Full length article

Racial/ethnic differences in 30-year trajectories of heavy drinking in a nationally representative U.S. sample

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ABSTRACT

Background: Racial/ethnic minorities bear a disproportionate burden of alcohol-related problems in the U.S. It is unknown whether this reflects harmful patterns of lifecourse heavy drinking. Prior research shows little support for the latter but has been limited to young samples. We examine racial/ethnic differences in heavy drinking trajectories from ages 21 to 51.

Methods: Data on heavy drinking (6+ drinks/occasion) are from the 1979 National Longitudinal Survey of Youth (N = 9468), collected between 1982 and 2012. Sex-stratified, generalized estimating equations (GEE) were used to model heavy drinking frequency trajectories as a function of age with a cubic curve, and interactions of race with age terms were tested to assess racial/ethnic differences. Models adjusted for time-varying socioeconomic status and marital and parenting status; predictors of trajectories were examined in race- and sex-specific models.

Results: White men and women had similarly steep declines in heavy drinking frequency throughout the 20s, contrasting with slower declines (and lower peaks) in Black and Hispanic men and women. During the 30s there was a Hispanic-White crossover in men's heavy drinking curves, and a Black-White female crossover among lifetime heavy drinkers; by age 51, racial/ethnic group trajectories converged in both sexes. Greater education was protective for all groups.

Conclusion: Observed racial/ethnic crossovers in heavy drinking frequency following young adulthood might contribute to disparities in alcohol-related problems in middle adulthood, and suggest a need for targeted interventions during this period. Additionally, interventions that increase educational attainment may constitute an important strategy for reducing heavy drinking in all groups.

1. Introduction

Racial/ethnic minorities bear a disproportionate burden of alcohol-related morbidity and mortality in the U.S. (Greenfield, 2001; Hilton, 2006; National Institute on Alcohol Abuse and Alcoholism (NIAAA), 2001; Stinson et al., 1993; Yoon and Yi, 2007). Compared to Whites, Black and Hispanic drinkers are at greater risk for negative drinking consequences and alcohol dependence symptoms (Caetano and Clark, 1998; Greenfield et al., 2003; Herd, 1994), as well as later alcohol use disorder onset and persistence (Grant et al., 2012). They also have higher rates of alcoholic liver disease (Chartier and Caetano, 2010), with Hispanics showing earlier onset and more severe consequences than Whites (Levy et al., 2015; Polednak, 2008; Yoon et al., 2011). Such disparities appear somewhat paradoxical given the lower or similar rates of heavy drinking and alcohol disorders in Blacks and Hispanics compared to Whites (Grant et al., 2015). This seeming discrepancy might be explained by differential abstention and access to alcohol interventions (Dawson et al., 2015; Mulia et al., 2014a), as well as possible differences in lifecourse drinking patterns.

Information on long-term heavy drinking, in particular, might shed light on disparities in conditions that often develop after years of heavy drinking, such as alcohol dependence and alcoholic liver disease, yet such data are uncommon. Much of what is known about long-term drinking patterns comes from developmental studies indicating that drinking commonly begins in adolescence, increases and peaks in the early twenties, and decreases thereafter Chen and Jacobson, 2012; Maggs and Schulenberg, 2004/2005). While different types of alcohol trajectories have been observed (e.g., Capaldi et al., 2013; Casswell et al., 2002; Jackson and Sher, 2005; Sher et al., 2011; Warner et al., 2007), a pattern of "aging out" of heavy drink-

ing is considered normative (Karlamangla et al., 2006; White and Jackson, 2004 /2005).

There are, however, some indications that "aging out" may differ across race. In contrast to White heavy drinking prevalence rates that rise and fall significantly during the twenties, Black heavy drinking rates climb slowly and plateau in the late 20s (Godette et al., 2006). Further, two studies based on the National Alcohol Survey (NAS) suggest more prolonged heavy drinking among minorities. In a 1992 follow-up of a 1984 sample of heavy drinkers, Hispanics and Blacks evidenced longer heavy drinking careers than Whites (Caetano and Kaskutas, 1995), and a recent analysis of the 2009–10 NAS found that Hispanic men and Black women had greater relative risks for persistent (vs. declining) heavy drinking compared to Whites (Mulia et al., under review).

Prospective longitudinal data are needed to confirm such patterns and determine whether and how racial/ethnic groups differ in lifetime heavy drinking. The sparse research examining this question has yielded mixed findings. Using time-varying effect models to analyze data from the National Longitudinal Study of Adolescent Health (AddHealth), Evans-Polce et al. (2015) found that White heavy drinking rose steeply to age 21 then declined, while Hispanic and Black trajectories remained comparatively flat or increased slightly throughout the 20s. By age 30, White and Hispanic heavy drinking converged, but Whites still exceeded Blacks in heavy drinking. A second AddHealth study by Keyes et al. (2015) examined sex-stratified, difference-in-differences models and showed consistently greater consumption in Whites compared to Blacks; the authors speculated about possible convergence in White and Black men's risky drinking beyond the ages observed. In a third AddHealth study, Chen and Jacobson's (2012) multilevel analysis showed a clear convergence in heavy drinking frequency of all three racial/ethnic groups by the early 30s. This is similar to Muthén and Muthén's (2000) results based on the 1979 National Longitudinal Survey of Youth (NLSY) and Cooper et al.'s (2008) longitudinal findings, which both showed eventual Black-White convergence in heavy drinking frequency.

While these studies indicate some racial/ethnic differences in "aging out" of heavy drinking, there is little evidence of more prolonged heavy drinking by minorities. However, nearly all of these studies ended with young adulthood. The exception was the NLSY study which followed individuals to age 37 and revealed both an upward trend in Black heavy drinking and a "crossover" in alcohol problems, with Blacks surpassing Whites and Hispanics in the mid–30s (Muthén and Muthén, 2000). This raises the question of whether longer follow-up might yield a different picture of racial/ethnic drinking patterns that could further understanding alcohol-related health disparities in middle adulthood. Additionally, the findings of Keyes et al. (2015) suggest the need to consider sex-specific trajectories.

The current study aims to address these questions by examining the heavy drinking trajectories of White, Black and Hispanic men and women from ages 21 to 51. To our knowledge, this is the first prospective, longitudinal study based on nationally representative U.S. data to examine disparities in heavy drinking from early adulthood to middle age.

2. Materials and methods

2.1. Dataset

We used data from the 1979 National Longitudinal Survey of Youth (NLSY), which follows a nationally-representative sample of non-institutionalized, civilian (non-military) youth selected using multi-stage probability sampling, including a general population sample and oversamples of Black, Hispanic, and economically-disadvantaged youth. Respondents provided verbal consent prior to each interview after having received an advance letter explaining the study and discussing concerns with interviewers. The NLSY interviewed 12,686 youth ages 14–21 in 1979 and followed them annually through 1994 and biennially since then (to ages 47–55 in 2012), with a response rate of 79% in 2012 among those remaining eligible and non-deceased (Bureau of Labor Statistics, 2012). The analytic sample for this study includes 4633 men and 4835 women who were in the civilian population sample and who provided data on heavy drinking between ages 21 and 51. Data were weighted using the NLSY custom weighting program which uses data from multiple survey years, adjusts for the sampling design, and includes a post-stratification weighting adjustment to ensure representation proportionate to the 1979 Census (Bureau of Labor Statistics, 2016). In the current analysis of heavy drinking, weighting takes into account (non)participation in survey waves where drinking data were collected such that those respondents who participated in at least one of these waves were included in the analytic sample.

2.2. Measures

2.2.1. Heavy drinking.
Our primary outcome was the frequency of heavy drinking (defined as "6 or more drinks on one occasion") in the 30 days prior to interview. Because the NLSY response options changed in 2006, we used a four-category variable (never, less than once a week, 1–2 times per week, more than 2 times per week) coded using the weighted empirical means of the midpoints for each response category, and limiting the upper value to be consistent across both sets of response options. Category values were 0, 1.8 (mean of once and 2–3 times per month), 5.1 (mean of 4–5 times and 6–7 times per month), and 11.0 (mean of 8–9 times and 10 or more times per month), and the outcome was treated as a continuous variable. The mean frequency of heavy drinking in 1982 was 1.79 (SD = 2.93); in 2012, it was 0.69 (SD = 1.98).

Substantial changes in the interview protocol in 1985 resulted in estimates of heavy drinking that were markedly and systematically lower than all other years. We therefore excluded this interview from our analyses. Heavy drinking was measured at 11 time-points, with an average of 8 data points per individual; 98.4% of men and 98.7% of women had data at three or more time-points.

2.2.2. Demographic variables.
Race/ethnicity was based on the NLSY assignment of respondents according to self-reported "origin or descent" and self-reported origin with which they most closely identify (for those with multiple racial/ethnic origins). Race/ethnicity was coded at baseline using two mutually-exclusive dummy variables for Black/African American (1361 men; 1409 women) and Hispanic/Latino (858 men; 893 women); White/Caucasian was the referent (2414 men; 2533 women). We omitted data from all other respondents (719 men and 774 women) due to small and heterogeneous sub-samples for groups such as Native Americans, Asian/Pacific Islanders, and those of other race/ethnicity.

Poverty status was a time-varying variable indicating whether family income in the 12 months prior to each interview was below the federal poverty level. Education was a time-varying variable indicating the highest grade completed, coded in one-year increments from "no formal education" (0) to "8 years of college" (20). Marital status was a time-varying variable coded with two dummy variables for single (never married) and divorced/separated/widowed, using currently married as the referent. Parenthood status was represented with a time-varying dichotomous variable indicating whether the respondent had at