Heavy drinking during periods of high unemployment: 15-Year trend study of the role of race/ethnicity

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ABSTRACT

Objectives: This study conceptualized high unemployment rate as a stressor deriving from the social structure. It tracked American adults' heavy drinking rates 1997–2011, intending to examine (1) whether heavy drinking escalates with rising unemployment, and (2) whether racial minorities, who feel economic downturns more than the majority, engage in heavy drinking at a higher level than Whites in times of high unemployment.
Methods: Research questions were answered using data from the Combined National Health Interview Survey. The present final sample included only respondents classified as heavy drinkers: those reporting that, on days (in the preceding year) on which they had consumed alcohol, they had regularly had at least 5 drinks.
Results: The study, which considered individual-level social structural factors, overall found rising unemployment rate to be associated with high measures for heavy-drinking frequency but low measures for heavy-drinking quantity. It did not find race to moderate the unemployment–heavy-drinking relationship, although some empirical evidence has shown racial minorities to be relatively more responsive to fluctuating unemployment inherent in the economic cycle.
Conclusions: Our results in general call for further research on roles of gender and race in heavy drinking, especially where Black females are concerned. Blacks' greater heavy-drinking frequency and greater heavy-drinking quantity (versus Whites) observed in this study may shed light on persistent racial disparities in Americans' health.

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1. Introduction

As a health risk and deviant behavior, heavy drinking plays a key role in the unintentional and intentional injuries and fatalities that result from drunk driving, assault, chronic illness, and homicide (Hingson and Winter, 2003; Lo et al., 2013; Rehm et al., 2006; Rivara et al., 2004; Stinson and DeBakey, 1992; Sutocky et al., 1993). Annually in the United States, almost 80,000 deaths are attributable to heavy drinking, according to recent research (Kanny et al., 2011). Research has shown that heavy drinking is prevalent among individuals experiencing such chronic stress as that created by low socioeconomic status (Lo and Cheng, 2012; Tenorio and Lo, 2011). By extension, experiencing job loss or decreased income during bad economic times, such loss typically generating anxiety, which is a stressor, may increase heavy drinking.

In the business cycle, booms and contractions succeed each other over time. Durkheim argued that societies' failure to regulate and "pace" such economic change leads to deviance (Nandan, 1980), and indeed, recent empirical evidence confirms that high unemployment can increase stress and substance abuse (Roberts et al., 2010). But dissimilar results have been reported for certain macro-level studies, those exhibiting a linear relationship between economic growth and alcohol-related mortality as well as all-cause mortality (Gerdtham and Ruhm, 2006; Granados, 2005; Makela, 1999). In such macro-level studies, rising unemployment was linked to a falling off of alcohol consumption and related harm (Freeman, 1999; Neumayer, 2004; Ruhm, 1995). Such results may reflect the fact that employed people have less time for physical activity yet can better afford to buy alcohol, risking both overindulgence in drink and, eventually, obesity; while unemployed people have more time for physical activity and can less afford alcohol (Ruhm, 2000, 2005). In general, per-capita alcohol consumption grows during economic expansions and declines during economic recessions; however, among the employed and unemployed alike, the prevalence of heavy drinking increases during economic recessions (Dee, 2001).

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An explanation for these seemingly inconsistent findings about economic influences on individual-level alcohol use may lie in prior studies' failure to consider important social structural factors like race. Different racial/ethnic groups bear different burdens during economic recessions (Brown and Pagan, 1998; Engemann and Wall, 2010). For individuals with enough assets to maintain their lifestyles, a brief stint of unemployment may actually offer a welcome break from stressful work; for others, employment is the sole means of meeting pressing basic needs. Many individuals from racial minorities, initially disadvantaged by ascribed race status and resulting discrimination, also tend to suffer the disadvantages of lower social status (Dee, 2001). Their burdens differing already, during an economic downturn, different racial/ethnic groups may well handle new stresses and emotional difficulties differently and manifest vulnerability in distinct ways (Aneshensel, 1992, 2009).

What happens during economic recessions illustrates the burden borne by minorities. Blacks and Hispanics, who tend to lack financial assets (Hogan et al., 1997; Hogan and Perrucci, 1998; Robert and House, 2000) and to accumulate relatively more disadvantages over time, lose more jobs to recession than Whites do; once unemployed, they stay unemployed much longer than Whites, so their financial straits are worse than those of Whites (Couch and Fairlie, 2010; Ewing et al., 2002; Morin and Kochhar, 2010; Strait, 2001).

Although racial/ethnic minority status has, in general, been linked to lower prevalence of heavy drinking versus Whites, among Hispanics and Blacks who do exhibit heavy drinking, its severity (in terms of frequency and quantity) is greater than among White heavy drinkers (Chartier and Caetano, 2010; Kanny et al., 2011). Using data from the combined National Health Interview Survey (NHIS) collected 1997–2011, the current, descriptive study sought trends in heavy drinking over a 15-year period that exhibited clear business cycles, comparing these trends with contemporaneous national unemployment rates. The data allowed the study to track, separately for male and female adults, trends for the population of heavy drinkers distinguishing differential distribution of drinking levels among heavy drinkers of various racial/ethnic backgrounds (Naimi et al., 2003, 2010). Taking into account social structural factors that characterize heavy-drinking behavior, we hypothesized that (1) heavy drinkers from any race/gender group respond to rising national unemployment by engaging in even heavier drinking; and (2) minority individuals' drinking in response to rising national unemployment is heavier drinking than is Whites' drinking in response to rising national unemployment.

2. Methods

2.1. Design and sample

This study combined data from 15 years (1997–2011) of the ongoing National Health Interview Survey, in order to evaluate by race/ethnicity the heavy-drinking behavior of American adults. Over the 1997–2011 data collection period, clear economic boom and bust occurred in the United States; thus these data are well-suited to the present study's purposes. A national study of households, NHIS has been conducted annually since 1957 by the National Center for Health Statistics (part of the Centers for Disease Control and Prevention). NHIS data are derived from a probability sample of the civilian, noninstitutionalized U.S. population. The survey's complex, multistage sampling design is typically redesigned every decade. However, the design employed during 2005–2011 closely resembled the stratified, multistage design employed during 1995–2004, a few changes notwithstanding (Botman et al., 2000).

The 15 datasets linked for the present study represented 266,782 adult respondents from NHIS samples. We included in our final sample only heavy drinkers, numbering 20,075 respondents (7.5% of the combined NHIS samples). To be counted as a heavy drinker, a respondent typically, according to self-reporting, had consumed at least 5 drinks on each day (during the preceding year) on which he or she had consumed alcohol. The heavy drinkers in our final sample identified themselves as non-Hispanic White (65.9%), non-Hispanic Black (7.8%), Hispanic (24.8%), and Asian (1.6%). Because our study required data pooling as we conducted our data analyses,

we adjusted the sampling weights NHIS had provided, dividing each survey year's sampling weight by 15 (our total number of data years).

2.2. Measures

Our examination involved 2 variables of heavy drinking: *quantity of alcohol consumed* (abbreviated *quantity*) and *number of days consuming at least 5 drinks per day* (abbreviated *frequency*), both of which we treated as continuous variables. In NHIS data, quantity measures the number of drinks typically consumed on a day (in the preceding year) on which a respondent drank alcohol; our sample's quantity measures ranged from 5 drinks to at least 10. NHIS measured frequency as number of days (in the preceding year) on which at least 5 drinks were consumed. We used natural logarithm to correct skewness in the quantity and frequency variables.

Each of our selected NHIS survey years was constructed as a dichotomous variable indicating 1 year between 1998 and 2011 (inclusive), with 1997 as the reference. U.S. Bureau of Labor Statistics reports provided our unemployment rates (among those 16 and older) for 1997–2011. We also had access to the annual unemployment rates (by gender) of, specifically, non-Hispanic Whites, non-Hispanic Blacks, Hispanics, and Asians. In answering our trend research questions, we took into account the following control variables: respondent age (18–85 years, approximately), poverty (100–200% of poverty or above 200% of poverty; the reference group was below 100% of poverty), education (ranging from less than 9th grade to graduate of college or higher), current employment (versus not employed), house ownership (versus no ownership), and married/living with partner (versus not married/living with partner).

2.3. Data analysis strategy

Our final analyses were limited to data on heavy drinkers only. In systematically deleting from our outcome equation any participant not classified as a heavy drinker, a problem of potential selection bias emerged. We used a two-stage process to address this threat to our results' validity. First, we developed a *hazard rate* for each case (Beck, 1983). To obtain hazard rates, we used a selection equation predicting probability of being a heavy drinker rather than non-heavy drinker. The equation involved all control variables plus nativity (i.e., U.S. or other birthplace); including nativity ensured an identified outcome model.

The literature documents differential age patterns characterizing heavy drinking within different racial/ethnic groups (Kanny et al., 2011). In anticipation of a curvilinear relationship, then, the second stage of the process became regressing each outcome measure (quantity, frequency), separately for 8 race/gender groups: White male, White female, Black male, Black female, Hispanic male, Hispanic female, Asian male, Asian female; on the 2 age variables we employed (age, age^2), on the hazard rate, and on the control variables (poverty, education, employment, house ownership, marital status). Via these regressions, we developed adjusted frequency and adjusted quantity variables.

Next, to illustrate changes in respondents' heavy drinking over the years covered by our data, we regressed our adjusted heavy-drinking measures corresponding to the 8 groups, on the 14 dummy variables indicating survey year. The results facilitated our calculation of final heavy-drinking measures aggregated for each group. For unbiased estimation of regression results, we used the sample weights provided by the dataset, along with STATA software.

In the fourth step of analysis, each of the 2 final heavy-drinking measures was regressed, separately, on each annual unemployment rate (15 in all), as well as on each race/gender-specific annual unemployment rate; this generated the relationships, for the years 1997–2011, between unemployment rate and heavy drinking, for each of the 8 groups. We also tested whether race moderated the survey year–heavy drinking relationships we calculated. To do so, we compared the 4 racial groups' coefficients for each survey year that had yielded at least 3 significant coefficients; White provided the reference. These comparisons were made, separately, for the two gender groups and the two heavy-drinking measures. To compare the racial groups' coefficients for a given year, we regressed heavy-drinking measures (1) on main effects of the dummy variables Black, Hispanic, and Asian; (2) on dummy variables indicating survey year (14 in all, 1998–2011); and (3) on interactions involving a given year and Black, Hispanic, and Asian. Any significant interactions observed in this testing process indicated that a given year had affected heavy drinking differently within a minority subsample than within the White subsample.

In light of the recent momentous economic recession, we also created the dichotomous variable recession, for which 1 indicated the period 2007–2011 and 0 indicated 1997–2006 (the reference). Annual national unemployment remained low until 2009, although this recession had in fact begun in December 2007; and, while the recession officially ended in 2009, high unemployment has persisted (Bureau of Labor Statistics, 2012). Contextualizing our adjusted heavy-drinking outcomes in the dichotomous recession/no recession context, we used HLM7 software and hierarchical linear regression to further explore recession's association with heavy-drinking measures, controlling for race and gender.