Gender Differences in Stressful Life Events, Social Support, Perceived Stress, and Alcohol Use Among Older Adults: Results From a National Survey

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Abstract

Stressful life events, perceived stress, and social support relationships with consumption, at-risk drinking, and alcohol use disorder (AUD) were studied in a population-based sample of current drinkers age 60+ in the National Epidemiologic Survey of Alcohol and Related Conditions (Wave 2; 2004–2005; $n = 4,360$). Stressful life events were associated with AUD among men and women, and crime victimization among men only. However, greater perceived stress was associated with lower consumption among women and greater odds of AUD in men, highlighting differences in the relationship between stress and alcohol use by gender that may be the result of the stress alcohol link.

Keywords

older adults; alcohol use disorder; perceived stress; stressful events; at-risk drinking; NESARC

Unhealthy alcohol use by older adults is a public health concern expected to worsen as the "baby boom" generation ages because this cohort is unique for its large numbers and its historically elevated rates of alcohol use (Colliver, Compton, Gfroerer, & Condon, 2006; Patterson & Jeste, 1999). Alcohol is the most commonly used substance among older adults (Moore et al., 2009) over 50, 17% of men and 11% of women exhibit at-risk drinking based on American Geriatrics Society guidelines specific to older adults (two or more drinks on a usual drinking day in the past 30 days) (Blazer & Wu, 2009). Substance use disorder treatment needs are forecasted to increase from 1.7 million in 2001 to 4.4 million in 2020 among older adults (Gfroerer, Penne, Pemberton, & Folsom, 2003). For approximately 1% of older adult drinkers, unhealthy alcohol use is associated with significant mental and physical health disability as well as major depression (Sacco, Bucholz, & Spitznagel, 2009).

Compared with younger groups, older adults have increased body fat and decreased water (Vestal et al., 1977) and therefore have less body fluid over which alcohol is distributed (Moore, Whiteman, & Ward, 2007; Vestal et al., 1977; Vogel-Sprott & Barrett, 1984). Furthermore, changes that occur in liver function as people age (Durnas, Loi, & Cusack, 1990) lead to higher blood alcohol levels at the same level of consumption compared with younger individuals. These differences in alcohol response may contribute to medical comorbidities associated with use, such as falls, functional disability, and decreased brain functioning, and put older adults at uniquely higher risk of alcohol-related health consequences (Oslin, 2000). Recent experimental research also suggests older adults are more impaired than young adults at a given alcohol consumption level and are less aware of their level of intoxication (Gilbertson, Ceballos, Prather, & Nixon, 2009). Use of alcohol and prescription medications in tandem may also be an issue for older adults, who have the highest rates of total medication use (Kaufman, Kelly, Rosenberg, Anderson, & Mitchell, 2002). Because of these public health risks, it is imperative to understand factors that may influence alcohol consumption and problems in this population.

One of the most common frameworks for understanding drinking among older adults is from Stress-Coping theory. Stress-Coping theory as developed by Moos and colleagues (Finney & Moos, 1984; Moos & Schaefer, 1993) is drawn from tension-reduction theory (Greeley & Oei, 1999). Under stress-coping approaches, alcohol consumption is a behavioral option available to individuals in response to stressful situations. Moos and colleagues' Stress Coping Model has been applied directly to alcohol use among older adults and has been utilized as a theoretical foundation for treatment approaches (Moos, 2007). We need to focus on this model with older adults as stress and coping motives in this population are crucial component for intervention development.

Findings related to stress and alcohol use among older adults have been mixed, with some studies identifying associations between stress and drinking (i.e., Jennison, 1992; Krause, 1995), while other studies have not identified a relationship (e.g., La Greca, Akers, & Dwyer, 1988; Welte & Mirand, 1995). Early studies of stress and drinking looked at self-identified stressors and problems in older adults involved with the legal system (e.g., driving under the influence of alcohol [DUI]) (Rosin & Glatt, 1971; Wells-Parker, Miles, & Spencer, 1983). In a community sample, Welte and Mirand (1995) found a relationship between problem use and increased stress, but not between stress and alcohol use, leading them to conclude that stress exacerbates problem drinking, rather than being a direct cause of drinking.

Research suggests that the type of stressor an individual experiences may play a role in stress-related drinking. In a longitudinal study of late-life problem drinkers, Schutte, Brennan, & Moos (1994) found that physical health-related stressors were associated with remission. Glass and colleagues (1995) reported that the death of a spouse, move, or spousal illness predicted increased consumption. In a study of stress, depression, and alcohol use, Krause (1995) found that alcohol use reduced the effects of stresses related to unimportant life roles, but increased the effect of stress on salient roles. In recent research, Shaw and colleagues (2011) found that changes in financial strain were associated with slightly

increased odds of heavy drinking among older men and older adults with lower levels of education.

The role of social support has also been considered. In a study of older adults in retirement and age-heterogeneous communities, LaGreca and colleagues (1988) did not find an association between stressful life events in relation to social support. Jennison (1992) analyzed the relationship of stressful events and social support to alcohol use among adults aged 60 and older and found that certain stresses (e.g., divorce) and total number of stresses were associated with increased alcohol use, even after adjusting for social support. Brennan and Moos (1990) found that older problem drinkers have more stressful life events, fewer social supports, and more chronic stress than nonproblem drinkers. But more recent studies have found mixed results. Analyzing data from a longitudinal survey, Platt and colleagues found that socializing with neighbors was associated with increased drinking, having close friends living nearby was associated with decreased drinking, and living near one's relatives was found to be associated with abstaining from alcohol (Platt, Solan, & Costanzo, 2010).

Gender differences are present in alcohol consumption as well as social support and stressors among older adults. Among older adults, women are less likely to be current drinkers (Kirchner et al., 2007; Moore et al., 2009). Population studies of stressful events have found that the effects of stressful events on alcohol use are distinct by gender (Dawson, Grant, & Ruan, 2005; Veenstra et al., 2006). Research specific to older adult problem drinkers has found that women have higher levels of support and fewer alcohol problems, but more family related problems and depressed mood than older male problem drinkers (Brennan, Moos, & Kim, 1993).

Although the stress and drinking relationship among older adults has been studied, associations between stressful events, perceived stress, and drinking have not been studied extensively in the general population of older adults. Most of this research has been done on treatment or convenience samples, limiting its applicability to current generations of older adults. The National Epidemiologic Survey of Alcohol and Related Conditions (NESARC) data provide an opportunity to explore relationships between these constructs and several measures of alcohol use in a general population sample of older adults as opposed to a convenience or treatment sample. Much of the literature on older drinkers and estimating risk associated with alcohol use focuses on the stresses of aging and the problem of social isolation as people age. The idea that older adults can develop alcohol-related problems in late life as a result of the stresses of retirement is prominent in literature focused on drinking among older adults (Hunter & Gillen, 2006; Lemke, Brennan, Schutte, & Moos, 2007; Schutte, Brennan, & Moos, 1998). Additionally, mutable factors such as stress are often a target of intervention. Therefore, we tested associations between alcohol use and problems in a nationally representative sample of older adults. Our study tests the following hypotheses:

> Hypothesis 1: A greater number of stressful life events in the past year are associated with higher mean daily alcohol use, at-risk drinking, and past-year alcohol use disorder.

> Hypothesis 2: Higher levels of social support are associated with lower levels of alcohol use, at-risk drinking, and past-year alcohol use disorder.

Hypothesis 3: Higher levels of perceived stress in the last month are associated with higher levels of alcohol use, at-risk drinking, and past-year alcohol use disorder.

Because research suggests there are gender differences in alcohol consumption and problems among older drinkers as well as potential differences in the influences of these correlates (e.g., social support) of drinking, we conducted gender-specific analyses assessing the aforementioned hypotheses stratified by gender.

METHOD

Data Source and Sample

This study utilized a sample of current drinkers aged 60 years and older who were surveyed as part of the National Epidemiologic Survey of Alcohol and Related Conditions (NESARC). The NESARC data are from a large nationally representative survey that contains valid and reliable measures of stressful events, social support, perceived stress, and alcohol use and problem use (Ruan et al., 2008). The survey gathered information regarding alcohol use and a variety of comorbid conditions from individuals in all 50 states and the District of Columbia living in households and various group settings. The NESARC utilized a multistage sampling structure, oversampling young adults (18–24), Hispanics, and African Americans (National Institute of Alcohol Abuse and Alcoholism, 2008). Data were weighted for three reasons: to adjust for oversampling noted earlier, to adjust for participant nonresponse, and to provide estimates that are representative of the population of the United States in 2000 (Evans, Price, & Barron, 2001). In-person computerized interviews were conducted with 43,093 participants from 2001–2002 by U.S. Census workers who were given training by staff from the National Institute on Alcoholism and Alcohol Abuse (NIAAA). Three years later, 80% of the Wave 1 respondents ($n = 34,653$) were reinterviewed for Wave 2 in 2004–2005. For this study, a sample of current drinkers (defined as any drinking in the last 12 months) in the NESARC survey, age 60 or older at Wave 2, were analyzed ($n = 4,360$). We utilized Wave 2 only because no measures of social support or perceived stress were included in Wave 1 of the NESARC survey.

Measures

Dependent Variables—Alcohol Consumption and Disorder—All outcomes were measured using the Alcohol Use Disorder and Associated Disabilities Interview Schedule—DSM-IV version (AUDADIS-IV). The AUDADIS-IV has been shown to be reliable in assessing DSM-IV alcohol disorders and consumption in the general population (Grant, Harford, Dawson, Chou, & Pickering, 1995). Measures of alcohol use included average daily consumption of alcohol in the last 12-months, at-risk use, and past-year alcohol use disorder. *Alcohol use disorder* is any DSM-IV diagnosis of alcohol abuse or alcohol dependence in the past year. These diagnoses were directly derived from the DSM criteria for these disorders and represent either a diagnosis of alcohol abuse and/or alcohol dependence in the past year. *Average daily consumption* is a continuous measure of alcohol consumption per day in ounces. It was calculated by NESARC analysts, is available in the public use data set, and is detailed elsewhere (National Institute of Alcohol Abuse and Alcoholism, 2004). Average daily consumption was log-transformed due to nonnormality.

At-risk use is measured dichotomously based on exceeding NIAAA risk-drinking guidelines in the past 12 months (1 = *at risk*, 0 = *not at risk*). The NIAAA general population definition of at-risk drinking for men is drinking more than 14 standard drinks per week or 5 or more standard drinks on any day, and for women, drinking more than 7 standard drinks per week or 4 or more standard drinks on any day (National Institute of Alcohol Abuse and Alcoholism, 2008).

Stress Measures—The two measures of stress included the Perceived Stress Scale-4 (PSS-4) (Cohen, Mermelstein, Kamarck, & Hoberman, 1985; Ruan et al., 2008), a global measure of cognitive appraisal of stress, and a stressful life events scale. The stressful life events (Cronbach's $a = 0.86$) and PSS-4 (Cronbach's $a = 0.84$) measures display excellent reliability. The PSS-4 is a 4-item scale that measures subjective perception of stress in the past month (Cohen & Williamson, 1988; Ruan et al., 2008) from *Never* (coded 0) to *Very often* (coded 4) per item with a range of 0 to 16. Items include questions on loss of control of one's life, one's confidence in managing life problems, one's feeling that things are "going your way," and one's sense that things are "piling up." It quantifies psychological distress rather than the objective stress actually experienced and is based on work by Cohen and colleagues (Cohen, Kamarck, & Mermelstein, 1983).

The stressful events scale scores range from 0 to 14 and include 14 dichotomous items measuring events occurring in the last 12 months. Items included stressors involving work, legal, social, and family related stresses (Dawson et al., 2005).

Using exploratory factor analysis (EFA) as a data reduction strategy (not shown[1]) with data from respondents of all ages in the Wave 2 sample, we reduced the 14 stressful events scale items to 4 categorical (coded 0/1) stress-related domains: "victimization," "work-related," "living situation," and "family related." For the victimization domain, the theft and vandalism questions were combined into a single dichotomous item based on whether an individual endorsed either of the items. Work-related stresses, including being fired/laid off, being unemployed, boss/coworker problems, and job change, were combined into a single dichotomous item. A third stressful event domain (living situation) was developed by combining the item focused on moving or having someone move in with you with divorce/breakup. The fourth factor was developed using items related to conflict with family or friends, own financial problems, own legal problems, death of family member or friend, and family crime victimization or family legal problems. EFA has been utilized in other analysis of drinking and stressful events using Wave 1 of the NESARC survey (Dawson et al., 2005).

Perceived Social Support—The Interpersonal Support and Evaluation List-12 (ISEL-12) contains 12 items measuring the perceived availability of social resources. Items are arranged on a 4-point Likert scale coded 1 = *definitely false*, 2 = *probably false*, 3 = *probably true*, and 4 = *definitely true* with a theoretical range of 12–48 (Cohen et al., 1985). In this scale, items assess areas including the availability of individuals with which to share activities, the extent to which one perceives receipt of material aid if needed, and perceived ability to talk about one's problems. Rather than a measure of social network, the ISEL-12

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[1]EFA Results available from the first author.

measures perceived social support. This instrument displays good reliability (Cronbach's a = 0.82) (Ruan et al., 2008).

Health—The Short Form-12 Health Survey (SF-12) (Ware, Kosinski, & Keller, 1996) provides a measure of general health disability. We included this measure of global health as a covariate in models. The SF-12 contains 12 items measuring components of self-rated health and is a norm-based index with scores ranging from 0 to 100 with a mean of 50. Main subscales include the physical health component scale (PCS) and mental health component scale (MCS). The SF-12 shows good reliability and validity in older adults (Resnick & Nahm, 2001).

Sociodemographic Variables—Sociodemographic covariates included age, race/ethnicity, education, household income, and marital status. The race/ethnicity measure contained five mutually exclusive groups based on self-report (White, Black, American Indian/Alaska Native, Asian/Native Hawaiian/Other Pacific Islander, and Hispanic—any race), which were dummy coded with White as the reference group. Income was measured using dummy-coded variables as follows: $0–24,999; $25,000–$49,999; $50,000–$99,999; $100,000 or more, with the lowest level ($0–$24,999) serving as the reference group. Education was dummy-coded into three categories: those with less than a high school education, high school graduates or GED recipients, and those with education beyond high school; the reference category was the lowest level of education. Current marital status was also dummy coded, reflecting currently married or living as married, formerly married (divorced, separated, or widowed), and never married; married/living as married served as the reference group.

Data Analysis

Linear regression models were used to test relationships between average daily alcohol consumption, as a dependent variable, and measures of stress and social support adjusting for demographic covariates (e.g., age, education, and race/ethnicity). Logistic regression models tested the influence of stressful life events and Perceived Stress Scales as well as the ISEL-12 on the odds of risky drinking and past-year alcohol use disorder, while adjusting estimates based on sociodemographic covariates. As noted, we stratified all models by gender. All analyses were conducted using SUDAAN 9® (Research Triangle Institute, 2004), a statistical package that adjusts estimates and standard errors appropriately for the complex survey design of the NESARC.

RESULTS

Sample Characteristics

Table 1 displays sociodemographic and health-related information for older adult current drinkers by gender. In the current drinker sample, a number of gender differences are notable. Women were slightly older than men, and were less likely to be currently married, but more likely to be formerly married (divorced, widowed, or separated) than men. Significantly fewer Asian and Latino women were in the sample, and higher percentages of White women were represented. Women were underrepresented at the higher income levels,

potentially a function of household composition and age, as well as longstanding gender-based income disparities. In terms of education, women were more likely to be high school graduates, and less likely to be either college educated or to have left school before graduating from high school.

Consistent with the literature on gender differences and alcohol risk, women consumed alcohol on average at lower levels than men (Zhang et al., 2008) and displayed lower levels of past-year at-risk drinking and AUD than men. Measures of stress showed variation by gender with women reporting higher levels of perceived stress than their male counterparts.

Multivariate Models

We estimated gender-stratified linear regression models of average daily consumption of alcohol use on stressful event, perceived stress (PSS), and social support (ISEL) scales with sociodemographic covariates (Table 2). Among men, stressful life events, perceived stress, and social support were not significantly related to consumption, but among women, higher perceived stress was associated with slightly lower consumption. College education, higher income levels, and better health were associated with higher mean consumption among both men and women. Interestingly, the significantly elevated effect of income on consumption among women was limited to the highest income level only whereas in men significantly increased consumption was present at each level of income above the lowest income group. In men and women, Asian ethnicity was associated with lower consumption and not being currently married was associated with significantly higher consumption in men only.

Two logistic regression models estimated the likelihood of at-risk drinking as defined by NIAAA guidelines (Table 3) and past-year AUD (Table 4), adjusted for sociodemographic covariates. We found that age was associated with decreased odds of at-risk drinking in both men and women; for every five-year increase in age, the likelihood of risky drinking among men decreased 27% among men and 19% among women. Being formerly married was associated with 61% greater odds of at-risk drinking among men and 50% greater odds among women and Asian race/ethnicity was associated with significantly lower risk of at-risk drinking among males ($OR_{adj} = .39$; $p < .05$). Stress-related constructs (stressful life events and perceived stress) and social support were not significantly associated with at-risk drinking (Table 3).

Findings for past-year alcohol use disorder were somewhat different (Table 4). Stressful life events were associated with increased odds of having a past-year AUD in both men ($OR_{adj} = 1.32$; $p < .01$) and women ($OR_{adj} = 1.23$; $p < .05$) and higher levels of perceived stress were also associated with AUD, but in men only ($OR_{adj} = 1.06$; $p < .05$). Consistent with findings from the model for risky drinking, older age was associated with decreased risk of AUD in both men ($OR_{adj} = .95$; $p < .001$) and women ($OR_{adj} = .90$; $p < .01$). For every five-year increase in age, the likelihood of AUD among men decreased 23% among men and 41% among women. Among women only, having never been married was associated with a significantly decreased risk of AUD ($OR_{adj} = .21$; $p < .05$).

To further assess the type of events that may be associated with past-year AUD, we conducted a logistic regression model using the dichotomous event domains (Table 5). In

this model, we again adjusted for demographic covariates (not shown). Victimization was found to be associated with past-year AUD among men only. Experiencing a theft or vandalism was associated with twice the odds of having a past-year AUD even when controlling for sociodemographic characteristics ($OR_{adj} = 1.84$; $p < .05$).

DISCUSSION

Our findings suggest that for both men and women, stressful life events are associated with increased odds of past-year AUD, but not with at-risk drinking or mean alcohol consumption (hypothesis 1). However, there were no significant associations of stressful events, perceived stress, or social support with at-risk drinking for men or women. For women, higher levels of perceived stress were associated with lower mean consumption and for men it was associated with a modest increase in the odds of a past-year AUD. Our findings also suggest that the level of general social support among older adults (hypothesis 2) is not a factor in alcohol consumption, at-risk drinking, or having an AUD.

Differences by gender may be the result of differences in both stress and alcohol use. Women drank less on average than men, and endorsed higher levels of perceived stress. Women may respond to stressors with significant changes in mood, without concomitant changes in drinking, while perceived stress may be more closely related to problem drinking among men. Research on problem drinkers suggests that women cope with family related stressors whereas men deal with financial and peer relationships (Brennan et al., 1993). Nonetheless, our study found that in both genders, stressful life events were associated with greater odds of AUD.

The stressful events and alcohol disorder relationship may arise at least in part as a function of the construct itself. AUDs include criteria that focus on problems resulting from alcohol use, such as medical problems related to use, curtailment of occupational and recreational activities, and failure to fulfill role obligations (American Psychiatric Association, 1994). It is possible that our findings related to the link between stressful events and AUDs is a function of the phenomenology of AUDs. Having a drinking problem may be an added stress in the lives of older men and women, rather than a direct causal pathway from stressful events through perceived stress then leading to increased drinking. Moreover, in an older adult sample such as the NESARC subsample used here, past-year alcohol use disorder may represent the impact of persistent or recurring disorder rather than new onset. Analyses by Kessler and colleagues (2005) derived from a national sample suggest that new onset of alcohol abuse and/or dependence is rare after age 50. Similarly, Grant et al. (2012), using the full-age spectrum of NESARC data found that both new onset and recurrence of AUD were lower with increased age.

Covariate findings in these statistical models are consistent with the literature on alcohol and aging. Greater average alcohol consumption was higher among individuals with better health, higher levels of education, and the highest income (+$100,000). Older age was associated with lower consumption levels and decreased odds of at-risk drinking and AUD. Our results are similar to those of Moore and colleagues (2009) who analyzed older adult drinking in wave 1 of the NESARC survey and found that being a current drinker was

associated with being younger, male, and divorced or separated. Also similar to our findings, Brennan and colleagues (2010) found that lower baseline income was associated with greater declines in drinking frequency in a sample of retirees. Our findings on the association between being formerly married and being an at-risk drinker are consistent with those of Blazer and Wu (2009) who found higher odds of at-risk and binge drinking among individuals age 50 and older in a national sample who were not currently married.

Stressful events, rather than being a direct causal factor in the development and maintenance of alcohol problems, may be a byproduct of AUD, both an outgrowth of the personal and family devastation as a result of the illness and a trigger to drink among older adults living with an AUD. In considering onset of disorder, it is likely that past-year AUD is reflective of longer term persistent disorder rather than the onset of AUD (Verges et al., 2012). Simply put, drinking problems may lead to stressful events (e.g., having to relocate or DUI) and drinking may also serve as a reaction to the stressful event itself. For example, research using wave 1 of the NESARC survey suggests that the risk of crime victimization is higher among individuals with an alcohol use disorder in the general population (Vaughn et al., 2010). Indeed, using wave 2 data, we had similar findings among men. These stressful events may lead to perceived stress among older adults with an AUD. This finding is consistent with general population research that has identified associations between problem use and stressful life events but not associations between alcohol consumption and stress (Welte & Mirand, 1995).

Moreover, the impact of stressful events on alcohol use may be a function of the emotional and behavioral repertoire of coping, rather than the amount of stress that these events create. Investigation has focused on the ways in which individual coping styles impact drinking behavior and alcohol problems. Veenstra et al. (2007) found that emotion-focused coping behaviors mediated the relationship between stressful life events and alcohol consumption; those who used emotion-focused coping to deal with a stressful life event increased their drinking whereas those who did not use emotion-focused coping decreased their drinking. However, their study was not specifically focused on older adults so it is not clear if the findings would generalize to the population included in the current study.

This research found no association between social support and drinking behavior among older adult drinkers. The use of a general support measure may lack the specificity to drill down to the important aspects of social support in both drinking and in recovery. The influence of support may be a function of the extent to which it is alcohol-specific (i.e., driving someone to a 12-step meeting) rather than simply having general emotional or instrumental support (McCrady et al., 2006). Social involvement may encourage alcohol use rather than suppress it among older adults whose social networks drink. Specifically, social support of drinking behavior may reinforce drinking patterns. In a longitudinal study of late-life problem drinkers, researchers found that less support for drinking from spouse and peers was associated with remission of drinking problems (Schutte et al., 1994; Schutte, Byrne, Brennan, & Moos, 2001). Conversely, recent research by Moos and colleagues found that high-risk drinking patterns predict peer/friend approval of drinking 10 years later, but that high-risk drinking predicted worse relationships with extended family 10 years later (Moos,

Brennan, Schutte, & Moos, 2010). Unfortunately, data to characterize the prodrinking nature of the social supports and networks were not collected in the NESARC survey.

Limitations

Although this research has limitations, it contributes to the knowledge base of gender differences in the relationship between stress and drinking in older adults. In understanding the relationship of stress and alcohol use, this research relied on retrospective reports of stressful events, perceived stress, social support, and alcohol-related variables. In cross-sectional samples, as is the case here, it is not possible to determine whether stress causes alcohol use, or alcohol use causes stress. Also, perceived stress and social support were considered to be measured statically, and the survey did not delve into the extent to which individuals' social support systems approved of alcohol consumption or not. Each measure utilized a slightly different time frame and was not designed to measure within-person variation over time frames in which relevant constructs would be expected to change. Ideally, one would capture shorter time frames and use methods that measure dynamic change. Moreover, potentially reciprocal relationships between alcohol use, problems, perceived stress, and specific means of coping were not captured in this analysis.

In a national sample of the general population of drinkers in older adulthood, our findings suggest that the experience of stressful life events is related to increased likelihood of AUD, but may not be associated with consumption measures (either mean consumption or risky drinking) in the general population of older adults. Although previous research has found differences in drinking patterns for older men and women, few studies have specifically examined gender-stratified relationships among stress, social support, and various measures of alcohol involvement among older drinkers. This study highlights the different relationships between stress and levels of alcohol use involvement for men and women. Specifically, perceived stress may have a dampening effect on alcohol use among older women and have a positive association with AUD among men. Future research should be designed to address the dynamic nature of stressful life events and perceived stress, such as experience sampling or diary-focused methodologies (Armeli, Todd, & Mohr, 2005). Additionally, further study in this area could include a focus on differences in behavioral responses to stress that are specific to older adult problem drinkers as these have been implicated as mediators of the relationship between stress and alcohol consumption (Veenstra et al., 2007).

GLOSSARY

At-risk drinking   This is defined as drinking more than 14 standard drinks per week or 5 or more standard drinks on any day for men, and drinking more than 7 standard drinks per week or 4 or more standard drinks on any day for women (based on NIAAA drinking guidelines for the general population)

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Biographies

Paul Sacco, PhD is an Assistant Professor at the University of Maryland School of Social Work, Baltimore, Maryland, USA. His research focuses on addictive behaviors with a focus

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Dr. Kathleen K Bucholz is a Professor in the Department of Psychiatry at Washington University School of Medicine in St. Louis, Missouri. She earned her PhD in epidemiology in 1986 from Yale University and completed a postdoctoral fellowship in psychiatric epidemiology at Washington University. She is a Psychiatric Genetic Epidemiologist with primary interests in genetic and environmental influences on alcohol and drug use disorders, developmental models of AUD/DUD in African Americans, and alcohol and drug use nosology.

Donna Harrington, PhD, is Professor and Associate Dean for doctoral and postdoctoral education in the University of Maryland, Baltimore School of Social Work. She received her PhD in applied developmental psychology from the University of Maryland, Baltimore County in 1990. Dr. Harrington teaches doctoral courses in advanced data analysis and the integration of theory and research methods. Her research focuses on child maltreatment and development, measurement, ethics, and older adults.

TABLE 1

Gender by sociodemographic and health-related variables

	Males (*n* = 2129)		Females (*n* = 2231)		
	n	wt.%	*n*	wt.%	*p*
Categorical measures:					
Marital status					
Currently married/cohabit.	1421	78.19	937	54.96	<.001
Divorced/widowed/sep.	592	18.24	1,181	41.27	<.001
Never married	116	3.57	113	3.76	.723
Race/ethnicity					
African American/Black	248	5.96	252	5.24	.197
Asian	28	2.33	19	.85	.004
Latino/Hispanic	243	5.36	196	3.71	.014
Native American	28	1.44	27	1.55	.806
White	1,582	84.92	1,737	88.66	<.001
Household income					
$0–24,999	591	21.69	929	35.57	<.001
$25,000–49,999	683	32.35	676	31.68	.702
$50,000–100,000	557	30.78	459	23.77	<.001
+100,000	278	15.18	167	8.98	<.001
Education					
Less than HS graduate	377	14.66	323	11.64	.017
High school	568	27.58	764	35.65	<.001
Some college or more	1184	57.76	1144	52.71	.008
Alcohol use					
At-risk drinking[†]	650	28.94	456	20.47	<.001
Past-year AUD	192	8.34	49	2.08	<.001
Continuous measures	*M*	*se*	*M*	*se*	
Alcohol consumption					
Average daily consumption (oz.)	.60	.03	.26	.01	<.001
Median daily consumption	.18		.04		

	Males (*n* = 2129)		Females (*n* = 2231)		
	n	wt.%	*n*	wt.%	*p*
Stressful events	.81	.02	.78	.03	.436
Perceived stress					
Perceived stress scale-4	2.93	.07	3.34	.08	<.001
Work problems	248	10.44	244	10.00	.637
Living problems	234	10.41	221	9.76	.513
Family problems	905	41.85	949	40.76	.527
Victimization	210	8.98	169	6.76	.019
Social support					
ISEL-12 sum score	42.17	.12	42.15	.15	.904
Physical health (mean SF-12)	47.15	.28	46.88	.27	.479
Mean age (in years)	70.07	.20	70.82	.19	.007

[†] Men = drinking more than 14 standard drinks per week or 5 or more standard drinks on any day.

Women = drinking more than 7 standard drinks per week or more 4 standard drinks on any day.

TABLE 2

Linear regression of average daily consumption of alcohol by gender

Measure	Men (n = 1,922)				Women (n = 1,999)			
	b	se	Wald F	p	b	se	Wald F	p
Mean age (in years)	–.01	.01	1.61	.209	.00	.01	.23	.637
Marital status (ref: married)								
Never married	.55	.22	6.14	.016	–.06	.24	.08	.724
Divorced/widowed/sep.	.44	.14	10.21	.008	–.07	.13	.18	.774
Race/ethnicity (ref: White)								
African American/Black	–.08	.17	.20	.656	–.01	.21	.06	.191
Asian	–1.88	.42	20.13	<.001	–1.14	.44	8.50	.005
Latino/Hispanic	–.16	.20	.62	.433	–.34	.20	1.75	.191
Native American	–.24	.43	.30	.583	.93	.51	4.61	.035
Income (ref: $0–24,999)								
$25,000–49,999	.32	.16	4.94	.030	.22	.14	2.24	.139
$50,000–100,000	.58	.16	15.59	<.001	.27	.17	2.41	.126
$+100,000	.58	.20	11.01	<.002	.65	.21	10.18	.002
Education (ref: <high school graduate)								
High school graduate	.24	.17	1.92	.170	.16	.19	.70	.406
Some college or more	.40	.16	6.42	.015	.83	.19	19.52	<.001
Physical health (SF-12)	.01	.01	6.78	.011	.02	.00	15.51	<.001
Stressful events	–.08	.06	1.40	.241	–.02	.04	.27	.610
Perceived stress scale-4	–.02	.02	.52	.473	–.04	.02	4.68	.034
Social support (ISEL-12 sum score)	–.08	.06	2.51	.241	–.00	.01	.00	.996

TABLE 3

Logistic regression models of at-risk drinking stratified by gender

Measure	Men ($n = 1,922$) OR$_{adj}$ (95% CI)	Women ($n = 1,999$) OR$_{adj}$ (95% CI)
Mean age (in years)	.94*** (.93, .96)	.96*** (.95, .98)
5-year increase in age	0.73	0.81
Marital status (ref: married)		
Never married	1.55 (.93, 2.58)	1.42 (.83, 2.44)
Divorced/widowed/sep.	1.61*** (1.24, 2.09)	1.50** (1.11, 2.02)
Race/ethnicity (ref: White)		
African American/Black	.90 (.63, 1.30)	1.14 (.73, 1.79)
Asian	.39* (.12, .96)	.22 (.05, 1.03)
Latino/Hispanic	1.05 (.71, 1.56)	.91 (.55, 1.50)
Native American	.86 (.31, 2.43)	1.63 (.52, 5.11)
Income (ref: $0–24,999)		
$25,000–49,999	1.29 (.93, 1.79)	1.09 (.77, 1.55)
$50,000–100,000	1.32 (.91, 1.92)	1.40 (.96, 2.07)
$+100,000	1.09 (.74, 1.61)	1.56 (.93, 2.61)
High school graduate	1.02 (.72, 1.45)	1.12 (.69, 1.82)
Some college or more	.93 (.66, 1.30)	1.52 (.92, 2.49)
Physical health (SF-12)	1.00 (.99, 1.01)	1.01 (1.00, 1.02)
Stressful events	1.01 (.89, 1.15)	1.03 (.93, 1.15)
Perceived stress scale-4	.98 (.93, 1.02)	.97 (.92, 1.02)
Social support (ISEL-12 sum score)	.98 (.96, 1.00)	.99 (.96, 1.01)

*
$p < .05$;

**
$p < .01$;

***
$p < .001$.

TABLE 4

Logistic regression models of past-year alcohol disorder (AUD) stratified by gender

Measure	Men ($n = 1,922$) OR$_{adj}$ (95% CI)	Women ($n = 2,004$) OR$_{adj}$ (95% CI)
Mean age (in years)	.95[***] (.93, .98)	.90[**] (.84, .96)
5-year increase in age	.77	.59
Marital tatus (ref: married)		
Never married	2.34 (.99, 5.52)	.21[*] (.04, .98)
Divorced/widowed/sep.	1.45 (.96, 2.19)	1.34 (.63, 2.84)
Race/ethnicity (ref: White)		
African American/Black	.89 (.49, 1.62)	.59 (.21, 1.62)
Asian	.00	.47 (.06, 3.87)
Latino/Hispanic	.57 (.27, 1.20)	.82 (.28, 2.46)
Native American	.58 (.12, 2.75)	1.09 (.12, 9.79)
Income (ref: $0–24,999)		
$25,000–49,999	1.41 (.87, .2.26)	1.11 (.43, 2.83)
$50,000–100,000	.95 (.53, 1.73)	2.05 (.78, 5.36)
$+100,000	.97 (.48, 1.96)	1.83 (.40, 8.36)
Education (ref: <high school graduate)		
High school graduate	.96 (.53, 1.76)	.48 (.16, 1.44)
Some college or more	.88 (.51, 1.52)	.90 (.43, 1.90)
Physical health (mean SF-12)	.99 (.97, 1.00)	1.00 (.97, 1.03)
Stressful events	1.32[**] (1.10, 1.57)	1.23[*] (1.04, 1.45)
Perceived stress scale-4	1.06[*] (1.01, 1.13)	1.08 (.95, 1.23)
Social support (ISEL-12 sum score)	1.01 (.98, 1.04)	.99 (.93, 1.06)

[*] $p < .05$;

[**] $p < .01$;

[***] $p < .001$;

OR = odds ratio.

TABLE 5

Logistic regression models of past-year alcohol use disorder stratified by gender

Stress type	Males ($n = 1,922$) OR$_{adj}$ (95% CI)	Females ($n = 2,004$) OR$_{adj}$ (95% CI)
Victimization	1.84[*] (1.01, 3.36)	1.00 (.38, 2.62)
Work-related	1.69 (.97, 2.94)	1.49 (.57, 3.92)
Living situation	.51 (.26, 1.03)	1.60 (.48, 5.27)
Family related	1.28 (.83, 1.99)	1.77 (.91, 3.44)

Note: Models adjusted for age, ethnicity, income level, health disability, PSS Score, and ISEL12 Score.

[*] $p < .05$.