likely to report drinking in the past 90 days (*aOR*=0.06, *p*=0.002), controlling for other variables in the model. However, no significant difference in alcohol consumption was found between people with a household income of \$2,000 or above and 0-\$999 (*p*>0.05). Participants who were from

the Caribbean were significantly less likely to report drinking in the past 90 days (*aOR*s=0.08, *p*=0.042) compared to participants from Venezuela. Employed participants were more likely to report drinking (*aOR*=6.57, *p*=0.015) than unemployed participants in the past 90 days.

### Drinking Frequency

The median drinking frequency in the past 90 days was 3.5 days. Caballerismo, depressive symptoms, and anxiety were excluded from the final negative binomial regression model because of the non-significant association with drinking frequency from the bivariate analysis. Results from the multiple regression model suggest that machismo was significantly negatively associated with drinking frequency, after controlling for other covariates in the model. A higher machismo score was associated with lower drinking frequency (*aRR*=0.67, *p*=0.043). Having a household income of \$1000-\$2000 was significantly associated with lower drinking frequency, compared to the household income of 0-\$999 (*aRR*=0.31, *p*=0.030). Employed participants had more drinking frequency in the past 90 days (*aRR*=2.8, *p*=0.042) than unemployed participants. Compared to the participants with an educational level of less than high school, those with some college (*aRR*=0.14, *p*<0.001) or a college/university degree (*aRR*=0.13, *p*<0.001) reported drinking less frequently. Authorized immigrants were likely to have a higher number of drinking days than those who were unauthorized (*aRR*=3.16, *p*=0.030).

### Drinking Quantity

Among participants, the mean number of drinks per day in which alcohol was consumed in the past 90 days was 2.6 (*SD*=2.8). Results from the bivariate analysis show no significant correlation between drinking quantity and machismo, caballerismo, or anxiety. Hence, these variables were excluded from the final regression model. Results show that having a household income of \$1000-\$1999 was associated with decreased drinking quantity ( $\beta$ =0.49, *p*=0.020), compared to those with household income of 0-\$999. Compared to married men, those who were in a domestic relationship reported higher drinking quantities ( $\beta$ =3.42, *p*<0.001). Compared to participants whose country of origin was Venezuela, Caribbean origin was associated with a significantly lower drinking quantity ( $\beta$ =0.36, *p*=0.032). Authorized immigrants reported greater drinking quantity ( $\beta$ =3.16, *p*=0.010). Age, years in the U.S., education, employment, participants' living area, or depressive symptoms were not significantly associated with drinking quantity (*p*>0.05).

## Binge Drinking

About 36% of the participants reported binge drinking in the past 90 days ( $\geq 5$  drinks per day in a single sitting). Machismo, caballerismo, depressive symptoms, or anxiety had no statistically significant association with binge drinking in the past 90 days and were excluded from the final regression model. Results from multiple logistic regression indicate employed participants were more likely to binge drink in the past 90 days (aOR = 5.71,  $p = 0.029$ ). Results show that binge drinking was not significantly associated with age, years in the U.S., household income, marital status, country of origin, education, immigration status, or participants' living area ( $p > 0.05$ ).

## Discussion

The present study highlights a negative correlation of machismo and drinking frequency, as men with higher scores of machismo reported drinking less frequently. Contrary to the literature on machismo that has characterized men with higher levels of machismo with higher levels of risk taking and substance abuse behavior [11, 18], the current study findings align with a wider perspective found in more recent ones [4, 19]. According to the more recent perspective of masculinity norms, there is a multidimensional aspect of machismo that encompasses attributes such as chivalry, respect, and honor [4, 12]. Studies on alcohol misuse also support the findings that there are higher levels of empathy and higher sense of morality among non-alcohol misusers [8, 9]. This result aligns with more positive aspects of machismo that have been associated with caballerismo [7] and that need to be further examined in future studies.

Similar to other studies [6], authorized immigrants were more likely to report drinking higher quantities and more frequently. There may be several factors associated with their frequency such as having a job, higher income, social stability, and less immigration stress (e.g., fear of deportation).

The present study represents a small example of the heterogeneity among Latinx communities. Our analysis demonstrates that future interventions may want to target low education and documented Latinx individuals. Alcohol frequency and quantity was more prevalent among households reporting less income; however, participants who were employed and lived in urban areas were more likely to report using alcohol in the last 90 days. However, the alcohol use prevalence identified in the present analysis needs to be examined further in future longitudinal studies that show potential differences among different Latinx subgroups.

Most participants from urban areas were of South American origin, primarily Venezuela, and they were more likely

to report alcohol use than participants of Central America and the Caribbean region. These findings support a previous study that investigated the alcohol use trajectory of Latinx men prior to and after immigration to the United States [20]. De La Rosa et al. [20] which revealed a decrease in alcohol use frequency for men during their pre- to post-immigration period. Future studies should focus on expanding the sample and including more representation from South America and the Caribbean.

In general, a significant percentage of participants (36%) reported binge drinking in the past 90 days, although the mean number of drinks per day was approximately 3. Although higher drinking quantities were found among men who reported being in a domestic relationship rather than legally married, most participants in the study were married; hence, we cannot draw substantial clinical implications or significant conclusions. Our results indicate the need for other mixed methods research to examine this relationship further.

## Limitations

Results from this study should be viewed with the known limitations of a small non-randomized self-reported retrospective data. Additionally, the Latinx population is a heterogeneous group, and the current community-based study sample was mostly well-educated, employed South and Central American immigrants; therefore, there is an underrepresentation of other large U.S. Latinx groups. Because this was a cross-sectional study, temporal relationships could not be established. In addition, it was not possible to examine time variance, given this study's design, since this was a secondary data analysis. However, future studies might address the mixed findings regarding machismo using other methodological approaches.

## Conclusion

The results from our analysis suggest that among adult Latinx men in MDC, alcohol use quantity and frequency are significantly associated with higher income and authorized immigration status. Contrary to our hypothesis, machismo was significantly associated to lower frequency of alcohol use but not quantity or binge drinking. 36% of participants reported binge drinking. Although this is a small cross-sectional community-based study, this is a modest but significant contribution to the knowledge gap in the literature on South and Central American immigrants, particularly Venezuelan immigrants, in Florida. Future studies that include biomarkers, larger samples, and control groups would

advance our findings and clarify the association among machismo, alcohol use frequency and quantity. Although previous studies have examined the negative consequences of alcohol use frequency and quantity among Latinos living in the U.S., the present study present an important subgroup distinction and posits the need to continue research on the associations of gender norms and alcohol misuse among Latinx subgroups.

## References

- Caetano R, Ramisetty-Mikler S, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey (HABLAS): rates and predictors of DUI across Hispanic national groups. *Accid Anal Prev*. 2008;40(2):733–41.
- Caetano R, Ramisetty-Mikler S, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey (HABLAS): the association between birthplace, acculturation and alcohol abuse and dependence across Hispanic national groups. *Drug Alcohol Depend*. 2009;99(1–3):215–21.
- Castañeda SF, Garcia ML, Lopez-Gurrola M, Stoutenberg M, Emory K, Daviglius ML, Kaplan R, Giachello AL, Molina KM, Perreira KM, Youngblood ME. Alcohol use, acculturation and socioeconomic status among Hispanic/Latino men and women: The Hispanic Community Health Study/Study of Latinos. *PLoS ONE*. 2019;14(4):e0214906.
- Arciniega GM, Anderson TC, Tovar-Blank ZG, Tracey TJ. Toward a fuller conception of Machismo: Development of a traditional Machismo and Caballerismo Scale. *J Couns Psychol*. 2008;55(1):19.
- Daniel-Ulloa J, Sun C, Rhodes SD. The intersection between masculinity and health among rural immigrant Latino men. *Int J Men's Health*. 2017;16(1):84.
- Balagopal G, Davidson S, Gill S, Barengo N, De La Rosa M, Sanchez M. The impact of cultural stress and gender norms on alcohol use severity among Latino immigrant men. *Ethnicity & Health*. 2021; Feb 9:1–9.
- Perrotte JK, Zamboanga BL. Traditional gender roles and alcohol use among Latinas/os: A review of the literature. *Journal of Ethnicity in Substance Abuse*. 2019; Mar 25.
- Martinotti G, Nicola MD, Tedeschi D, Cundari S, Janiri L. Empathy ability is impaired in alcohol-dependent patients. *American Journal on Addictions*. 2009 Jan 1; 18(2):157–61.
- Francis KB, Gummerum M, Ganis G, Howard IS, Terbeck S. Alcohol, empathy, and morality: acute effects of alcohol consumption on affective empathy and moral decision-making. *Psychopharmacology*. 2019 Dec;236(12):3477–96.
- Perrotte JK, Zamboanga BL, Kearns N. Linking alcohol-specific masculine norms and drinking behavior among Latino men. *Psychol Men Masculinities*. 2020;21(3):490.
- Mirandé A. *Hombres y machos: Masculinity and Latino culture*. Routledge; 2018. Feb 12.
- Corbin WR, Farmer NM, Nolen-Hoekesma S. Relations among stress, coping strategies, coping motives, alcohol consumption and related problems: A mediated moderation model. *Addict Behav*. 2013;38(4):1912–9.
- Sobell LC, Buchan G, Cleland P, Sobell MB, Fedoroff I, Leo GI: The reliability of the Timeline Followback method applied to drug, cigarette, and cannabis use. In 30th Annual Meeting of the Association for Advancement of Behavior Therapy, New York, NY. 1996.
- Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med*. 2001 Sep;16(9):606–13.
- Spitzer RL, Williams JB, Kroenke KJ. Test review: patient health questionnaire–9 (PHQ-9). *Rehabilitation Couns Bull*. 2014;57(4):246–8.
- Spitzer RL, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med*. 2006;166(10):1092–7.
- SAS Institute Inc. SAS/ACCESS® 9.4 Interface to ADABAS: Reference. Cary: SAS Institute Inc; 2013.
- Neff JA, Prihoda TJ, Hoppe SK. "Machismo," self-esteem, education, and high maximum drinking among anglo, black and Mexican-American male drinkers. *J Stud Alcohol*. 1991;52(5):458–63.
- Falicov CJ. Changing constructions of machismo for Latino men in therapy: "The devil never sleeps." *Fam Process*. 2010;49(3):309–29.
- De La Rosa M, Sanchez M, Wang W, Cano MA, Rojas P. Alcohol use trajectories of adult Latinx immigrants during their first decade in the United States. *Addict Behav*. 2020;106:106352.

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.