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The 2008–2009 Recession and Alcohol Outcomes: Differential Exposure and Vulnerability for Black and Latino Populations

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ABSTRACT. Objective: We examined whether race/ethnicity was related to exposure to acute economic losses in the 2008–2009 recession, even accounting for individual-level and geographic variables, and whether it influenced associations between economic losses and drinking patterns and problems. **Method:** Data were from the 2010 National Alcohol Survey (N = 5,382). Surveys assessed both severe losses (i.e., job and housing loss) and moderate losses (i.e., reduced hours/pay and trouble paying the rent/mortgage) attributed to the 2008–2009 recession. Alcohol outcomes included total annual volume, monthly drunkenness, drinking consequences, and alcohol dependence (based on criteria from the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*). **Results:** Compared with Whites, Blacks reported significantly greater exposure to job loss and trouble paying the rent/mortgage, and Latinos reported greater exposure to all economic losses. However, only Black–White differences were robust in multivariate analyses. Interaction tests suggested that associations between exposure to economic loss and alcohol problems were stronger among Blacks than Whites. Given severe (vs. no) loss, Blacks had about 13 times the odds of both two or more drinking consequences and alcohol dependence, whereas the corresponding odds ratios for Whites were less than 3. Conversely, associations between economic loss and alcohol outcomes were weak and ambiguous among Latinos. **Conclusions:** Results suggest greater exposure to economic loss for both Blacks and Latinos (vs. Whites) and that the Black population may be particularly vulnerable to the negative effects of economic hardship on the development and/or maintenance of alcohol problems. Findings extend the economic literature and signal policy makers and service providers that Blacks and Latinos may be at special risk during economic downturns. (*J. Stud. Alcohol Drugs, 74,* 9–20, 2013)

ALTHOUGH THE UNITED STATES has experienced several recessions in the last 50 years, the 2008–2009 recession is distinguished by its extensive loss of jobs, housing, and wealth as well as by an unusually prolonged recovery. Most Americans have suffered some loss because of the collapse, but Black and Latino populations have been especially hard hit (Taylor et al., 2011). The effects of further economic strain on health-related outcomes within these already disadvantaged groups are of particular concern. Accordingly, this article examines (a) associations between race/ethnicity and exposure to specific, acute economic losses during the 2008–2009 recession and (b) whether associations between economic loss and drinking patterns and problems varied across racial/ethnic groups. Thus, we explore both differential exposure and differential vulnerability to economic loss (Diderichsen et al., 2001).

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Prior research on the effects of economic loss on alcohol outcomes

Numerous studies now associate economic loss, assessed at both individual and population levels, with poorer mental and physical health outcomes (Catalano et al., 2011). Reason suggests that, by increasing psychological distress, economic loss may also lead to greater alcohol consumption and problems. Studies on this question, however, have been conflicting. Several econometric (i.e., population-level) studies have associated economic downturns with reductions in volume of alcohol consumed, frequency of consumption, and liver-related mortality (Freeman, 1999; Gerdtham and Ruhm, 2006; Ruhm, 1995; Ruhm and Black, 2002). Nevertheless, those same studies have produced contradictory results for heavy drinking and alcohol dependence (Dee, 2001; Ruhm and Black, 2002), as have international studies (e.g., Johansson et al., 2005). Studies examining acute economic losses on the individual level have likewise produced ambiguous results. For example, some studies have associated job loss

with increased heavy drinking and drinking-related problems (Catalano et al., 1993; Dooley and Prause, 1998; Mossakowski, 2008), including one rigorous, longitudinal study of a plant closure (Eliason and Storrie, 2009). Still others have reported mixed (Ettner, 1997; Hammer, 1992; Lahelma et al., 1995) or null (Gallo et al., 2001; Morris et al., 1992) results, even for heavy drinking and alcohol problems. In short, results are mixed even within a given outcome and study type.

Inconsistencies in the literature may be partially explained by the fact that relationships between economic loss and alcohol outcomes depend on characteristics of the exposure, individual, and social context. This highlights the need for nuanced studies addressing potential moderators of associations with alcohol outcomes (e.g., race/ethnicity).

Race/ethnicity and economic loss

In general, the economic literature has paid little attention to subgroup differences in exposure and (especially) response to economic loss during economic downturns. Yet, race/ethnicity has been a key correlate of economic loss during the 2008–2009 recession and its aftermath. Using data from the U.S. Census Bureau, Taylor et al. (2011) showed that, from 2005 to 2009, inflation-adjusted median wealth fell by 66% among Latino households and 53% among Black households, compared with only 16% among White households. As a consequence, the median wealth of White households is now 18 times that of Latino households and 20 times that of Black households. Declining housing values appear to be the principal cause of the erosion of wealth among Blacks and Latinos, but rates of home foreclosure have also been greatest among these groups (Been et al., 2008; Pollack and Lynch, 2009). Further, employment has fallen disproportionately among Blacks and Latinos (Lopez and Cohn, 2011), which may partly reflect the concentration of racial minorities in the sensitive service, manufacturing, and construction sectors (Wessler, 2009).

Race/ethnicity may also affect the health consequences of economic loss. As discussed, Black and Latino households typically have lower income and less personal wealth than White households (Smith, 1995), as well as less access to social networks and information crucial to accessing employment and financial support (Fernández-Kelly, 1998). The effects of any economic loss in these populations, therefore, are likely to be particularly prolonged and debilitating. Moreover, limitations in access to mental and physical health services among Blacks and Latinos (Alegría et al., 2002; Mulia et al., 2011; Wells et al., 2001) are likely to exacerbate any health consequences that do emerge, because problems should be more likely to go untreated. Last, the social context may inform interpretations of economic loss in ways that lead to worse outcomes for Blacks and Latinos. Namely, Blacks and Latinos may be more likely than Whites to attribute economic loss to discrimination and (in part because of this attribution) less likely to expect a rapid return to employment and financial security. This could exacerbate their vulnerability to alcohol problems since perceived discrimination may provoke psychological distress (Jackson et al., 1996; Kessler et al., 1999; Williams et al., 2003) and has been associated with drinking consequences and alcohol dependence (Mulia et al., 2008; Mulia and Zemore, 2012; Yen et al., 1999, Zemore et al., 2011). In addition, research suggests that expectations of future economic strain may intensify or even mediate the negative effects of economic loss on mental health (Creed and Klisch, 2005; McKee-Ryan et al., 2005).

Current study

In response to these considerations, our study examined how race/ethnicity related to exposure and response to acute economic loss using data from the (cross-sectional) 2010 National Alcohol Survey (NAS), a general population survey collected during the height of the recession. Our main goal was to test whether associations between exposure to economic loss during the recession and alcohol-related outcomes varied by race/ethnicity (i.e., differential vulnerability). To our knowledge, no other studies have examined this question. Yet, identifying factors that modify the effects of economic loss should help to resolve inconsistencies in the existing literature and is crucial to developing a more complete model of how, when, and why economic loss affects alcohol consumption and problems. A secondary aim was to clarify relationships between race/ethnicity and exposure to economic loss during the recession. Although some data, described above, already show that the recession affected racial/ethnic groups differently, an examination of associations between race/ethnicity and economic loss in a multivariate (and national) context is needed to clarify whether race/ethnicity is an independent determinant of exposure or whether other factors, such as drinking history, socioeconomic status, and state unemployment, explain the association. Following from the above, we hypothesized that (a) Blacks and Latinos would be more severely affected than Whites by all economic losses assessed, and that these associations would be reduced but not eliminated when accounting for other factors; and (b) relationships between economic loss and heavier drinking and alcohol problems would be stronger for both Blacks and Latinos than Whites.

Method

National Alcohol Survey

Our data source was the 2010 NAS. The current analysis includes only data from complete landline interviews (N = 5,382, or 86% of all landline cases). The 2010 NAS was conducted between June 2009 and March 2010 and involved

computer-assisted telephone interviews with a national probability sample of adults age 18 years and older. Households were selected through single-stage random-digit dialing, and individuals within households were selected (randomly) using the Kish Grid method (Kish, 1965). Surveys included a main sample and oversamples of sparsely populated U.S. states as well as Blacks and Latinos; the latter groups were obtained by targeting telephone exchanges with Black/Latino densities of at least 40%. The survey cooperation rate was 49% for the current sample (American Association for Public Opinion Research, 2000), which is typical of recent U.S. telephone surveys in a time of increasing barriers to random-digit dialing studies (Midanik and Greenfield, 2003b; Midanik et al., 2001). Interviews were conducted, in English and Spanish, by trained bilingual interviewers. For more details on the design and conduct of the NAS, see Kerr et al. (2004).

Economic loss variables

The NAS included five items assessing household economic losses, beginning with, "Have you or another member of your household been negatively affected by the recent economic downturn or recession? That is, since January 2008?" Respondents indicating "yes" were then asked four follow-up questions, all yes/no. Questions were, "Since January 2008, did you or anyone in your household . . . " (a) "lose a job," (b) "lose their housing, either owned or rented," (c) "have their hours or pay reduced at work," and (d) "have trouble paying the rent or mortgage?" Items were analyzed separately and as a composite assessing severe loss (i.e., lost job and/or lost housing), moderate loss (i.e., reduced working hours/pay and/or trouble paying the rent/mortgage, but no severe losses), or no loss. All items were associated with a seven-category measure of annual household income, supporting their validity (ps < .001).

Alcohol outcomes

Total volume. Volume of drinking was measured using a graduated frequency approach (Greenfield, 2000a; Rehm et al., 1999). This method involves solicitation of frequency of drinking using a 7-point scale for each of 6 volume levels: 12 or more, 8–11, 5–7, 3–4, 2, and 1 drink(s) in a given day. Total volume is calculated by multiplying frequency and volume for each level and summing. Volume scores were log-transformed after adding a constant (Carroll and Ruppert, 1988). The graduated frequency approach yields data that agree well with detailed prospective diary data (Hilton, 1989) and is much superior to simpler quantity–frequency measures for capturing occasional heavy drinking (Greenfield, 2000a).

Drinking to drunkenness. Problem drinking was measured with the item, "How often in the past year did you drink enough to feel drunk?" which used a 9-point response scale. Because of skew, responses were dichotomized to indicate monthly drinking to drunkenness (vs. less/none). Frequency of drunkenness has been strongly associated with drinking consequences, dependence symptoms, and harms in prior research, and some evidence suggests it is a better indicator of problem drinking than apparently more objective measures, such as 5+ drinking (Greenfield, 1998).

Drinking consequences. Drinking consequences in the past 12 months were captured by a 15-item scale assessing presence of problems while or because of drinking across five domains: social (4 items), legal (3 items), workplace (3 items), health (3 items), and injuries and accidents (2 items). Again because of skew, we created a dichotomous variable indicating two or more consequences (vs. fewer/none). Items have been used successfully in the NAS for decades (Cahalan, 1970; Midanik and Greenfield, 2000).

Alcohol dependence symptoms. Dependence was measured using a 17-item scale representing symptoms in the seven domains identified by the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV; American Psychiatric Association, 1994). Consistent with American Psychiatric Association procedures, we created a dichotomous variable indicating the presence of three or more symptoms in as many domains (vs. fewer/none) over the past 12 months.

Covariates

History of alcohol-related health problems. Surveys also included the questions, "Was there ever a time when you felt your drinking had a harmful effect on your health?" and "What age were you when your drinking first had a harmful effect on your health?" This information was used to determine whether the respondent had an alcohol-related problem before January 2008. Status on this variable was positively associated with all four alcohol outcomes (ps < .05).

Parental history of alcohol problems. Parental history of alcohol problems was assessed with the questions, "Have any of your (other) blood relatives ever been a problem drinker or an alcoholic?" and (if yes), "Which blood relatives have been problem drinkers or alcoholics?" Respondents indicating that a parent had had an alcohol problem were coded as *yes* (vs. *no* for all others). Parental history was also positively associated with all alcohol outcomes (ps < .05).

Demographic and geographic variables. Race/ethnicity was ascertained by asking participants which among the following best described their family origin: White (not of Hispanic origin), White (of Hispanic origin), Black (not of Hispanic origin), Black (of Hispanic origin), Asian, American Indian/Alaskan Native, or Other. These categories were recoded as White (not of Hispanic origin), Black (not of Hispanic origin), Latino (including both Whites and Blacks of Hispanic origin), and Other (all other). Additional de-

mographic variables included gender (male or female), age (continuous), education (less than high school, high school and/or some college, or college degree), annual household income adjusted for household size (≤$12,500, $12,501–$30,000, >$30,000, or missing), and marital status (married/living as married or not married/living as married). State unemployment was determined using data published by the U.S. Bureau of Labor Statistics (United States Department of Labor, 2011). To capture unemployment during the peak of the recession, we averaged rates for each state across 2008 and 2009.

Analysis

In a preliminary analysis, we examined bivariate associations between the various recession-related losses, race/ethnicity, and key covariates. We then tested Hypothesis 1 (addressing differential exposure) using hierarchical logistic regressions examining associations between economic losses and race/ethnicity alone (first) and with demographic variables (second), drinking history variables (third), and state unemployment (fourth). Parallel multinomial logistic regressions were used to examine the effects of race/ethnicity on our composite measure of loss. These latter models determined whether effects for race/ethnicity on economic loss were explained by confounding. Multivariate models excluded individuals of Other race/ethnicity, who formed a small, heterogeneous group. Hypothesis 2 (addressing differential vulnerability) was tested using linear and logistic regressions examining effects for race/ethnicity, recession-related loss, and their interaction on all four alcohol outcomes. Note that we use the term *interaction* throughout to describe "cases where the relationship between two variables varies as a function of a third (moderator) variable" (Jaccard, 2001, p. 13), which may be understood as "effect modification." We focused on the composite measure of loss for Hypothesis 2 rather than conducting separate tests for each indicator because statistical power was limited and Type I error likely to be a problem with multiple testing. However, these analyses were supplemented by exploratory tests of the separate indicators. Exploratory analyses also addressed whether findings generalized across genders within each race/ethnicity. For Hypothesis 1, we specifically tested whether gender interacted with race/ethnicity to predict composite (severe, moderate, or no) loss. For Hypothesis 2, we conducted additional bivariate regressions and chi-square tests exploring associations between composite loss and alcohol outcomes within each Race × Gender group. Cell sizes were insufficient to conduct a more formal test of effect modification by gender (i.e., to reliably detect three-way interactions involving gender, race/ethnicity, and economic loss).

Across models, all demographic variables that were significantly associated with the outcomes under study were included as controls, except income, which was excluded from the exposure analyses because reduced income is often synonymous with economic loss. Drinking history variables were included in all models to help address the possibility of reverse causation (i.e., the possibility that associations between alcohol outcomes and economic loss are explained by effects for problem drinking on economic loss instead of, or in addition to, the reverse). Data were weighted to adjust for the probability of selection and by sex, age, race/ethnicity, education, and state. Weights were constructed to make the weighted sample comparable on these characteristics to the entire U.S. population, as reflected by the 2008 American Community Survey (United States Census Bureau, 2012). All analyses were conducted using Stata Release 10.0 (StataCorp LP, College Station, TX).

Results

Sample characteristics

Table 1 displays the sample characteristics. Results show that, compared with Whites, the Black and Latino samples were significantly younger, less educated, less likely to be employed, and lower on income; further, Blacks were significantly less likely to be married or living with a partner. Parental history of an alcohol problem was marginally less prevalent among those of Other race/ethnicity, and monthly drunkenness was marginally more prevalent among Whites (vs. other groups).

Bivariate and multivariate associations between race/ethnicity and recession-related losses

Table 2 displays the bivariate associations between recession-related losses, race/ethnicity, and all key covariates. Partially confirming expectations, race/ethnicity was associated with three of the four indicators of loss. Blacks and Latinos showed about double the rates, compared with Whites, of both job loss and trouble paying the rent/mortgage. This pattern was also obtained for housing loss, although racial/ethnic differences were not significant. Further, Latinos were more likely than Whites to report reduced hours/pay. Prevalence of any severe loss (i.e., lost job and/or housing) was significantly higher among Blacks (at 23.7%) and Latinos (at 25.4%) than Whites (at 14.9%), whereas there was no association between race/ethnicity and moderate loss exclusive of severe loss. Individuals of Other race/ethnicity showed somewhat greater exposure to job loss (and hence any severe loss) than Whites, as well as greater trouble paying the rent/mortgage.

Both age and education were significantly associated with all four indicators of economic loss. Respondents aged 18–24 years were especially prone to experience job and housing loss, and prevalence of reduced working hours/pay and trouble paying the rent/mortgage peaked between the

TABLE 1. Sample characteristics (N = 5,382), including weighted and unweighted statistics

Variable	White weighted % (unweighted n)	Black weighted % (unweighted n)	Latino weighted % (unweighted n)	Other weighted % (unweighted n)
Total sample	68.3 (3,133)	11.3 (1,040)	13.1 (1,035)	7.3 (174)
Demographics				
Gender				
Male	48.4 (1,223)	46.8 (310)	52.1 (340)	47.3 (64)
Female	51.6 (1,910)	53.3 (730)	47.9 (695)	52.8 (110)
Age, in years				
18–24	10.4*** (75)	16.6 (41)	17.5 (84)	18.8 (13)
25–29	6.8 (81)	10.1 (50)	12.1 (87)	6.5 (5)
30–39	16.6 (289)	16.7 (111)	26.6 (217)	17.9 (25)
40–49	21.3 (557)	22.0 (158)	19.4 (206)	21.1 (30)
50–59	18.3 (690)	15.5 (223)	14.2 (189)	15.2 (36)
60–100	26.7 (1,385)	19.2 (432)	10.3 (224)	20.5 (53)
Education				
Less than high school	10.1*** (174)	19.7 (140)	34.8 (290)	15.4 (23)
High school/some college	60.1 (1,563)	59.2 (581)	54.3 (517)	55.0 (84)
College graduate	29.8 (1,383)	21.2 (313)	10.9 (221)	29.7 (65)
Employment status				
Employed	57.4*** (1,584)	49.5 (465)	54.4 (520)	55.2 (89)
Unemployed	7.5 (160)	17.8 (104)	11.6 (94)	4.4 (9)
Other	35.0 (1,383)	32.6 (468)	33.9 (420)	40.4 (75)
Adjusted annual income[a]				
≤12,500	25.9*** (645)	46.3 (402)	46.8 (477)	26.3 (43)
>12,500 but ≤30,000	30.1 (869)	21.9 (224)	21.8 (198)	24.1 (44)
>30,000	30.7 (1,185)	18.9 (275)	14.1 (187)	35.7 (58)
Missing	13.4 (434)	13.0 (139)	17.3 (173)	14.0 (29)
Marital status				
Married/living with partner	68.0*** (1,873)	57.0 (380)	65.7 (622)	58.4 (98)
Other	32.1 (1,245)	43.1 (645)	34.3 (402)	41.6 (75)
Alcohol variables				
Alcohol-related health problem before recession	14.9 (413)	12.4 (113)	14.9 (120)	14.4 (24)
Parental history of alcoholism	24.2† (696)	23.7 (199)	27.6 (276)	16.4 (35)
Monthly drunkenness	9.2† (165)	5.9 (29)	4.5 (32)	4.8 (5)
≥2 drinking consequences	3.3 (61)	5.5 (24)	2.4 (17)	3.6 (6)
≥3 DSM-IV dependence	2.9 (51)	4.7 (15)	3.3 (18)	1.1 (2)

Notes: DSM-IV = *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.* [a]Annual household income divided by family size, in U.S. dollars.
†$p < .10$; ***$p < .001$.

TABLE 2. Associations between severe and moderate recession-related losses and race/ethnicity, other demographic factors, and drinking history covariates (N = 5,382): Weighted data

Variable	Severe: Lost job (n = 872) %	Severe: Lost housing (n = 184) %	Moderate: Reduced working hours or pay (n = 1,666) %	Moderate: Trouble paying rent or mortgage (n = 850) %	Any severe loss (n = 939) %	Any moderate (no severe) loss (n = 1,054) %
Demographics						
Race/ethnicity						
White	14.1***	2.9	30.5*	12.3***	14.9***	20.3
Black	22.1	5.0	30.9	26.8	23.7	18.5
Latino	23.0	5.9	39.2	24.2	25.4	20.9
Other	17.8	2.3	28.6	19.7	20.1	14.9
Age						
18–24	22.4***	7.5*	35.1***	19.2***	24.6***	18.0***
25–29	18.0	3.0	32.7	21.9	19.2	17.3
30–39	19.9	4.5	37.8	24.0	20.6	24.1
40–49	19.3	3.1	40.3	18.2	20.1	26.8
50–59	16.3	2.8	35.7	14.2	18.2	23.7
60–100	7.8	1.8	13.6	5.7	8.8	8.8
Gender						
Male	17.2	3.7	32.2	14.5†	18.4	19.5
Female	15.7	3.2	31.0	17.4	17.0	20.1
Education						
<High school	18.4*	5.7**	29.6*	20.8***	21.1**	17.5
High school/ some college	17.7	4.0	34.0	17.1	18.9	20.7
College graduate	12.8	1.2	27.7	11.2	13.3	19.3
Alcohol-related variables						
Alcohol-related health problem before recession						
Yes	20.4†	3.7	37.8*	24.0***	21.8†	26.6**
No	15.7	3.5	30.5	14.7	16.9	18.6
Parental history of alcoholism						
Yes	19.0†	5.5*	35.0†	20.2**	20.5†	22.2
No	15.6	2.8	30.5	14.7	16.7	19.0

†p < .10; *p < .05; **p < .01; ***p < .001.

ages of 40–49 and 30–39, respectively. Lower education was associated with higher levels of all four economic losses, but not with moderate loss exclusive of severe loss (similar to race/ethnicity). Gender was not reliably associated with economic losses, although women were marginally more likely than men to report trouble paying the rent/mortgage. Both those reporting an alcohol-related health problem before the recession (vs. not) and those with a parental history of alcohol problems (vs. not) were marginally or significantly more likely to report all losses assessed, except that housing loss was unrelated to history of an alcohol-related health problem.

Table 3 displays the hierarchical models testing associations between exposure to recession-related losses and race/ethnicity. Results from these more focused analyses again reveal bivariate associations between Black (vs. White) race/ethnicity and both job loss (showing an odds ratio [OR] of 1.74) and trouble paying the rent/mortgage (OR = 2.61), along with bivariate associations between Latino (vs. White) race/ethnicity and all indicators of economic loss (ORs = 1.47–2.27). Blacks and Latinos also showed higher levels of severe (but not moderate) loss (vs. Whites), paralleling Table 2 (ORs = 1.79 for Blacks, 2.06 for Latinos). Parameter estimates comparing Blacks with Whites were largely robust, even in the full models including state unemployment, whereas effects for Latino (vs. White) race/ethnicity were successively diminished and ultimately eliminated by the inclusion of demographic variables and state unemployment.

Effects for race/ethnicity on the relationship between recession-related loss and alcohol outcomes

Examining race/ethnicity as a moderator of the association between economic loss and alcohol outcomes, Table 4 shows the results of multivariate models regressing alcohol outcomes on race/ethnicity, level of economic loss (i.e., severe, moderate, or none), and their interaction. Again partially consistent with expectations, two marginally sig-

TABLE 3. Bivariate and multivariate effects of race/ethnicity on recession-related losses, excluding "Other" (*n*s ≥ 4,951 except in final model, where *n*s ≥ 4,266)[a]: Weighted data

Variable	Severe: Lost job (*n* = 802) OR [95% CI]	Severe: Lost housing (*n* = 175) OR [95% CI]	Moderate: Reduced working hours or pay (*n* = 1,556) OR [95% CI]	Moderate: Trouble paying rent or mortgage (*n* = 774) OR [95% CI]	Any severe loss (*n* = 861) RR [95% CI]	Any moderate (no severe) loss (*n* = 996) RR [95% CI]
Bivariate Model						
Black	1.74**	1.77	1.02	2.61***	1.79***	1.02
(vs. White)	[1.22, 2.47]	[0.81, 3.86]	[0.76, 1.37]	[1.86, 3.65]	[1.26, 2.54]	[0.72, 1.44]
Latino	1.82***	2.11*	1.47**	2.27***	2.06***	1.24
(vs. White)	[1.36, 2.44]	[1.17, 3.78]	[1.16, 1.87]	[1.69, 3.06]	[1.53, 2.79]	[0.93, 1.66]
Adjusting for demographics[b]						
Black	1.54*	1.37	0.93	2.32***	1.54*	0.95
(vs. White)	[1.07, 2.24]	[0.62, 3.01]	[0.68, 1.27]	[1.63, 3.32]	[1.06, 2.24]	[0.66, 1.37]
Latino	1.45*	1.28	1.22	1.72**	1.54*	1.06
(vs. White)	[1.03, 2.02]	[0.69, 2.40]	[0.92, 1.61]	[1.23, 2.41]	[1.09, 2.17]	[0.76, 1.47]
Adjusting for demographics,[b] drinking history[c]						
Black	1.58*	1.41	0.95	2.43***	1.59*	0.97
(vs. White)	[1.09, 2.30]	[0.64, 3.08]	[0.69, 1.30]	[1.70, 3.47]	[1.10, 2.31]	[0.67, 1.39]
Latino	1.46*	1.31	1.23	1.75***	1.56*	1.08
(vs. White)	[1.04, 2.04]	[0.70, 2.44]	[0.92, 1.62]	[1.24, 2.47]	[1.10, 2.21]	[0.77, 1.50]
Adjusting for demographics,[b] drinking history,[c] state employment						
Black	1.55*	1.49	0.91	2.44***	1.56*	0.96
(vs. White)	[1.05, 2.28]	[0.66, 3.36]	[0.66, 1.26]	[1.68, 3.53]	[1.06, 2.30]	[0.66, 1.41]
Latino	1.08	0.94	0.90	1.44	1.12	1.01
(vs. White)	[0.66, 1.76]	[0.41, 2.16]	[0.62, 1.32]	[0.91, 2.28]	[0.69, 1.82]	[0.67, 1.54]

Notes: OR = odds ratio; RR = relative risk. [a]Any severe and any moderate loss [vs. none] examined together in a multinomial logit model; [b]demographics included age, age squared, and education; [c]drinking history variables included alcohol-related health problem before the recession and parental history of alcoholism.
*$p < .05$; **$p < .01$; ***$p < .001$.

nificant interactions emerged, suggesting that associations between severe (vs. no) loss and both alcohol-related consequences and alcohol dependence were stronger among Blacks than Whites (ORs = 5.16 and 6.08, respectively). A third marginally significant interaction suggests, counter to expectations, that the association between severe (vs. no) loss and alcohol-related consequences was weaker among Latinos than Whites (OR = 0.19). Associations between economic loss and both total volume and monthly drunkenness were equivalent across race/ethnicity, with the total sample yielding an overall association between severe (vs. no) loss and higher odds of monthly drunkenness (OR = 1.73). Given no economic loss and compared with Whites, both Blacks and Latinos reported significantly lower total volume (βs = -.779 and -.811, respectively) and decreased odds of monthly drunkenness (ORs = 0.44 and 0.28, respectively).

Illustrating the interactive effects for economic loss and race/ethnicity above, Figures 1 and 2 display associations between economic loss and alcohol problems within race/ethnicity. These figures suggest a dramatic increase in rates of both two or more consequences and alcohol dependence among Blacks given severe (vs. no) loss and a more modest increase in prevalence of these outcomes for Whites experiencing severe (vs. no) loss. Economic loss does not appear to be associated with alcohol problems among Latinos. Indeed, in disaggregated analyses, composite economic loss was significantly related to consequences and dependence among both Whites (*p*s < .05) and Blacks (*p*s < .001), but unrelated to either outcome among Latinos (*p*s > .19).

A similar pattern for race/ethnicity also emerged, although interaction terms were often nonsignificant, when interacting race/ethnicity with separate indicators for job and housing loss. That is, results suggested stronger associations between both job and housing loss and alcohol-related consequences and dependence for Blacks (vs. Whites) and weaker associations between these variables for Latinos (vs. Whites; results available on request).

TABLE 4. Interaction effects for race/ethnicity with moderate and severe loss in predicting alcohol outcomes (*n*s ≥ 4,960)[a]; weighted data

Variable	Total drinking volume β [95% CI]	Monthly drunkenness OR [95% CI]	≥2 consequences OR [95% CI]	DSM-IV dependence OR [95% CI]
Race				
Black	-0.779***	0.44*	0.46	0.44
(vs. White)	[-1.126, -0.432]	[0.21, 0.88]	[0.15, 1.38]	[0.12, 1.67]
Latino	-0.811***	0.28***	0.68	0.56
(vs. White)	[-1.142, -0.481]	[0.14, 0.56]	[0.16, 2.89]	[0.10, 3.18]
Loss				
Moderate[b]	-0.116	0.81	1.05	1.03
(vs. no)	[-0.412, 0.179]	[0.48, 1.36]	[0.43, 2.60]	[0.31, 3.36]
Severe[c]	0.220	1.73*	2.54*	2.11
(vs. no)	[-0.099, 0.538]	[1.03, 2.89]	[1.03, 6.25]	[0.81, 5.54]
Interactions				
Black × Moderate[b]	–	–	1.78	2.39
			[0.31, 10.08]	[0.32, 17.76]
Black × Severe[c]	–	–	5.16†	6.08†
			[0.81, 26.09]	[0.88, 42.14]
Latino × Moderate[b]	–	–	0.75	2.08
			[0.09, 5.95]	[0.18, 23.57]
Latino × Severe[c]	–	–	0.19†	0.70
			[0.03, 1.25]	[0.09, 5.47]

[a]Models control for gender, age, education, income, marital status, alcohol-related health problem prior to the recession, and parental history of alcoholism; [b]moderate loss is defined as working hours/pay reduced and/or trouble paying rent/mortgage but no severe loss; [c]severe loss defined as lost job and/or lost housing.
†$p < .10$; *$p < .05$; ***$p < .001$.

Exploratory analyses of gender effects

Exploratory analyses of gender effects related to Hypothesis 1 showed no evidence that gender modified associations between race/ethnicity and exposure to economic loss, with one exception: A significant interaction emerged for gender and Latino race/ethnicity in predicting moderate loss. Gender-disaggregated analyses showed that moderate loss was significantly more prevalent among Latina than White women, whereas Latino and White men showed equivalent exposure to moderate loss. Disaggregated analyses exploring gender effects related to Hypothesis 2 revealed two notable findings. First, associations between severe (vs. no) loss and drunkenness appeared to be stronger for White and Black men than they were for White and Black women and Latinos of both genders (and strongest of all for Black men): White

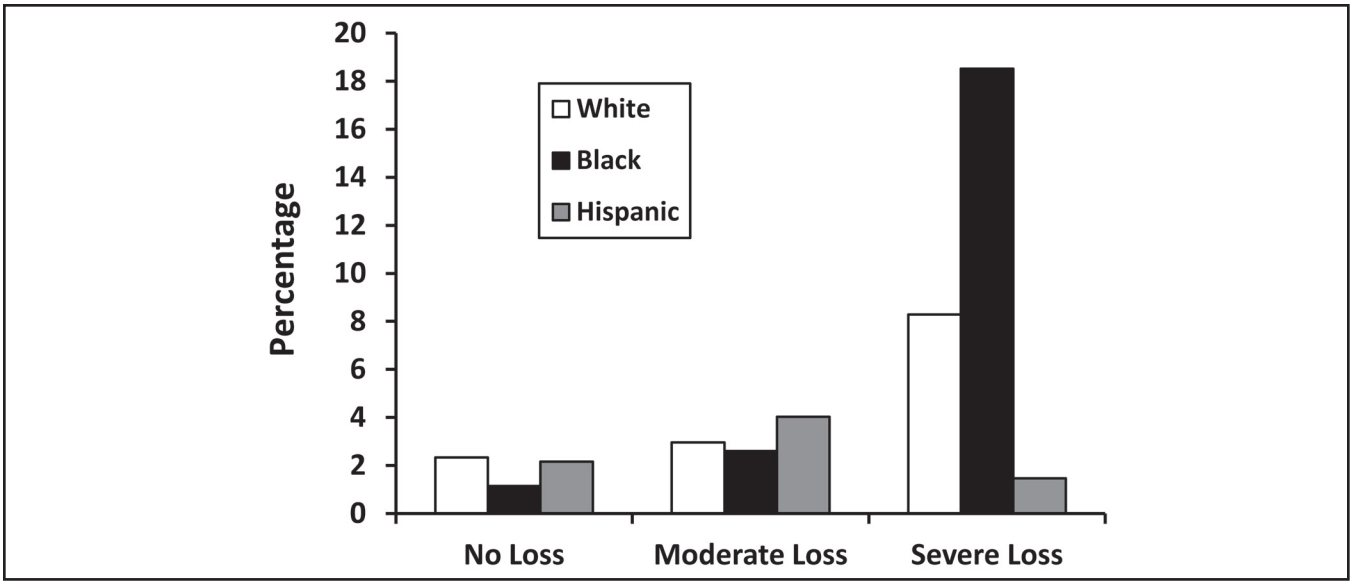

FIGURE 1. Percentage of respondents reporting two or more drinking consequences, by economic exposure and race/ethnicity

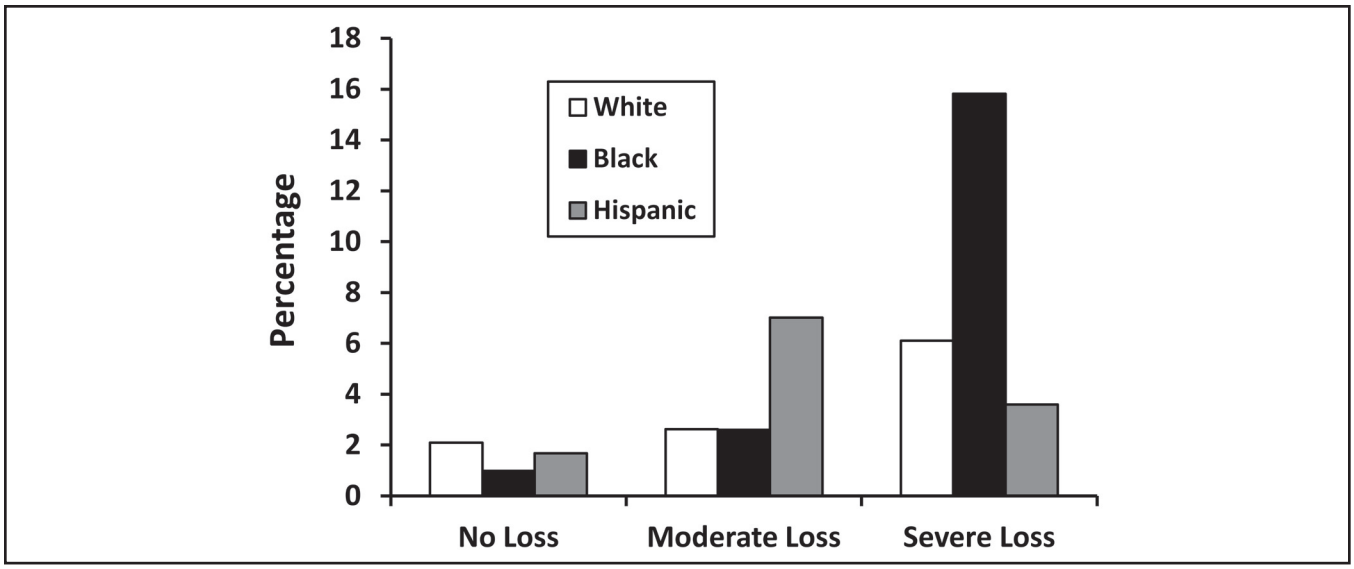

FIGURE 2. Percentage of respondents reporting alcohol dependence by economic exposure and race/ethnicity

and Black men experiencing severe loss reported significantly higher rates of monthly drunkenness (23% and 25%, respectively) than their counterparts reporting no loss (11% and 6%, respectively; *p*s < .05), whereas economic loss was unrelated to drunkenness in other groups. Second, associations between severe (vs. no) loss and alcohol dependence appeared to be stronger for Black men than Black women: Although dependence rates differed dramatically across Black men reporting severe versus no loss (at 30% vs. 2%), very few Black women in any group (<2.3%) reported dependence. Similarly, Latinas reported very low levels of consequences and dependence regardless of economic loss. Latino men showed weak-to-null associations between economic loss and consequences and dependence (*p*s = .44 and .07, respectively), with the pattern of results for Latino men reflecting the overall analysis (see figures).

Discussion

Main conclusions

The present findings add to the literature on economic loss by suggesting that race/ethnicity may be relevant to both exposure and response to economic loss during a recession. Our analyses of self-reported losses experienced because of the 2008–2009 recession indicate that Blacks were more likely than Whites to suffer both job loss and trouble paying the rent/mortgage, whereas Latinos were more likely than Whites to report all losses that were assessed. This suggests that both Blacks and Latinos may experience heightened economic strain during economic decline. As shown in Table 3, however, different factors explained the heightened vulnerability of Blacks and Latinos. Among Blacks, elevated odds of loss maintained even controlling for demographics, drinking history, and state unemployment. This suggests that racial/ethnic discrimination in employment-related decisions could be at play. Blacks' concentration in vulnerable sectors of the economy, which may not be fully captured by measures of socioeconomic status (McGeehan and Warren, 2009; Wessler, 2009), could also contribute. By contrast, the elevated risk for Latinos failed to maintain in multivariate analyses. Supplemental analyses (not shown) suggest that Latinos' heightened exposure is mostly attributable to their younger age, lower education, and greater likelihood of living in California and Nevada (United States Census Bureau, 2011), which reported among the highest unemployment rates in the nation during the recession and its aftermath (United States Department of Labor, 2011). Exploratory analyses suggested that associations between race/ethnicity and economic loss largely generalized across genders.

Findings related to our examination of differential vulnerability were especially noteworthy. A key, if tentative, finding from our study was that associations between exposure to severe loss and alcohol-related problems were stronger among Blacks than Whites. Multivariate analyses suggested that, for Whites, severe loss was associated with moderately but significantly elevated odds of consequences (OR = 2.54); effects for dependence were ambiguous (OR = 2.11, nonsignificant). The odds for Blacks (given severe vs. no loss) were 5.16 and 6.08 times these odds, or 13.11 and 12.83 for consequences and dependence, respectively (see Jaccard, 2001, pp. 18–24, on interpreting interactions). Associations between economic loss and dependence were particularly strong among Black men—who also reported higher rates of drunkenness given severe (vs. no) loss—whereas economic loss was associated with consequences, but not drunkenness

or dependence, among Black women. These differences should be interpreted cautiously given the marginal significance of the interaction terms and small cell sizes. Still, the effect sizes merit attention.

No studies have yet reported these relationships per se, but some have shown that race/ethnicity can affect the strength of the relationship between economic (and other) stressors and distress. For example, a study of the 1987 General Motors plant shutdowns reported that the effects of unemployment on mental health were stronger among Black (vs. White) workers, particularly if they were also low on education (Ennis et al., 2000; Hamilton et al., 1990). Similarly, analysis of the 2004–2005 National Epidemiologic Survey on Alcohol and Related Conditions showed that among those exposed to trauma, risk for posttraumatic stress disorder was higher among Blacks than Whites but equivalent among Latinos and slightly lower among Asians (Roberts et al., 2011).

As suggested above, Blacks' apparent vulnerability to alcohol problems may be driven in part by their weak financial safety net and limited access to health services, as well as by the attributions they may make when experiencing loss. Drinking motives and preferred contexts may also interact with economic stressors to negatively affect outcomes for Blacks. To this point, some studies have found that Blacks are more likely than Whites to drink to cope, which predicts higher risk of alcohol problems even controlling for amount consumed, especially when perceived stress is high (Abbey et al., 1993; Cooper et al., 1992, 2008). In addition, Black men may be more likely than White men to drink alone, which is associated with heavy episodic drinking and alcohol problems (Neff, 1997). It is also possible that Blacks (and perhaps especially men) who remain employed during an economic recession strategically inhibit their drinking to prevent job loss (Catalano et al., 1993), which could magnify the discrepancy in outcomes between loss and no-loss groups.

Surprisingly, our data tentatively suggested only weak and ambiguous associations between severe economic loss and heavy drinking and alcohol problems among Latinos. This may be partly attributable to the drinking style of less acculturated Latinos, characterized by infrequent consumption for both men and women—although men may consume high volumes when they do drink (Neff, 1997; Neff et al., 1991; Zemore, 2007). Infrequent drinking may reflect stricter drinking norms and offer little license for temptation. It may also be that Latinos enjoy certain protective resources, such as family support, that buffer them from the effects of economic strain (Ennis et al., 2000).

Mechanisms underlying these disparities are beyond the scope of this study, but future analyses are planned to examine mediation. Causal modeling is important to identifying points of intervention as well as to addressing the possibility that effects of problem drinking on job and housing loss explain the present pattern of results, rather than the reverse. Reverse causation is a key threat and could help explain not only overall associations between economic loss and alcohol problems but also "differential vulnerability" by race/ethnicity, assuming that the effects of problem drinking on job and housing loss are stronger among Blacks than Whites and Latinos. Controlling for drinking history only partially mitigates this concern.

An important point is that relationships between severe loss and alcohol problems were moderated by race/ethnicity, but this was not so for total volume, which was unrelated to severe loss. This suggests that racial/ethnic disparities in the relationship between severe loss and alcohol problems may not be explained by differential effects of economic loss on total consumption, but rather by differential effects on manner of drinking (e.g., drinking pattern, reasons for drinking, and venue choice). Also, the lack of relationship between amount of alcohol consumed and economic loss argues against a simple accord between income level and alcohol consumption (Ruhm, 1995).

Limitations and future research

As noted, a significant limitation is that the data are cross-sectional. As a consequence, the directionality of associations between economic loss and alcohol outcomes remains unclear. Even so, the current data do offer an important lens on associations between recession-related loss and alcohol outcomes. Although some panel studies addressing health outcomes have been conducted over the course of the 2008–2009 recession, none incorporate comprehensive measurement of alcohol variables and socioeconomic status before and after the recession. In any case, regardless of causality, associations between race/ethnicity, economic loss, and alcohol problems are informative for identifying at-risk populations.

Second, the moderate cooperation rate of the NAS raises questions about representativeness. Fortunately, at least some methodological studies suggest minimal impact for nonresponse bias. For example, studies have found only modest and inconsistent differences across telephone and in-person surveys in responses to alcohol consumption and harms questions, despite the much higher response rates for in-person surveys (Greenfield, 2000b; Midanik and Greenfield, 2003a, 2003b). Still, generalizability should be established using other data sets, particularly because the current sample excluded individuals without landlines, who differ from those with landlines (Hu et al., 2011; Lee et al., 2010).

Two additional concerns are that (a) we could not formally test whether results relevant to the differential vulnerability hypothesis were consistent across genders within race/ethnicity, and (b) the interaction effects comparing associations between severe (vs. no) loss and alcohol problems across race/ethnicity were only marginally significant. Future studies are thus needed to replicate our findings.

Final comments

The current findings extend the economic literature by suggesting a need to consider effects of economic recession within racial/ethnic subgroups as well as in the population overall. Findings also constitute a signal to policy makers and service providers that Blacks and Latinos may be at exceptionally high risk for economic problems during economic downturns, and that Blacks (and Black men especially) may be particularly vulnerable to alcohol problems. Assuming that distress helps to mediate this latter effect, other health problems may also be elevated among Blacks. Findings are especially noteworthy because further economic downturns are likely in the coming decade (Reinhart and Rogoff, 2009), suggesting a need for interventions targeted to vulnerable populations.

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