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Authors
Karriker-Jaffe, Katherine J
C. M. Roberts, Sarah
Bond, Jason

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Income Inequality, Alcohol Use, and Alcohol-Related Problems

Katherine J. Karriker-Jaffe, PhD,
Alcohol Research Group, Public Health Institute, Emeryville, CA

Sarah C. M. Roberts, DrPH, and
Alcohol Research Group, Public Health Institute, Emeryville, CA. Community Health and Human Development, University of California, Berkeley

Jason Bond, PhD
Alcohol Research Group, Public Health Institute, Emeryville, CA

Abstract

Objectives—We examined the relationship between state-level income inequality and alcohol outcomes and sought to determine whether associations of inequality with alcohol consumption and problems would be more evident with between-race inequality measures than with the Gini coefficient. We also sought to determine whether inequality would be most detrimental for disadvantaged individuals.

Methods—Data from 2 nationally representative samples of adults (n = 13 997) from the 2000 and 2005 National Alcohol Surveys were merged with state-level inequality and neighborhood disadvantage indicators from the 2000 US Census. We measured income inequality using the Gini coefficient and between-race poverty ratios (Black–White and Hispanic–White). Multilevel models accounted for clustering of respondents within states.

Results—Inequality measured by poverty ratios was positively associated with light and heavy drinking. Associations between poverty ratios and alcohol problems were strongest for Blacks and Hispanics compared with Whites. Household poverty did not moderate associations with income inequality.

Conclusions—Poverty ratios were associated with alcohol use and problems, whereas overall income inequality was not. Higher levels of alcohol problems in high-inequality states may be partly due to social context.

A growing literature examines the impact of area-level income inequality on health. Inequality, or the size of the difference in income between rich and poor, is distinct from absolute income or socioeconomic status (SES).[1] Recent systematic reviews have found associations between income inequality and health.[2–6] Theoretical[3,7] and empirical work suggests that income inequality may affect health through two main pathways. First, there

Correspondence should be sent to: Katherine J. Karriker-Jaffe, Alcohol Research Group, Public Health Institute, 6475 Christie Ave., Suite 400, Emeryville, CA 94608-1010 (kkarrikerjaffe@arg.org).

Contributors

K. J. Karriker-Jaffe conceptualized the study, completed the analyses, and contributed to the writing. S. C. M. Roberts contributed to the writing. J. Bond assisted with the analyses.

Note. The content presented here is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute on Alcohol Abuse and Alcoholism or the National Institutes of Health.

Human Participant Protection

This study was approved by the institutional review board at the University of California, Berkeley, and original data collection and geocoding were conducted under approval by the institutional review board of the Public Health Institute, Oakland, CA.

may be psychosocial pathways, whereby people compare themselves with those who are better (or worse) off.[4,8–10] Second, there may be neomaterial pathways, whereby income inequality may lead to limited public investment in social goods such as education, health services, and welfare that directly affect health.[3,11,12] The term neomaterial is used to acknowledge the fact that material conditions relevant to health outcomes in the present day differ from those material conditions that influenced infectious diseases in the 19th century.[3]

Most research on income inequality and health has focused broadly on health status and mortality,[2] but a few studies focus on specific health outcomes and health behaviors.[2,13,14] Among these is a small literature on alcohol that suggests that income inequality is associated with increased frequency of alcohol consumption,[13] volume of alcohol consumed,[14,15] drinking to drunkenness,[14] and death due to chronic alcohol-attributable illnesses.[16] Results are not unequivocal, however. Findings for alcoholic cirrhosis are mixed, with one study finding a positive association for men but not women[15] and others finding no association.[17,18] Another study documented a curvilinear relationship with alcohol-related hospitalization, suggesting an initial decline in hospitalizations followed by a rapid rise as inequality increases.[16] Finally, one study found that state-level income inequality was negatively associated with women's alcohol dependence, but not after adjustment for state beer taxes.[19]

To date, this literature on income inequality and alcohol has not examined whether income inequality affects alcohol consumption and related problems equally across SES and race/ethnicity. Further, it has primarily measured income inequality using the Gini coefficient, a measure that captures the difference between an observed income distribution and a condition of complete equality.[1] We expand on the existing literature by examining SES and race/ethnicity as moderators of associations between income inequality and alcohol outcomes, and by examining race-based measures of income inequality in addition to the Gini coefficient.

Income inequality may not affect everyone in the same way.[2,20] Affluent individuals may benefit from[2] or be immune to the negative effects of[21] living in unequal areas, whereas poorer people and Black and Hispanic people may suffer a "double jeopardy" in unequal areas.[20,21] This double jeopardy hypothesis, however, may be specific to certain health and social outcomes.[18] For example, compared with more egalitarian areas, areas with more unequal income distribution have stronger inverse associations between individual SES and adolescent literacy[21] as well as mortality from alcoholic liver disease.[18] These studies indicate there is an interaction of individual SES and income inequality for certain outcomes. In contrast, some evidence suggests largely uniform (rather than differential) effects of income inequality on poor self-rated health[22]; however, most alcohol studies have not examined possible moderators of effects of income inequality.

Income inequality can be measured overall or by comparing the status of 2 groups. Overall measures incorporate the range and distribution of incomes with the extent of inequality. The most commonly used overall measure is the Gini coefficient.[1] In contrast, relative measures emphasize income or poverty differences between groups based on demographic characteristics. For example, between-race income inequality measures summarize differentials in income between various racial/ethnic groups living in the same area and have been used in the criminology literature.[23,24] In the United States, there are stark differences in income and poverty status between Whites, Blacks, and Hispanics. In 2000, the ratio of per capita income of Whites to Blacks was 1.66 and of Whites to Hispanics was 1.97, with 15% of Whites, almost 30% of Blacks, and over 20% of Hispanics having family incomes below the federal poverty threshold.[25] Use of these relative measures seems especially

relevant given our interest in examining whether race/ethnicity moderates the associations between income inequality and alcohol outcomes.

We examined whether income inequality, measured by the Gini coefficient and 2 between-race measures, is associated with light to moderate alcohol consumption, heavy alcohol consumption, alcohol-related consequences, and alcohol dependence. Although not tested explicitly here, heavy (but not light) alcohol consumption may be linked to income inequality primarily through the psychosocial pathway (such as drinking to cope with stress), whereas alcohol problems additionally may be influenced by neomaterial effects of inequality (such as increased policing[24] or decreased funding for alcohol treatment services). We also investigated whether associations with inequality were most detrimental for disadvantaged individuals (people in poor neighborhoods, with low household income, or racial/ethnic minority status), which also may suggest neomaterial effects of inequality.[3]

METHODS

The data were from the 2000 National Alcohol Survey (NAS) and the 2005 NAS, which each used computer-assisted telephone interviews with randomly selected adults aged 18 and older, including oversamples from sparsely populated states and of Blacks and Hispanics. The 2000 NAS included 7613 respondents (response rate = 58%); the 2005 NAS included 6919 respondents (response rate = 56%). The response rates were typical of those of recent US telephone surveys in a time of increasing barriers to random-digit dial telephone surveys.[26] Two types of evidence suggest that nonresponse bias should have little impact on results. First, a series of methodological studies comparing identical questions in telephone and in-person surveys found comparable population estimates for alcohol consumption[27–30] and only inconsistent mode effects for alcohol harms,[31] despite higher response rates for in-person surveys. Second, an analysis using data from the 2000 NAS to examine consumption estimates for different subsets of respondents (defined by sample replicates, or sampling pools) found no association between the subsample response rate and total volume of alcohol consumed. This suggests that nonresponse bias should not substantially affect NAS consumption estimates. Significant overlap in the interview protocols for 2000 and 2005 (with many identical questions) allowed data to be analyzed together. For detailed discussions of the NAS methodology, see Clark and Hilton,[32] Kerr et al.,[33] and Midanik and Greenfield.[29] Table 1 contains respondent characteristics.

We matched geocoded survey data with indicators of state-level inequality and neighborhood (census tract) disadvantage from the 2000 US Census.[34] Approximately two thirds (61%) of the sample had geocodes assigned on the basis of street address; the remainder had geocodes assigned on the basis of zip code centroid. A sensitivity analysis determined that the pattern of results did not differ substantially when those with less precise geocodes were excluded (data available upon request), but all analyses adjusted for precision of geocode match.

Measures

Income inequality—We measured overall income inequality using a Gini coefficient for household income, which we calculated using a formula for categorical data provided by Thomas et al.[35] The Gini coefficient ranges from 0 to 1, with 1 being maximum inequality (when 1 person has all of the income in a population) and 0 representing a perfectly equal distribution of income across all members of the population.[2] At the state level, the Gini coefficient is highly correlated with other measures of overall income inequality, such as the income ratio of the top and bottom 20% ($r = 0.87$, $P < .01$). Two additional measures of between-race income inequality indicated the ratio of non-White to White poverty,[23,24,36] using logged percentages of residents with incomes below the federal poverty threshold. The

measures of between-race inequality focused on differentials between Whites and Blacks (Black–White poverty ratio) or Hispanics (Hispanic–White poverty ratio), because most states have sizable populations of each racial/ethnic group. Higher values represent a greater burden of poverty for Blacks or Hispanics relative to Whites. We converted all 3 income inequality measures to *z* scores, so model coefficients can be interpreted as deviation from overall means.

We classified states into 3 groups (high, medium, low income inequality) according to each measure of income inequality, with the grouping based on 1 standard deviation around the mean. Convergent validity for the between-race measures was suggested by a significant κ coefficient comparing the state classifications based on the Black–White poverty ratio with those based on the Hispanic–White poverty ratio ($\kappa = 0.53$, $P < .01$). In contrast, divergent validity for overall and between-race measures was suggested by nonsignificant κ coefficients comparing the state classifications based on the Gini coefficient with those based on either the Black–White poverty ratio ($\kappa = -0.06$, $P = .55$) or the Hispanic–White poverty ratio ($\kappa = -0.15$, $P = .14$). Thus, classification based on poverty ratios overlapped more than would be expected by chance, whereas the Gini coefficient and poverty ratios appear to measure different things.

Neighborhood socioeconomic status—Our measure of neighborhood socioeconomic disadvantage included proportions of adults without a high school diploma, males who were unemployed or not in the labor force, people with incomes below the federal poverty threshold, families with incomes below 50% of the median, and households without access to a car. We calculated a composite score by averaging the items (mean = 19.9%, SD = 10.8, Cronbach α = 0.89). We classified low neighborhood SES using a dichotomous indicator based on the top 25% of the distribution of the composite variable of neighborhood disadvantage.

Alcohol outcomes—Alcohol outcomes (light and heavy drinking, alcohol-related consequences and dependence) were based on recommendations for the description of drinking patterns and alcohol problems, such as assessing multiple outcomes and using a 12-month window to examine consequences of drinking.[37] Both light and heavy drinking were based on reported volume of alcohol consumed in the past year. We assessed volume using a graduated quantity–frequency approach,[38,39] which asks about the frequency of drinking at 6 quantity levels ranging from 1 drink to 24 or more drinks. Frequency was captured on a 7-point scale ranging from “never” to “every day or nearly every day”. This approach is very effective for measuring consumption among individuals who occasionally drink heavily.[38] The 12-month volume from light drinking was calculated by summing the estimated volume consumed (based on quantity multiplied by frequency) in sessions where drinking 1, 2, or 3–4 drinks was reported. This approximates meeting guidelines for low-risk daily drinking (no more than 3 drinks/day for women or 4 drinks/day for men) set forth by the US National Institute on Alcohol Abuse and Alcoholism.[40] As with volume from light drinking, the 12-month volume from heavy drinking was calculated from sessions where drinking 5 to 7, 8 to 11, or 12 or more drinks was reported. In contrast to other common indicators of heavy drinking, this variable accounts for both frequency and intensity of heavy-drinking episodes. We log-transformed light and heavy drinking to adjust for skewness. We captured alcohol-related consequences by a dichotomous variable indicating whether the respondent had experienced 2 or more of 15 consequences while or because of drinking in the past 12 months. Consequences included 4 social problems (such as getting into arguments while drinking), 3 legal problems (such as being warned by a police officer because of drinking), 3 workplace problems (such as having one’s chances of promotion hurt because of drinking) and 5 health problems or injuries (such as illness from drinking that prohibited regular activities for at least a week). These items have been used successfully in the NAS for 40

years.[41] Alcohol-related consequences are related to, but distinct from, alcohol dependence.[42–44] We measured dependence using 17 items assessing criteria established in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*,[45] which has been shown to have high reliability and validity of the dependence classification.[46] A dichotomous variable indicates whether a respondent reported at least 1 physical symptom of dependence in 3 or more of 7 domains in the past year: withdrawal, alcohol tolerance, drinking despite physical or psychological consequences, unsuccessful efforts to reduce drinking, drinking in larger amounts than intended, time spent drinking or recovering from drinking, and giving up activities because of drinking. The items have been validated in prior NAS data sets.[47]

Individual-level demographics—In addition to low neighborhood SES, demographic moderators of interest included race/ethnicity and household poverty. We coded race/ethnicity with 3 mutually exclusive dummy variables for Blacks, Hispanics, and "others," with Whites as the reference group. Because of small subgroup size and respondent ethnic heterogeneity, "other" was used only as a control variable. We measured household poverty according to US federal poverty guidelines.[48] We categorized income per family member (adults and children in the home) as above or below 100% of the federal poverty level in 1999 or 2004, depending on the survey.

Control variables—Multivariate analyses adjusted for state-level median household income (from US Census, entered as a *z* score), gender (female as reference), age (continuous), marital status (married or partnered vs single), level of education (college degree vs less) and work situation (employed vs unemployed or not in workforce). Multivariate models also included indicators of geocoding precision (street address vs zip code match) and survey year.

Analysis Strategy

Analyses consisted of multilevel linear and logistic regression that accounted for clustering of respondents within states.[49] Because we selected national samples through random-digit dialing, the degree of neighborhood clustering was low (only 3% of tracts contained 5 or more respondents) and 3-level modeling was therefore not required.[50] All models used weights to adjust for sampling and nonresponse; we conducted analyses using HLM analytic software version 6.06 (Lincolnwood, IL: Scientific Software International).[51]

Multivariate analyses testing random effects of each income inequality indicator across levels of demographic variables examined whether relationships with drinking outcomes varied by race/ethnicity, household poverty, or neighborhood disadvantage. For the Gini coefficient, moderation models contained random effects for the intercept as well as Black or Hispanic race/ethnicity, household poverty, or low neighborhood SES. For the poverty ratios, moderation models differed in that the data were limited to the relevant racial/ethnic groups (Whites and either Blacks or Hispanics) and random effects were included only for the relevant minority racial/ethnic group. We tested all moderation effects separately and then jointly, removing any statistically nonsignificant random effects from final models. We assessed significant moderation effects using graphical plots.[52,53]

RESULTS

Bivariate models (Table 2) showed that the Gini coefficient was negatively associated with both volume variables (significant for heavy drinking), whereas the poverty ratios each had significant positive associations with both volume variables. The bivariate results for consequences and dependence followed a similar pattern, but only the positive association

between the Black–White poverty ratio and negative consequences of drinking was significant.

Multivariate models showed significant positive associations of each poverty ratio with light drinking and of the Black–White poverty ratio with heavy drinking (Table 2). There were moderated associations of the race-based poverty ratios with alcohol consequences and dependence (Table 3), indicating that high levels of inequality were associated with more alcohol problems for Blacks and Hispanics than for Whites (Figure 1; other interaction patterns were graphically similar). Posthoc analyses revealed no significant bivariate associations of state-level prevalence of different types of consequences (either interpersonal, health, work, or legal consequences) with any income inequality measure (results available upon request).

The association between the Gini coefficient and alcohol dependence was moderated by both Hispanic ethnicity and neighborhood poverty, with odds of dependence highest under conditions of low income inequality for Hispanics and for residents of disadvantaged neighborhoods. Risk of dependence for Hispanics and for people in disadvantaged neighborhoods in low-inequality states was higher than for these same groups in high-inequality states. Posthoc analyses revealed that states with high Gini coefficients had the highest rates of abstinence from alcohol use ($r = 0.34$, $P < .05$) and thus the lowest number of respondents at risk for experiencing active alcohol dependence.

Multivariate models showed a relatively low degree of confounding by state-level median income, neighborhood disadvantage, or individual SES. State median income was consistently positively associated with light drinking. Neighborhood disadvantage and household poverty were consistently negatively associated with light drinking. Neighborhood disadvantage also was positively associated with alcohol-related consequences.

DISCUSSION

We examined relationships between 3 indicators of state-level income inequality (Gini coefficient and Black–White and Hispanic–White poverty ratios) and alcohol consumption and problems. This is one of the first health studies to use measures of between-race income inequality as indicators of income inequality. Multivariate associations between inequality and alcohol outcomes were either nonsignificant (for the Gini coefficient) or positive (for the between-race indicators). The between-race indicators suggested that higher Black–White poverty ratios were associated with higher levels of both light and heavy drinking among White and Black people, as well as with increased consequences and dependence for Blacks. Similarly, higher Hispanic–White poverty ratios were associated with higher levels of light (but not heavy) drinking by White and Hispanic people, as well as with elevated consequences and dependence for Hispanics. With the exception of an interaction of the Gini coefficient with neighborhood disadvantage, there were no other significant interactions of the inequality measures with household or neighborhood SES.

In multivariate models, the Gini coefficient was not associated with light or heavy drinking or with alcohol-related consequences. The Gini coefficient only showed a moderated association with alcohol dependence. The overall lack of significant findings with the Gini coefficient is consistent with some other alcohol research.[54] Income inequality as measured by the Gini coefficient is more commonly associated with health outcomes with a strong inverse social gradient.[4] Alcohol has varying social gradients, with higher income generally positively associated with lower-risk drinking but negatively associated with heavier drinking and alcohol-related problems.[55–61] It may be that heavy alcohol use, like smoking,

is an exception to the general pattern of findings with the Gini coefficient.[4] Further research is warranted to determine whether health behaviors other than tobacco and heavy alcohol use are also exceptions.

Findings with the between-race poverty ratios are important for 2 reasons. First, these poverty ratios may be important alternative indicators of income inequality for use in the United States, where between-race income inequality is stark. Second, race-based poverty ratios could indicate a type of inequality with amplified neomaterial effects operating through limited public investment in social goods. Specifically, such measures may tap into stereotypes of deserving and undeserving poor.[62] Perceptions of deservingness influence people's attitudes toward social welfare policies, as well as actual spending on such policies.[63–66] In geographic areas where a larger proportion of poor people are Black or Hispanic, such stereotypes could be triggered, leading to less support for social welfare programs[67] but to more resources devoted to policing and other punitive approaches to poverty.[24] Thus, as Lynch et al.[3] suggest in relation to the proportion of Black people in a given geographic area and as Holmes et al.[24] found in relation to White–Hispanic income inequality, it is plausible that residents and policymakers in areas where a higher proportion of people in poverty are Black or Hispanic might show less support for social welfare policies to address or limit the impact of poverty (including less formal help for alcohol-related problems), instead favoring investment in punitive approaches to poverty such as policing. The consequences of disinvestment may be especially pronounced for poor Black and Hispanic people, who may be more likely to be subjected to legal sanctions or more likely to use publicly funded services.

It is striking that there are significant cross-level interactions of poverty ratios and race, with Black and Hispanic people more at risk for consequences and dependence than White people in states with high between-race income inequality. These interactions were not present for either consumption measure. These findings are consistent with previous individual-level research that has found that Black and Hispanic people appear to suffer higher levels of alcohol-related problems at lower levels of alcohol consumption than their White counterparts.[68] Thus, factors beyond the extent of alcohol use may determine some consequences of drinking. Our findings suggest that higher levels of alcohol-related problems among Black and Hispanic people may be partly due to the social and policy context in states with high race-based income inequality.

On a smaller geographic scale, neighborhood disadvantage was negatively associated with light and heavy drinking, yet positively associated with negative consequences of drinking. This suggests that in disadvantaged neighborhoods, people experience more alcohol problems, even though the volume of their drinking may not be higher. These findings reiterate that higher levels of problems may be due in part to the social and policy context. It is plausible that there is more policing in disadvantaged neighborhoods, which leads people to experience more legal consequences; this should be explored in future research.

Also worth noting are negative associations with light drinking for both neighborhood disadvantage and household poverty, as well as a positive association with light drinking for state-level median income. These relationships are consistent with research suggesting that socially advantaged or affluent people are more likely to consume alcohol in this healthier pattern.[58]

In terms of dependence, interactions between the Gini coefficient and Hispanic race/ethnicity and neighborhood disadvantage suggest the opposite of the double jeopardy hypothesis. Specifically, in states with high income inequality, risk of dependence is similar and relatively low across neighborhoods and for both Hispanics and Whites. In contrast, in

states with low income inequality, people in disadvantaged neighborhoods and Hispanics are at higher risk of dependence than people in advantaged neighborhoods or than White people. Thus, the local neighborhood environment and individual-level minority status appear to take on more importance in the context of low income inequality. The relationship between income inequality and alcohol dependence may be confounded by drinking norms, however; we noted a significantly higher prevalence of past-year abstinence from alcohol in states with the highest Gini coefficients. These associations also may be artifactual and should be replicated with other samples.

Our findings have implications for both research and practice. First, measures of between-race income inequality may be important for use in US-based health studies, where income inequality is often complicated by race. In this case, between-race income inequality appears to play a larger role in alcohol use and related problems than overall levels of income inequality. However, conclusions regarding effects of either overall or between-race inequality may be inaccurate when measures assume a reference group (either majority population or White majority) that may be irrelevant for Blacks or Hispanics.[23] Thus, additional studies examining health effects of within-race inequality (for example, a Gini coefficient calculated by the income distribution for Blacks[23]) also could be informative. Second, further research is needed to assess whether the association of between-race inequality and alcohol consequences is mediated by the policy environment, perhaps looking at resources devoted to policing vs social welfare programs. Third, focusing on reducing the ratios of Black and Hispanic to White people living in poverty not only may have direct impacts of reduction of poverty among Blacks and Hispanics, but it also may help change the social and policy environment. This could reduce alcohol-related consequences indirectly by improving infrastructure and policies that may exist in environments with high between-race poverty ratios.

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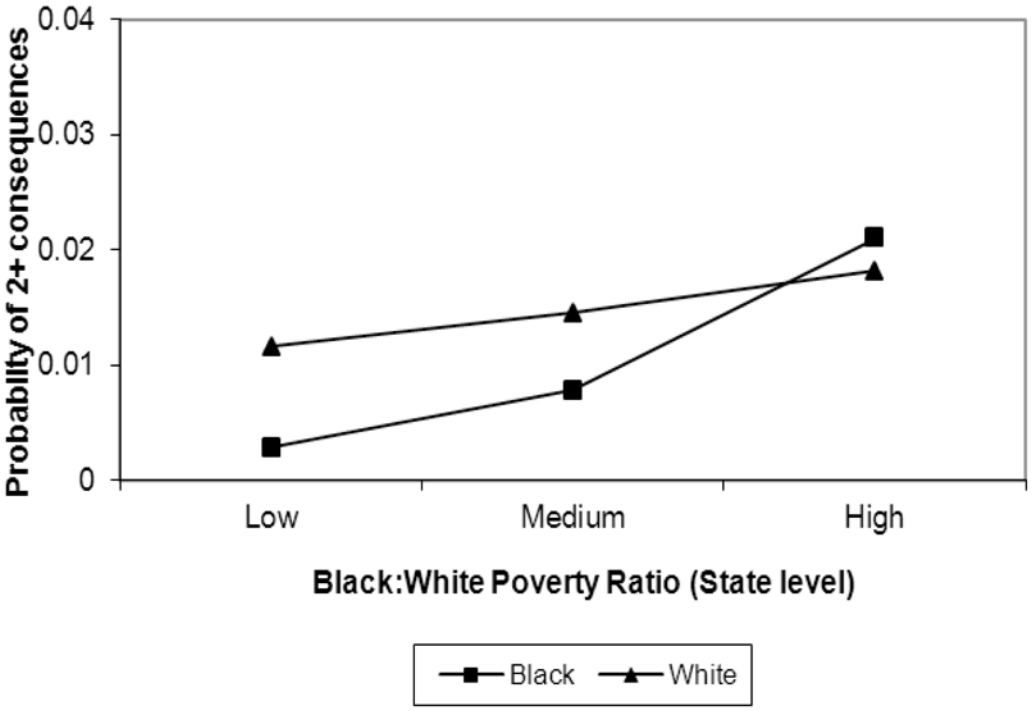

FIGURE 1.
Moderated association of between-race inequality (measured by Black–White poverty ratio) with negative consequences of alcohol use among Blacks and Whites: 2000 and 2005 National Alcohol Surveys

TABLE 1

Characteristics of Respondents Included in the Study Sample (n = 13 997): 2000 and 2005 National Alcohol Surveys

Characteristic	%
Gender	
Male	48
Female	52
Marital status	
Married or partnered	56
Single	44
Age, y	
18–29	22
30–39	21
40–49	20
50–59	17
≥ 60	19
Race/ethnicity	
White	61
Black	16
Hispanic	18
Other	4
Individual income, $	
≤ 20 000	23
20 001–40 000	24
40 001–60 000	16
60 001–80 000	11
≥ 80 001	15
Education	
Less than high school	14
High school diploma	30
Some college	26
College graduate (or more)	29
Employment	
Employed full- or part-time	65
Unemployed	14
Homemaker	6
Retired	14

Note. Percentages may not total 100% because of rounding or missing data.

TABLE 2

Multilevel Associations of Measures of State-Level Income Inequality With Alcohol Consumption in a National Sample of US Adults: 2000 and 2005 National Alcohol Surveys

	Light Drinking, B (SE)			Heavy Drinking, B (SE)		
Model	**Full Sample (n = 13 991)**	**Whites and Blacks Only (n = 10 887)**	**Whites and Hispanics Only (n = 11 120)**	**Full Sample (n = 13 991)**	**Whites and Whites and Blacks Only (n = 10 887)**	**Hispanics Only (n = 11 120)**
Unadjusted						
Gini coefficient	−0.08 (0.09)			−0.11*** (0.04)		
Black-White poverty ratio		0.17*** (0.06)			0.12*** (0.04)	
Hispanic-White poverty ratio			0.26*** (0.05)			0.06* (0.03)
Multivariate[a]						
Gini coefficient	0.08 (0.07)			−0.05 (0.04)		
Black–White poverty ratio		0.09** (0.03)			0.11*** (0.03)	
Hispanic–White poverty ratio			0.11*** (0.04)			0.04 (0.03)
State median income	0.21*** (0.04)	0.19*** (0.04)	0.14** (0.05)	0.02 (0.03)	0.01 (0.03)	0.01 (0.03)
Neighborhood disadvantage	−0.25*** (0.06)	−0.30*** (0.07)	−0.27*** (0.08)	−0.09 (0.06)	−0.11* (0.06)	−0.14** (0.07)
Below federal poverty guideline	−0.35*** (0.07)	−0.43*** (0.09)	−0.43*** (0.09)	0.01 (0.07)	−0.004 (0.09)	−0.01 (0.08)
Black	−0.70*** (0.08)	−0.68*** (0.08)		−0.64*** (0.05)	−0.65*** (0.05)	
Hispanic	−0.56*** (0.12)		−0.51*** (0.11)	−0.28*** (0.05)		−0.31*** (0.06)

[a]Also adjusted for gender, age, marital status, education, employment, other race/ethnicity (in models with Gini coefficient), and geocoding accuracy.

*$P < .10$;

**$P < .05$;

***$P < .01$.

TABLE 3

Multilevel Associations of Measures of State-Level Income Inequality With Alcohol Problems in a National Sample of US Adults: 2000 and 2005 National Alcohol Surveys

	Negative Alcohol-Related Consequences, OR (95% CI)			Alcohol Dependence, OR (95% CI)		
Model	**Full Sample (n = 13 991)**	**Whites and Blacks Only (n = 10 887)**	**Whites and Hispanics Only (n = 11 120)**	**Full Sample (n = 13 991)**	**Whites and Blacks Only (n = 10 887)**	**Whites and Hispanics Only (n = 11 120)**
Unadjusted						
Gini coefficient	0.93 (0.79,1.09)			0.99 (0.89,1.10)		
Black–White poverty ratio		1.17** (1.02,1.35)			1.08 (0.90,1.29)	
Hispanic–White poverty ratio			1.09 (0.97,1.23)			0.93 (0.76,1.15)
Multivariate[a]						
Gini coefficient	0.91 (0.79,1.06)			0.97 (0.86,1.08)		
Black–White poverty ratio		1.12 (0.95,1.32)			0.99 (0.82,1.19)	
Hispanic–White poverty ratio			1.07 (0.90,1.28)			0.86 (0.67,1.09)
State median income	1.02 (0.89,1.17)	0.98 (0.85,1.14)	0.95 (0.81,1.11)	1.03 (0.89,1.19)	1.06 (0.88,1.27)	1.07 (0.87,1.32)
Neighborhood disadvantage	1.33** (1.05,1.68)	1.33* (1.00,1.78)	1.24 (0.94,1.64)	1.33** (1.02,1.74)	1.25 (0.90,1.73)	1.18 (0.86,1.62)
Below federal poverty guideline	1.24 (0.90,1.70)	1.28 (0.90,1.83)	1.24 (0.92,1.67)	1.20 (0.81,1.80)	1.13 (0.67,1.93)	1.30 (0.85,1.99)
Black	0.64*** (0.47,0.88)	0.52*** (0.37,0.74)		0.90 (0.60,1.34)	0.75 (0.49,1.16)	
Hispanic	0.64*** (0.47,0.87)		0.64*** (0.50,0.82)	1.57** (1.03,2.39)		1.24 (0.80,1.91)
Gini × NBH disadvantage	…[b]			0.72** (0.54,0.96)		
Gini × Hispanic	…[b]			0.71** (0.54,0.96)		
Black–White PR × Black		1.47** (1.03,2.11)			1.46** (1.03,2.06)	
Hispanic–White PR × Hispanic			1.45*** (1.12,1.87)			1.44** (1.03,2.02)

Note. PR = poverty ratio; NBH = neighborhood; OR = odds ratio; CI = confidence interval.

[a] Also adjusted for gender, age, marital status, education, employment, other race/ethnicity (in models with Gini coefficient), and geocoding accuracy.

[b] Interaction term dropped because not statistically significant.

* $P < .10$;

** $P < .05$;

*** $P < .01$.