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Mental Health Service Utilization and Drinking Outcomes in a National Population Sample: Are There Racial/ Ethnic Differences?

Lisa M. Minich, MA

University of Illinois at Chicago Department of Psychiatry Psychiatric Institute

Kathleen M. Rospenda, PhD

University of Illinois at Chicago Department of Psychiatry Psychiatric Institute

Judith A. Richman, PhD

University of Illinois at Chicago Department of Psychiatry Psychiatric Institute

Abstract

Racial and ethnic disparities in alcohol use and alcohol-related problems have been well-documented. Less information is available about possible disparities in outcomes related to mental health services utilization. The differential effect of mental health services use by race on drinking outcomes was examined. Wave 2 of a national population sample of employed adults who reported having at least one alcoholic drink in the past year (n=1058) encompassed measures of the prevalence of mental health services use in response to stress, and alcohol-related outcomes. Nonwhite participants who reported using any mental health services, 4 or more mental health visits in the past year, and 8 or more mental health visits in the past year reported lower rates of problematic drinking behaviors, including frequency of drinking to intoxication, heavy episodic drinking, and modified Brief MAST scores, than whites who reported similar use of mental health services.

Introduction

Alcohol misuse and abuse are significant problems in the US. In 1998 (the most recent year estimates are available), the cost of alcohol abuse in the US topped \$184 million, including about \$26 million on alcohol-related health care costs, \$134 million on lost productivity due to alcohol-related illnesses, premature deaths, and alcohol-related crimes, and about \$25 million on other consequences to society, including motor vehicle crashes, crime, fire destruction, and social welfare administration.¹ In one recent national study, 30% of participants met the criteria for a lifetime alcohol use disorder.²

There are well-documented racial/ ethnic disparities in alcohol misuse and abuse. Whites report lower rates of abstinence than African Americans or Hispanics³ and rates of clinically significant alcohol problems are highest among white and Hispanic men.^{4,5} Rates of experiencing 3 or more social, legal, and physical alcohol problems, such as problems with a spouse, driving under the influence, and abuse and dependence, are higher for African American and Hispanic men than for white men, while white women report higher rates of 3 or more alcohol problems than African American and Hispanic women.⁶ Life-cycle studies suggest that African Americans and Hispanics are less likely to “age-out” of risky drinking

behaviors than whites.^{7,8} Finally, African American and Hispanic men are more likely than white men to suffer from higher rates of alcohol-related problems like intimate partner violence and cirrhosis mortality,⁹ and African Americans report experiencing more alcohol dependence symptoms than whites.^{10,11} Thus, while alcohol consumption is more prevalent among whites, racial/ethnic minorities suffer a disproportionate burden of problems related to alcohol misuse and abuse.

Alcohol use disorders are severely undertreated. Few individuals with an alcohol use disorder are likely to perceive a need for treatment¹² or to seek treatment.² Of those with an alcohol use disorder, estimates of those who receive treatment range from 6% to 15%.^{2,13} Individuals seek alcohol abuse treatment from a variety of places, including the general health sector, the mental health sector, specialty substance abuse treatment services, the human services sector, and from mutual-help groups.¹⁴ Of these treatment options, mutual-help group attendance and mental health/specialty substance abuse treatment services are the most frequently used.^{2,14}

While it is clear that there are racial/ethnic disparities in alcohol misuse and abuse and alcohol-related problems, it is less clear whether there are similar disparities in treatment.¹⁵ Some research suggests that African Americans and Hispanics are over-represented in publicly funded treatment programs, while other studies suggest no difference in treatment utilization across racial and ethnic groups.^{2,16} There may be significant differences in the types of treatment accessed, however. For example, African Americans tend to report less frequent usage of mutual help groups than whites¹⁷ while Hispanics are less likely to receive care at a specialty alcohol treatment program.⁵

The effectiveness of alcohol treatment by race has only begun to be considered. Initial results suggest that treatment outcomes for minority patients appear to be as successful as for white patients.^{18,19} However, the majority of these studies have been clinical trials, which raises concerns about the representativeness of the minority participants. It is well-documented that minority patients have a higher probability of presenting with some common exclusionary criteria, such as homelessness, coexisting psychiatric disorders, and heavy drug use.²⁰ It is also well-documented that minorities tend to have lower rates of treatment engagement and retention, suggesting that only the most motivated minority patients are likely to remain in a study.¹⁵

This study provides preliminary data relevant to the effectiveness of mental health treatment for alcohol misuse and abuse in a nationally representative sample by examining the role that race/ ethnicity plays in predicting drinking outcomes among the recipients of mental health services.

Method

Participants

Data for this study derive from a random digit dial telephone (RDD) survey conducted by the second and third authors to examine the prevalence of various types of work and life stressors, services use in response to stress, and mental health outcomes in a national sample (continental US) of employed adults (age 18 and older) who were fluent in English or Spanish. The study population was identified using the Trolldahl-Carter-Bryant method of respondent selection. 21·22 Eligibility criteria included being at least 18 years of age and having been employed at least 20 hours per week at some time in the past 12 months prior to the wave 1 (W1) survey. Informed consent was obtained from participants prior to the administration of the survey. Of the 4116 households with eligible individuals, 2151 participated at W1 (52.3% response rate; 68.7% white, 10.4% African American, 12.5% Hispanic, 4.8% other, and 3.5% who did not identify a race/ ethnicity) and 1418 participated at wave 2 (W2) , for a retention rate of 66%

and an overall response rate of 34.5% (77.2% white, 7.4% African American, 8.4% Hispanic, 6.3% Other, and 0.7% who did not identify a race/ ethnicity). (The racial and ethnic makeup of our sample is slightly different than reported previously²³, as a small coding error was identified and corrected.) Participants who remained in the study at wave 2 and reported having at least one alcoholic drink in the past year ($n = 1058$, 74.7% of W2 respondents; 85.1% of white W2 respondents, 50.0% of African American W2 respondents, 53.7% of Hispanic W2 respondents and 76.1% of Other W2 respondents) were included in the analyses reported here. This percentage appears on par with recently reported national averages for employed individuals, as the National Institute on Alcohol Abuse and Alcoholism reported that 77.0% of those employed full-time and 73.3% of those employed part-time reported past-year alcohol use in 2002.²⁴ Due to small numbers in some of the race/ ethnicity categories, we combined all non-white participants into one group ($n = 188$; 17.9% of W2 participants who reported having at least one drink in the past 12 months).

The study was approved by the university Institutional Review Board. Advance letters describing the study and providing contact information for those wanting additional information were sent to potential participants at the beginning of both waves of data collection. W1 interviews were conducted from August 2003 to February 2004 and W2 data were collected one year later. Respondents were paid \$10 for participation at W1 and \$20 for participation at W2. Both pretests and interviews were conducted in English or Spanish. Interviews took place mostly during weekday evenings and weekends to increase the probability of successful contact and averaged 30 minutes in length. Twenty contact attempts were made at different times before determining a case as a non-contact, and in the case of refusal, two callbacks were made by interviewers experienced at refusal conversion before finalizing the contact as a refusal.

Measures

Mental health services use—Respondents were asked at W2 to indicate whether they had seen any of the following mental health professionals in the past 12 months as a result of stress: psychiatrist, psychologist, social worker, or other mental health worker. This item was significantly, positively correlated with a Brief MAST item that asked if the individual had gone to anyone for help about their drinking ($r = .26$, $p < .001$ for white respondents; nonwhite respondents did not report going to anyone for help with their drinking). The total number of visits reported to each type of mental health professional was added together to create a variable describing total use of mental health services. From this variable, three additional variables were created to compare different levels of use of mental health services—0 versus 1 more visits to any mental health provider, 0 versus 4 or more visits to any mental health provider, and 0 versus 8 or more visits to any mental health provider. These variables were coded 1 if respondents made visits and 0 if they did not.

Drinking frequency—Respondents were asked to estimate the number of days they drank any kind of alcoholic beverages in the past 12 months by reporting their consumption in a) average number of days per week; b) average number of days per month; or c) average number of days in the past 12 months. Responses given in days per week or days per month were converted to an estimate of drinking days per year using a methodology drawn from the National Survey on Drug Use and Health technical report.²⁵

Heavy episodic drinking was assessed by the number of days respondents had 5 or more drinks containing alcohol on one occasion in the past 12 months. Drinking to intoxication was assessed by one item: “About how often in the past 12 months did you drink enough to feel drunk, that is, where drinking noticeably affected your thinking, talking, and behavior?” Responses to each of these measures were given on an 8-point scale from 0= “Never” to 7= “5 times a week or more”.²⁶

Brief MAST—Six items from the Brief MAST (BMAST)²⁶ were used to measure problematic alcohol use in the past-year. The BMAST correlates strongly with the full version of the MAST²⁷ and is an effective screening tool for alcohol problems among current drinkers.²⁸⁻²⁹ We omitted four items from the original BMAST that proved problematic in the survey pre-test (e.g., respondents didn't understand the meaning of the questions). The items used included “Have you attended a meeting of Alcoholics Anonymous related to your own drinking?”, “Have you lost a friend, spouse, or someone else close to you because of your drinking?”, “Have you had problems at work because of your own drinking?”, “Have you had trouble meeting your family obligations because of your own drinking?”, “Have you gone to anyone for help about your drinking?”, and “Have you been arrested for drunk driving or driving after drinking?” Respondents answered “yes” (coded 1-5) or “no” (coded 0) for each item. Items were summed to create a composite index of problem drinking. The score derived from the six items was also strongly correlated to the score on the complete Brief MAST in a sample of university employees collected by the third author ($r = .67$, $p = .000$). Because four items from the original scale were omitted, the modified measure should be viewed as a conservative indicator of problem drinking.

Demographic variables included age, gender (1 = female, 0 = male), race/ethnicity (1 = white, 0 = non-white), education, income, place (1 = urban/ suburban, 0 = small town/ rural) marital status (1 = married, 0 = widowed/divorced/separated/never married) and current employment status (1 = currently employed, 0 = not currently employed). Age was measured continuously in years, education was an ordinal scale ranging from 0 (8th grade or less) to 7 (master's degree or higher, and income was an ordinal scale ranging from 0 (less than \$10,000) to 5 (greater than \$70,000). In terms of differences in demographic variables between completers and non-completers at W2, non-completers were more likely to be African-American or Hispanic, to be younger and to have lower levels of income and education than completers.³⁰ Additionally, both white and nonwhite W2 non-completers reported higher frequencies of drinking to intoxication and heavy episodic drinking, and nonwhite W2 non-completers had higher modified Brief MAST scores and reported drinking on more days in the past year than nonwhite W2 completers ($p < .01$). W2 non-completers also reported more mental health services visits than W2 completers ($p < .01$).

Statistical analysis

Analyses were carried out using SPSS for Windows (version 14.0). Ordinary least squares regression models were computed to examine the relationship between drinking outcomes and the interaction of race and 3 levels of mental health service use at W2. For services use, W2 data only were used in this study, as the wording of the service use questions was changed prior to the second wave of data collection to more clearly assess professional service use due to stress. Three different models were constructed to compare groups with varying levels of mental health service use to those who did not use any mental health services. The first comparison (0 v 1 or more mental health visits) was designed to test differences between those who sought any type of mental health services and those who had not sought services. Two additional comparisons, 0 v. 4 or more mental health visits and 0 v. 8 or more mental health visits, were designed to test group differences between those who received no mental health services and those who were more consistent users of mental health services. The number of visits used to define these groups if service users at various levels is based on published evidence-based practices in mental health: 4 visits is the recommended minimum number for individuals using medication to manage mental illness, while 8 visits is the recommended minimum number for individuals engaging in talk-therapy only.³¹⁻³⁴

Pairwise deletion of missing data resulted in sample sizes that varied slightly by model, ranging from 855 to 885. For each variable, missing rates were mostly less than 1%. Exceptions were

the variables W2 income categories (4.1%), W1 frequency of drinking to intoxication (6.6%), W1 frequency of heavy episodic drinking (6.5%), W1 modified Brief MAST (6.4%), and W1 number of days drank alcohol (7.0%). While this reduction of the sample size is not ideal, there were no solid theoretical guidelines for imputing missing data without creating unknown biases.³⁵ Models were tested in several steps, with the demographic controls described above, social support, and W1 drinking behaviors entered at step 1, race and mental health services main effects (0 v. 1 or more visits, 4 or more visits, and 8 or more visits) entered at step 2, and the race by services use interaction term at step 3. W1 drinking behaviors were controlled for as previous research has shown that drinking behaviors are highly and consistently correlated over time.³⁶ Regression results thus reflect effects of predictor variables on change in each drinking outcome from W1 to W2. Selection weights (to adjust for number of phone lines and number of eligible adults within the household) and post-stratification weights (to ensure the distribution of key demographic variables in the sample conformed to their distribution in the 2003 Current Population Survey) were applied to the data and used in all analyses.

Results

Descriptive statistics for all variables are presented in Table 1, overall and separately for whites and nonwhite and for those who used mental health services and those who did not use mental health services. Chi-square analyses, Kruskal-Wallis tests (a non-parametric statistical test very similar to an analysis of variance appropriate for use with ordinal variables with 3 or more levels; used with the outcome variables education and income) and one-way ANOVAs were performed to examine differences between whites and nonwhites and mental health users and mental health nonusers. Compared to nonwhites, whites in the sample were older, reported higher income and more education and were more likely to live in a small town or rural area ($p < .05$). Those who used mental health services in the past year were more likely than those who did not to be younger, to be female, and to report not being employed ($p < .05$).

Table 2 presents drinking outcomes for the overall sample as well as for whites and nonwhites and those who used mental health services and those who did not use mental health services. Kruskal-Wallis tests and one-way ANOVAs were performed to examine group differences. Whites were more likely than nonwhites to report higher frequencies of drinking to intoxication and to report more days drank in the past 12 months ($p < .05$). Those who used mental health services were more likely to report higher frequencies of drinking to intoxication and to have higher scores on the modified Brief MAST than those who did not use mental health services ($p < .05$).

The results of the ordinary least squares regression analyses are shown in Tables 3, 4 and 5. In all models, the control variables entered at Step 1 produced highly significant models ($p < .01$). The addition of the race and mental health service use variables in Step 2 significantly improved the models predicting the frequency of drinking to intoxication and scores on the modified Brief MAST. In Step 3, the addition of race by mental health service use interaction term improved the models predicting the frequency drinking to intoxication and the modified Brief MAST score for all levels of mental health service use, and the model predicting the frequency of heavy episodic drinking for the 0 v. 8 or more visits interaction term.

Several demographic control variables were consistent predictors of alcohol outcomes. Being male, being young, reporting a higher income and not being married were predictive of increased frequencies of drinking to intoxication and heavy episodic drinking (although, interestingly, high income was also predictive of lower scores on the modified Brief MAST). Less education was predictive of a higher frequency of heavy episodic drinking and being white was predictive of a higher frequency of drinking to intoxication. Using mental health services was predictive of fewer instances of drinking to intoxication in the models using the 0 v. 4 or

more and 0 v. 8 or more mental health visits variables. Living in an urban or suburban place was predictive of more instances of drinking to intoxication in the 0 v. 4 or more and 0 v. 8 or more models and predictive of higher Brief MAST scores in the 0 v. 8 or more visits model. As expected, W1 drinking outcomes were strong positive predictors in every model.

The interaction of race and mental health service use was significant when predicting the frequency of drinking to intoxication in the past year and scores on the modified Brief MAST in the models comparing 1 or more mental health visits and 4 or more mental health visits to no mental health visits. Significant race by mental health service use interactions were found for the frequency of drinking to intoxication, the frequency of heavy episodic drinking, and scores on the modified Brief MAST in the model comparing 8 or more visits to no visits. In each of these findings, non-white clients who report no mental health service use have slightly higher problematic drinking outcomes than whites, while nonwhite clients who do report using mental health services have lower problematic drinking outcomes compared to whites.

The percentage of variance explained by each model ranged considerably from small (15- 16% for the models predicting scores on the modified Brief MAST) to rather large (50- 54% for the models predicting the frequency of drinking to intoxication and heavy episodic drinking and 66% for the model predicting the number of days drank in the past year). When interpreting the results, however, it is important to note that the interaction terms consistently explained only a small portion of the variance in W2 drinking in any of the models (with W1 drinking being by far the strongest predictor in each model, as would be expected).

Discussion

Our data show that mental health service use is significantly associated with lower levels of alcohol consumption, misuse and abuse for non-white clients, including the number of times in the past year the individual drank to intoxication, the number of times in the past year the individual engaged in heavy episodic drinking and scores on the modified Brief MAST, while service use was not associated with improved drinking outcomes in white clients. Additionally, greater numbers of visits to mental health service providers were associated with significantly less drinking at W2 across a greater number of outcome measures.

While it is impossible to draw causal conclusions from these results, these findings suggest the need for more research on the relationship between race, mental health service use, and drinking outcomes. When planning future research, it may be useful to consider the three levels at which disparities in health care and health outcomes may occur. Briefly, disparities may occur at the system level (e.g., minorities experience more barriers to accessing services than whites), the provider level (e.g., providers knowingly or unknowingly incorporate prejudice and stereotyping), and the patient level (e.g., patient preferences).³⁷⁻³⁸

Some system-level variables to be considered in future research would include places where people receive their mental health care, the mental health benefits included in their health insurance plan, and the financial burden of seeking mental health care, including copayments and possible lost wages. Nonwhites are less likely to have insurance than whites, even in employed samples. For example, in a large community sample, the rate of employer-based coverage among employed African Americans was 53%, compared to 73% among employed whites.³⁹ The rate of employer-based insurance coverage among employed Hispanics is even lower, at 43%.⁴⁰ Nonwhites are more likely to receive mental health care from human services professionals (e.g., social workers), while whites are more likely to see a psychiatrist.⁴¹ Nonwhites have lower rates of both talk therapy and drug therapy than whites⁴² and are more likely to avoid seeking mental health treatment because of concerns over lost wages and paying for services.^{2,43} It is possible that these factors work to create barriers to entry into the mental

health system such that only those nonwhites who are the most persistent and dedicated are able to access them, thereby increasing their chances of improvement when compared to whites who have fewer problems accessing the system.

Provider-level factors should also be considered in future research. Healthcare providers incorporate cognitive processes such as prejudice and stereotyping into their visits with dissimilar patients.³⁷ In particular, much is known about how patient characteristics influence mental health service providers. African Americans are diagnosed with schizophrenia at a higher rate than whites,⁴⁴⁻⁴⁶ are overrepresented at inpatient facilities,^{44,47} and are more likely to receive antipsychotic and neuroleptic drugs than whites with similar diagnoses.⁴⁸⁻⁴⁹ Evidence of provider bias can be seen in the treatment of substance abuse, as general healthcare providers are more likely to ask nonwhite clients about their drug and alcohol use.⁴⁹⁻⁵¹ It is possible that nonwhites who enter mental health treatment are more likely to receive substance abuse services simply because providers are more prone to ask questions about substance use.

Finally, there are patient-level factors to consider in future research, particularly the intended outcome of the treatment. Substance abuse disorders without comorbidity have some of the lowest levels of perceived need for treatment, with estimates ranging from 11% to 14%.^{12, 52} While our results show a clear pattern between mental health service use and improved drinking outcomes in nonwhites, the reasons for using those services are not specified beyond experiencing stress. Perhaps the nonwhite participants who reported using mental health services were also more likely to be actively trying to reduce their drinking, while whites who reported using services may have not been as likely to have that goal in mind.

In addition to considering sources of racial and ethnic differences in the use and outcomes of mental health and substance abuse treatment, future research should investigate the quality of substance abuse treatment received in various mental health settings. One recent study found that of those receiving mental health treatment, only 33% of individuals were receiving at least minimally adequate treatment.⁵³ While relatively generic quality standards have been defined and are used for most major categories of mental illness, including substance abuse,⁵³⁻⁵⁴ future research may wish to consider whether receiving care from different types of mental health professionals (e.g., psychiatrist v. psychologist v. social worker) warrants different quality definitions. Future research may also wish to investigate the extent to which mental health providers are trained to recognize and treat substance abuse problems. Edlund, Unutzer and Curran found that individuals with substance abuse disorders were twice as likely to report needing mental health treatment rather than substance abuse treatment, suggesting that mental health professionals should be trained to identify and treat substance abuse disorders in patients who seek treatment for other reasons.¹²

While this study presents intriguing findings, it should be noted that they are preliminary and should be interpreted only as descriptive, not causal. Several important limitations to this study should also be discussed. These data were from a longitudinal RDD study of workplace harassment and drinking outcomes, and as a result data on mental health service use was not collected in great detail. However, future research dedicated to the study of the interaction between race and mental health service use could certainly collect more detailed data. Minorities were underrepresented in the original sample, and more so in the W2 sample, leading to the creation of the “nonwhite” category, which unfortunately could not analyze differences both between and within minority groups. When asked to report their marital status, participants were not given an option to indicate that they were coupled but not married, and it is reasonable to assume that participants who would have identified with that response choice selected either “married” or “never married” to describe themselves. Future work should include a “coupled but not married” option in the marital status variable.

Participant non-response and attrition should also be considered when interpreting these findings, as technology such as caller ID and increasing privacy concerns have negatively impacted telephone-based survey response rates.⁵⁵ However, it is also worthwhile to note that the study's overall response rate (34.5%) is on par with recently reported mean response rates for national telephone surveys.⁵⁶ Groups excluded from the study should also be taken into account—as a result of the methodology, individuals without land line telephones (including both those without any telephone and those with cellular phones but no land line) were excluded from the study, as well as those who had not worked at least 20 hours a week during any time in the past 12 months prior to W1. As a result, it is possible that individuals with severe drinking problems were disproportionately excluded from the study. Future studies should work to over sample minority groups and to include those who do not have a land line telephone and those without a recent work history.

This study should be considered a conservative description of the possible relationship between race/ ethnicity, mental health services use, and drinking outcomes. W2 completers reported less alcohol misuse and abuse than non-completers (but not a significantly lower frequency of drinking), as well as less use of mental health services. It is possible that the change in the wording of the service use question (from asking about general use to asking about using because of stress) is at least partially responsible for the lower rates of service use. It is also possible that participants who more severely misused or abused alcohol disproportionately did not respond to the W2 survey. Additionally, the race by mental health service use interaction terms explained only a small portion of the variance in W2 drinking. However, drinking is a multidetermined behavior that has a complex array of influencing factors, so our results should not be discounted.

Finally, it is important to note that the “heavy episodic drinking” variable in this study was defined as 5 or more drinks within a couple of hours of each other. While this is an appropriate definition for heavy episodic drinking in men, the correct definition for women is four or more drinks in the period of a few hours, and so the results of this analysis may only generalize to women on the higher end of the heavy drinking spectrum.

Conclusion

This study represents a first look into the relationships between race, use of mental health services, and drinking outcomes. While the study had a variety of limitations, the consistent pattern of results demonstrating lower levels of alcohol consumption, misuse and abuse for minority, but not white, respondents who used mental health services suggests is compelling. We hope that our findings encourage further research to more systematically examine system-, provider-, and patient-level factors that may covary with race and may help explain disparities in services use and outcome.

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Table 1

Demographic characteristics of wave 2 responders who reported having at least 1 drink in the past year.

	Overall (n= 1015)	White (n= 809)	Nonwhite (n= 197)	One or more MH visit (n= 57)	No MH visits (n= 957)
Race (%)					
White	80.4			87.7	79.9
Nonwhite	19.6			12.3	20.1
Age (Mean, SD) ** ++	42.3 (12.1)	43.1 (12.2)	39.0 (11.6)	37.9 (11.6)	42.6 (12.1)
Sex (%) ++					
Men	54.2	53.0	58.6	31.6	55.6
Women	45.8	47.0	41.4	68.4	44.4
Income (%) **					
10,000 or less	2.1	1.7	4.3	1.9	2.1
10,000-19,999	6.1	5.3	9.7	7.4	6.0
20,000-29,999	9.2	8.5	12.4	11.1	9.1
30,000-49,999	21.8	21.8	21.6	20.4	21.8
50,000-69,999	23.6	23.0	25.4	20.4	23.9
70,000 or more	37.2	39.8	26.5	38.9	37.1
Education (%) **					
8 th grade or less	1.5	0.2	7.1	0	1.7
Some high school	2.9	2.5	4.6	1.8	3.0
High school graduate	31.4	30.0	37.1	30.4	31.4
Some college	19.0	19.4	17.8	25.0	18.7
Associate's	10.4	11.3	7.1	7.1	10.6
Bachelor's	18.4	18.6	16.8	21.4	18.2
Some graduate work	2.2	2.6	0.5	7.1	1.9
Master's or higher	14.1	15.4	9.1	7.1	14.5
Employment status (%) +					
Employed	92.3	93.1	89.4	84.2	92.8
Not employed	7.7	6.9	10.6	15.8	7.2

	Overall (n= 1015)	White (n= 809)	Nonwhite (n= 197)	One or more MH visit (n= 57)	No MH visits (n= 957)
Place (%) **					
Urban/suburban	60.0	56.3	73.7	66.1	59.6
Small town/ rural	40.0	43.7	26.3	33.9	40.4
Marital Status (%)					
Married	65.7	66.3	62.4	54.4	66.3
Not married	34.3	33.7	37.6	45.6	33.7
Occupation (%)					
Managerial	17.2	16.9	16.5	15.1	17.3
Other	82.8	83.1	83.5	84.9	82.7
Total social support (Mean, SD)	24.6 (3.6)	24.7 (3.5)	24.6 (3.7)	24.2 (3.4)	24.7 (3.6)
Visited a MH professional (%)					
Yes	5.6	6.2	3.5		
No	94.4	93.8	96.5		
Number MH visits (Mean, SD) ++	0.7 (6.1)	0.8 (6.6)	0.3 (2.9)	11.9 (23.1)	0

MH = Mental health

** difference between whites and nonwhites, $p < .01$ + difference between MH users and MH nonusers, $p < .05$ ++ difference between MH users and MH nonusers, $P < .01$

Table 2

Drinking characteristics of wave 2 responders who reported having at least 1 drink in the past year.

	Overall (n= 1015)	White (n= 809)	Nonwhite (n= 197)	One or more MH visit (n= 57)	No MH visits (n= 957)
Frequency of drinking to intoxication (%) ** ++					
Never	54.0	52.0	61.9	29.1	55.6
1-3 times P12M	24.9	25.1	23.9	43.6	23.7
4-7 times P12M	8.4	9.6	4.1	5.5	8.6
8-11 times P12M	3.7	3.4	4.6	3.6	3.7
1-3 times per month	4.5	5.1	2.5	12.7	4.1
Once or twice a week	3.5	3.7	2.5	0	3.7
3-4 times a week	0.7	1.0	0	3.6	0.5
5 times a week or more	0.2	0.1	0.5	1.8	0.1
Frequency of binge drinking (%)					
Never	55.5	55.2	56.6	52.7	55.6
1-3 times P12M	20.0	20.3	18.9	21.8	20.0
4-7 times P12M	8.6	8.4	9.7	3.6	8.9
8-11 times P12M	3.3	3.1	3.1	3.6	3.3
1-3 times per month	5.0	4.8	6.1	3.6	5.0
Once or twice a week	5.4	5.3	5.6	5.5	5.4
3-4 times a week	1.1	1.4	0	7.3	0.7
5 times a week or more	1.1	1.4	0	1.8	1.0
Brief MAST score (Mean, SD) ++	0.2 (1.3)	0.2 (1.4)	0.1 (0.6)	1.4 (3.4)	0.1 (0.9)
Days drank past year (Mean, SD) **	75.9 (91.7)	81.3 (94.5)	52.1 (73.9)	79.5 (104.7)	75.5 (90.9)

MH = Mental health

P12M = Past 12 months

** difference between whites and nonwhites, $p < .01$

++ difference between MH users and MH nonusers, $P < .01$

Table 3

Drinking outcomes, 0 v. 1 or more mental health visits by race.

Independent variable	Drinking to intoxication ^a (n = 883)				Heavy episodic drinking ^b (n = 883)				Modified Brief MAST ^c (n = 885)				Days drank in past year ^d (n = 879)			
	B	SE	ΔR ²		B	SE	ΔR ²		B	SE	ΔR ²		B	SE	ΔR ²	
Step 1																
Gender	-.26**	.07			-.39**	.09			-.13	.07			-7.00	3.91		
Age	-.02**	.00			-.02**	.00			.00	.00			.07	.16		
Income	.09**	.03			.12**	.04			-.09**	.03			1.44	1.70		
Education	-.03	.02			-.08**	.02			-.02	.02			-.56	1.09		
Marital status	-.27**	.09			-.32**	.10			-.04	.08			-1.78	4.48		
Employment status	-.02	.13			-.02	.15			.10	.13			8.60	7.08		
Place	.14	.07			.07	.09			.10	.07			-4.79	3.92		
Wave 1 outcome	.61**	.03	.490**		.62**	.03	.508**		.21**	.03	.097**		.80**	.02	.656**	
Step 2																
Race	.21*	.09			.02	.11			.03	.09			1.22	5.03		
Mental health visits	-.88	.51	.007**		-.66	.60	.001		-.14	.50	.043**		-24.05	27.25	.001	
Step 3																
Race × mental health visits	1.31*	.54	.003**		.93	.62	.001		1.24*	.53	.005*		9.88	28.61	.000	
Model R ²			.500				.510				.146				.657	

Note. Unstandardized regression coefficients are presented. Coefficients presented are from the final model.

^aModel F (11, 871) = 79.06**.

^bModel F (11, 871) = 82.534**.

^cModel F (11, 873) = 13.54**.

^dModel F (11, 867) = 151.09**.

* p ≤ .05.

** p ≤ .01.

Table 4

Drinking outcomes, 0 v. 4 or more mental health visits by race.

Independent variable	Drinking to intoxication ^a (n = 870)			Heavy episodic drinking ^b (n = 870)			Modified Brief MAST ^c (n = 872)			Days drank in past year ^d (n = 868)		
	B	SE	ΔR ²	B	SE	ΔR ²	B	SE	ΔR ²	B	SE	ΔR ²
Step 1												
Gender	-.25**	.07		-.37**	.09		-.13	.07		-5.38	3.93	
Age	-.02**	.00		-.02**	.00		.00	.00		.06	.16	
Income	.07**	.03		.12**	.04		-.08**	.03		.69	1.71	
Education	-.03	.02		-.08**	.02		-.02	.02		-.70	1.10	
Marital status	-.21**	.08		-.28**	.10		-.06	.08		1.69	4.53	
Employment status	-.12	.13		-.10	.16		.10	.13		4.83	7.17	
Place	.19**	.07		.09	.09		.08	.07		-2.55	3.94	
Wave 1 outcome	.63**	.03	.508**	.62**	.03	.512**	.20**	.03	.097**	.80**	.02	.657**
Step 2												
Race	.22*	.09		.03	.11		.04	.09		2.05	5.01	
Mental health visits	-1.17*	.55	.005*	-.85	.66	.001	-.19	.56	.052**	-28.02	30.17	.001
Step 3												
Race x mental health visits	1.43*	.59	.003*	1.37	.70	.002	1.82**	.60	.009**	12.98	32.22	.000
Model R ²			.516			.515			.158			.659

Note. Unstandardized regression coefficients are presented. Coefficients presented are from the final model.

^aModel F (11, 858) = 83.03^c.

^bModel F (11, 858) = 82.98^c.

^cModel F (11, 860) = 14.69^c.

^dModel F (11, 856) = 150.07^c.

* p ≤ .05.

** p ≤ .01.

Table 5

Drinking outcomes, 0 v. 8 or more mental health visits by race.

Independent variable	Drinking to intoxication ^a (n = 857)			Heavy episodic drinking ^b (n = 857)			Modified Brief MAST ^c (n = 859)			Days drank in past year ^d (n = 855)		
	B	SE	ΔR ²	B	SE	ΔR ²	B	SE	ΔR ²	B	SE	ΔR ²
Step 1												
Gender	-.28**	.07		-.37**	.09		-.07	.06		-5.96	3.95	
Age	-.02**	.00		-.02**	.00		.00	.00		.03	.17	
Income	.06*	.03		.13**	.04		-.08**	.03		1.02	1.73	
Education	-.03	.02		-.09**	.02		-.02	.02		-.84	1.10	
Marital status	-.24**	.08		-.31**	.10		-.01	.08		.87	4.58	
Employment status	-.14	.13		-.14	.16		.04	.12		3.88	7.29	
Place	.17*	.07		.07	.09		.16*	.07		-3.53	3.97	
Wave 1 outcome	.64**	.03	.524**	.62**	.03	.517**	.21**	.03	.118**	.80**	.02	.655**
Step 2												
Race	.23 ^d	.09		.03	.11		.04	.08		2.12	5.01	
Mental health visits	-1.45*	.64	.005**	-1.22	.77	.000	-.20	.60	.025**	-56.31	35.53	.001
Step 3												
Race x mental health visits	2.13**	.71	.005**	1.66*	.84	.002*	1.65*	.65	.006*	38.64	38.83	.000
Model R ²			.54			.519			.149			.656

Note. Unstandardized regression coefficients are presented. Coefficients presented are from the final model.

^aModel F (11, 845) = 88.03^c.

^bModel F (11, 845) = 83.05^c.

^cModel F (11, 847) = 13.48^c.

^dModel F (11, 843) = 146.35^c.

* p ≤ .05.

** p ≤ .01.