

DSM-IV Alcohol Dependence and Marital Dissolution: Evidence From the National Epidemiologic Survey on Alcohol and Related Conditions

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ABSTRACT. Objective: The purpose of this study was to examine the cross-sectional and longitudinal associations among alcohol use disorder (AUD), stressful life events, and marital dissolution in a probability sample of adults. **Method:** The National Epidemiologic Survey on Alcohol and Related Conditions is a prospective, longitudinal study of a probability sample of 43,083 adults 18 years of age and older living in the United States. The interval between Wave 1 (W1) and Wave 2 (W2) was approximately 3 years. Cross-sectional analyses included 32,359 adults ages 18 and older who were ever married at W1, and longitudinal analyses included 17,192 adults who were currently married at W1 and who completed relevant W2 measures. Participants completed in-home surveys conducted with computer-assisted personal interviewing. **Results:** Rates of lifetime marital dissolution were significantly higher among those with lifetime AUD (48.3%) than in those with no lifetime

AUD (30.1%). The incidence of marital dissolution from W1 to W2 was 15.5% for those with a past-12-month AUD at W1, compared to 4.8% among those with no AUD. Proportional hazards regression analyses showed that past-12-month AUD, tobacco use disorder, other substance use disorder, stressful life events, older age at marriage, being married more than once, and being married to an alcoholic at W1 predicted greater hazards of marital dissolution at W2. These associations were not moderated by gender. **Conclusions:** AUD and stressful life events predict subsequent marital dissolution independently of other substance use disorders, mood and anxiety disorders, and personality disorders. Results were discussed within the framework of the Vulnerability–Stress–Adaptation model of marriage. (*J. Stud. Alcohol Drugs*, 75, 520–529, 2014)

DOES ALCOHOL USE DISORDER (AUD) predict marital dissolution? Leonard and Rothbard (1999) noted that “perhaps because of the commonsense appeal that drinking causes marital problems and divorce, few studies have systematically addressed this issue” (p. 143). Although several studies have established linkages between AUD and indicators of marital quality (e.g., Cranford et al., 2011; Whisman, 2007; Whisman et al., 2006), few longitudinal studies have tested the hypothesis that AUD leads to marital dissolution (Chilcoat and Breslau, 1996; Smith et al., 2012b). High rates of comorbidity between AUD and other psychiatric disorders make it difficult to determine the relative importance of AUD as a predictor of marital dissolution. In addition, research examining gender differences in the association between AUD and marital outcomes has yielded conflicting evidence. The present study addressed these limitations by (a) testing the hypothesis that AUD predicts marital dissolution using longitudinal data from a national probability sample, (b) simultaneously assessing the effects

of other psychiatric disorders, and (c) examining gender as a possible moderator of these associations.

Research documenting the association between alcohol involvement and marital status has a long history, going back more than 100 years (Bacon, 1944; Heron, 1912). Evidence showed that alcohol involvement was a common reason for divorce. For example, Kephart (1954) analyzed a random sample of divorce records from Philadelphia courts for the years 1937–1950 and found that “excessive drinking” was a factor in 21.1% of divorce cases. Similarly, Kitson and Sussman (1982) found that alcohol involvement was a commonly cited reason for divorce. More recently, Amato and Previti (2003) analyzed qualitative data from a five-wave 18-year national longitudinal study and found that “drinking or drug use” was the third most commonly cited cause of divorce, following infidelity and incompatibility (p. 615).

Epidemiological studies also have examined associations between alcohol involvement and marital dissolution. Results from the Epidemiologic Catchment Area (ECA) study showed that about 40% of those with at least one lifetime divorce or separation had a lifetime AUD (Helzer et al., 1991), and the odds of past-month AUD were higher among the separated/divorced than among married participants (Regier et al., 1993). Findings from the National Comorbidity Survey indicated that AUDs (alcohol abuse and dependence) were associated with divorce, but these associations were significant among women only (Kessler et

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al., 1998). Previous analyses of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) data (Hasin et al., 2007) showed that being widowed/separated/divorced was associated with higher odds of lifetime alcohol dependence and past-12-month alcohol abuse and dependence.

Several longitudinal studies have directly examined the association between alcohol involvement and marital dissolution. Amato and Rogers (1997) showed that problems due to drinking or drug use predicted marital dissolution 12 years later in a large probability sample. Similarly, Wilsnack et al. (1991) found that heavy alcohol involvement predicted separation and divorce 5 years later among non-problem-drinking and problem-drinking women. Collins et al. (2007) showed that past-12-month frequency of intoxication at age 23 predicted divorce between ages 23 and 29 (also see Power and Estauth, 1990).

To our knowledge, only two longitudinal studies have focused on AUDs (rather than drinking behavior). Chilcoat and Breslau (1996) followed a random sample of 979 young adults (ages 21–30) over 3.5 years and found that diagnosis of AUD (based on *Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised* [DSM-III-R] criteria; American Psychiatric Association, 1987) at baseline predicted higher odds of divorce over the subsequent 3.5-year interval. More recently, Smith et al. (2012b) reported results from NESARC showing that women who were married or living as if married to a problem drinker were more likely to end their relationship in the subsequent 2 years. In addition, regardless of their partner's AUD status, women who reported higher frequency and quantity of alcohol use, more alcohol problems, and AUD were more likely to be divorced/separated from their partner 2 years later.

However, some studies have not found longitudinal associations between alcohol involvement and subsequent marital dissolution. For example, results from the ECA study showed that lifetime AUD did not predict higher odds of separation/divorce over 1 year (Bruce, 1998). Fu and Goldman (2000) did not find the hypothesized association between alcohol involvement and marital dissolution in a longitudinal study. Indeed, their results showed that moderate alcohol use among men was associated with lower risk of divorce (cf. Sanchez and Gager, 2000).

Vulnerability–Stress–Adaptation model of marriage

Based on an extensive review of theory and research on the longitudinal course of marital quality and stability, Karney and Bradbury (1995) advanced a Vulnerability–Stress–Adaptation (VSA) model of marriage. According to the VSA model, three broad classes of variables are crucial for marital quality and stability: (a) enduring vulnerabilities (e.g., stable personal characteristics), (b) stressful events (including acute and chronic stressors), and (c) adaptive

processes (how couples interact with each other to resolve problems). These factors are hypothesized to influence marital satisfaction, which then has a direct effect on marital stability.

In the context of the VSA model, alcoholism can be thought of as an enduring vulnerability characterized by high comorbidity with other substance use and psychiatric and personality disorders (Cranford et al., 2011; Grant et al., 2004a, 2004b; Hasin et al., 2007; Zucker, 2006; Zucker et al., 1995, 2000), with a developmental course that varies as a function of interpersonal factors (Leonard and Eiden, 2007; Leonard and Homish, 2008; McAweeney et al., 2005; McCrady et al., 2009). For example, Bruce (1998, p. 221) suggested that “a history of psychopathology falls within the broad definition of ‘enduring vulnerabilities’ and may affect both the risk of acute or chronic stressors in a marriage as well as the capacity of the couple to adapt successfully to those stressors” (also see Johns et al., 2007).

Consistent with the VSA model, some evidence showed that the marital interactions of alcoholic couples consist of higher levels of negative and lower levels of positive affect and behavior (Billings et al., 1979; Haber and Jacob, 1997; Jacob and Krahn, 1988; Jacob et al., 1981). In addition, alcoholic couples reported lower levels of marital satisfaction than nonalcoholic couples (Kelly et al., 2002; Marshal, 2003), and alcohol involvement is a consistent correlate of intimate partner violence (Foran and O’Leary, 2008; Leonard, 1993, 2005; Leonard and Eiden, 2007; Smith et al., 2012a). In sum, AUD is associated with several enduring vulnerabilities, acute and chronic stressors, and adaptive processes that might contribute to marital dissolution.

Gender differences in the association between alcohol involvement and marital outcomes

Consistent with recent reviews showing gender differences in the associations between marital functioning and health (Kiecolt-Glaser and Newton, 2001), there is some evidence that the association between AUD and marital dissolution may be stronger for women than for men. Some results showed that female alcoholics had higher rates of co-occurring psychiatric disorders than did male alcoholics (see Nixon and Glenn, 1995), and female alcoholics reported higher rates of sexual dysfunction than did non-alcoholics (Wilsnack and Wilsnack, 1995). Other evidence showed that wives’ (but not husbands’) AUDs predicted their own and their husband’s marital dissatisfaction (Cranford et al., 2011), and a study using behavioral observation methods found higher levels of negativity and lower levels of positivity in female alcoholic couples compared with male alcoholic and nonalcoholic couples (Haber and Jacob, 1997). Smith et al. (2012b) found that various dimensions of alcohol involvement were associated with subsequent divorce in a sample of women.

In addition, according to role incompatibility theory (Fu and Goldman, 2000), greater social acceptance of heavy alcohol involvement among men might translate into a stronger association between alcohol use and marital dissolution among women (see Paolino et al., 1978; Ramisetty-Mikler and Caetano, 2005). Taken together, theory and evidence suggest that AUD may represent an enduring vulnerability that is more disruptive to the interpersonal relationships of female alcoholics.

Is the association between alcohol use disorder and marital dissolution attributable to other risk factors?

The high degree of comorbidity between AUD and other substance use and/or psychological disorders (Grant et al., 2004c) raises the possibility that the association between AUD and marital dissolution is spurious. However, some evidence suggests that AUD may have specific effects on marital outcomes. For example, Collins et al. (2007) showed that frequency of intoxication (but not frequency of marijuana use, frequency of cigarette smoking, or any hard drug use) was longitudinally associated with divorce. Contrary to the hypothesis that AUD might have a unique association with marital dissolution, epidemiological studies have found associations between marital dissolution and other substance use and psychiatric disorders, including illicit drug use (Compton et al., 2007; Fu and Goldman, 2000; Kandel et al., 1986); tobacco use (Chassin et al., 1992; Doherty and Doherty, 1998; Fu and Goldman, 2000); and mood and anxiety disorders (Chatav and Whisman, 2007; Kessler et al., 1998; Merikangas, 1984).

Summary and hypotheses

To summarize, the available evidence supports the hypothesis that AUD is associated with marital dissolution. However, with few exceptions (Chilcoat and Breslau, 1996; Smith et al., 2012b), few studies have tested this hypothesis with longitudinal data from national probability samples. In addition, the degree to which this association varies by gender is unclear. In the current study, we analyzed data from Waves 1 and 2 of NESARC (Grant and Kaplan, 2005; Grant et al., 2003) and tested the cross-sectional and longitudinal associations between AUD and marital dissolution. Based on the VSA model, we tested the following hypotheses.

(A) *HYPOTHESIS 1:* Lifetime AUD will be associated with lifetime marital dissolution, even when other substance use and psychological disorders are statistically controlled.

(B) *HYPOTHESIS 2:* Past-12-month AUD and past-12-month stressful life events at W1 will predict marital dissolution (separation or divorce) at W2, even when other substance use and psychological disorders are statistically controlled.

(C) *HYPOTHESIS 3:* The associations between AUD and marital dissolution will be stronger for women than for men.

Method

To test these hypotheses, we conducted secondary data analyses of the NESARC (Grant et al., 2003), a national household survey sponsored, designed, and conducted by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). The NESARC is the largest and most comprehensive study of AUD and co-occurring psychiatric disorders that has ever been conducted in the United States.

Sample design

For the NESARC, the target population is the civilian noninstitutionalized population, 18 years of age and older, living in the United States. The target population included persons living in households and in certain noninstitutionalized group quarters (i.e., boarding and rooming houses, nontransient hotels and motels, shelters, facilities for housing workers, college quarters, and group homes). After the sample was weighted, the NESARC data were adjusted based on the 2000 Decennial Census so that they were representative of the civilian noninstitutionalized U.S. population for region, gender, age, race, and ethnicity (Grant et al., 2003). All interviews were conducted by 1,800 interviewers from the U.S. Census Bureau who had an average of 5 years of experience (Grant et al., 2004a).

Response rates and sample characteristics

For W1 of the NESARC, face-to-face interviews were conducted with 43,093 participants using computer-assisted personal interviewing. At W1, the NESARC achieved a sampling frame response rate of 99%, a household response rate of 89%, and a person response rate of 93%, for an overall response rate of 81% (Grant et al., 2004a). Based on weighted data, the final sample was 52.1% female; with respect to age, 21.8% of participants were 18–20 years old, 30.9% were 30–44 years old, 31.1% were 45–64 years old, and 16.2% were 65 years or older; 70.9% of participants were White, 11.1% were Black, 11.6% were Hispanic, 4.4% were Asian or Pacific Islander, and 2.1% were Native American. For our cross-sectional analyses, the analytic sample comprised 32,359 adults ages 18 and older who reported being married at least once in their lifetime (77.0% of the sample) at W1. Participants who reported that they had never been married ($n = 9,872$, 20.8%) or were currently living with someone as married with no previous marriages ($n = 862$, 2.2%) at W1 were excluded from the analytic sample.

Approximately 3 years after W1 was completed, a total of 34,653 eligible respondents were interviewed at W2, for a response rate of 86.7%. The overall cumulative response rate for both waves of NESARC was 70.2% (Grant et al., 2003). For longitudinal analyses, our analytic sample comprised 17,192 adults ages 20 and older who (a) reported that they

were “currently married” at W1 and (b) completed W2 and responded to the question about changes in marital status since the W1 interview.

Measures

Demographic variables assessed in the NESARC included gender, age, race/ethnicity, marital status, highest year of school completed, and total household income in the past 1 year. Age was treated as a binary variable (18–29, ≥ 30).

Lifetime and past-12-months alcohol use disorder at W1. All NESARC interviews were conducted with the NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV Version (AUDADIS-IV; Grant et al., 2003). The AUDADIS-IV yields diagnoses for the past year (current) and before the past year (past), with lifetime diagnoses defined as those occurring in the past 12 months and/or before the past year. The AUDADIS-IV provides DSM-IV diagnoses of alcohol abuse and alcohol dependence (American Psychiatric Association, 1994). A diagnosis of DSM-IV alcohol abuse required participants to meet at least one of four abuse criteria (without meeting criteria for alcohol dependence), and a diagnosis of DSM-IV alcohol dependence required participants to meet at least three of seven dependence criteria (see Grant et al., 2004a).

Based on extensive work by the DSM-5 Substance-Related Disorders Work Group (Hasin et al., 2013), the recently published DSM-5 (American Psychiatric Association, 2013) combines alcohol abuse and dependence into a single AUD, with number of symptoms as an indicator of severity (2–3 symptoms = mild, 4–5 symptoms = moderate, and ≥ 6 symptoms = severe AUD). The measure of DSM-IV alcohol dependence at W1 overlaps substantially with the operational definition of DSM-5 AUD (see Agrawal et al., 2011; Compton et al., 2013; Dawson et al., 2013). Thus, individuals who originally met DSM-IV criteria for diagnoses of lifetime alcohol dependence or past-12-months alcohol dependence at W1 were given DSM-5 diagnoses of *lifetime AUD* or *past-12-months AUD*, respectively.

Lifetime and past-12-months substance use and psychiatric disorders at W1. The AUDADIS-IV was also used to assess lifetime and past-12-months drug use disorders (DUDs; see Conway et al., 2006; Stinson et al., 2005). A separate module of the AUDADIS-IV was used to assess lifetime and past-12-months nicotine dependence. Lifetime and past-12-months diagnoses of independent or primary mood and anxiety disorders at W1 also were made in accord with DSM-IV criteria (American Psychiatric Association, 1994). All lifetime and past-12-months independent mood and anxiety disorders ruled out substance-induced disorders and disorders attributable to medical conditions and bereavement (Grant et al., 2004c).

Stressful life events at W1. In W1 of NESARC, participants were presented with 12 potentially stressful events and

asked if they had experienced any of them in the past 12 months (e.g., “In the last 12 months, were you fired or laid off from a job?”). Items were summed to create an index of the number of stressful events experienced during the last 12 months (see Dawson et al., 2005, 2007). An item asking participants if they had gotten separated or divorced or had broken off a steady relationship in the last 12 months was excluded. Thus, scores on this measure had a possible range of 0–11.

Current spouse alcoholic or problem drinker at W1. At W1, participants were asked, “Did you ever live as if married with someone who was an alcoholic or problem drinker?” Those who responded “yes” were then asked if they currently lived with this person. Those who responded “yes” to this question were then asked, “Would you say that (he/she) is an alcoholic or problem drinker at this time?” (see Dawson et al., 2007; Smith et al., 2012b).

Ever separated or divorced in lifetime at W1. Current marital status at W1 was assessed with the question, “What is your current marital status?” Response categories included married, living with someone as if married, widowed, divorced, separated, and never married. All participants (except those in the never-married category) were then asked the number of times they had ever been married. Participants who indicated that they had been married one time were classified as “married to first spouse.” Those who indicated that they had been married more than one time were then asked how their first marriage had ended. Response categories included widowed, divorced, separated, and other. Based on previous research showing that the majority of marital separations eventually end in divorce (Binstock and Thornton, 2003), we combined the separated and divorced groups. Participants were coded as “currently separated/currently or ever divorced” ($n = 12,004$, 24.7% of the W1 sample) if they indicated that they were currently separated, currently divorced, or previously divorced.

Transition out of marriage from W1 to W2. Participants at W2 were also asked about their current marital status. In addition, participants were asked, “Since your LAST interview in (MO/YR), have you had any of the following changes in your marital status, for example, getting married, becoming widowed, getting divorced or legally separated, or did you start or stop living with someone as if married?” We defined marital dissolution as “getting divorced or legally separated” between W1 and W2.

Data analysis

Because the NESARC used a complex sample design, estimation procedures that assume simple random sampling cannot be used. Accordingly, all parameters, 95% confidence intervals (CIs), and standard errors were estimated using SAS Version 9.3 (SAS Institute Inc., Cary, NC), a statistical software program with several procedures that account

for complex survey designs. Cross-sectional analyses of the W1 data adjusted for the design effects of the W1 sample, and longitudinal analyses adjusted for the design effects of the W2 sample. Domain analysis was used to examine subgroups of interest.

Bivariate and multiple logistic regression analyses (Jaccard, 2001) were used to assess the unconditional and conditional associations between each covariate and marital dissolution at W1. Proportional hazards regression analyses (Cox, 1972) were used to test hypotheses about W1 predictors of W2 marital dissolution using guidelines provided by Allison (2010). The event of interest was "separation or divorce from current spouse at W2," and survival time (i.e., marital duration in years) was treated as a discrete variable and defined as the number of years between the age at marriage to the current spouse at W1 and age at separation or divorce from the same spouse at W2. Participants who were still married or widowed at W2 were censored at number of years married to the W1 spouse.

Nonparametric estimates of the discrete-time hazard and survival functions were obtained by the life-table or actuarial method (Allison, 2010) using the LIFETEST procedure in SAS (SAS Institute Inc., 2011). For these descriptive analyses, marital duration was stratified into five 5-year intervals (0–4, 5–9, 10–14, 15–19, and 20–24 years; see Graham et al., 2012; Singer and Willett, 2003), and the sixth and final interval was expanded to a width of 30 years (25–54 years) to capture enough events to allow for reliable estimates of the hazard functions (Allison, 2010). Because the aim of these analyses was descriptive, we present the unweighted hazard functions. For the Cox proportional hazards regression models, the SURVEYPHREG procedure in SAS was used to account for the complex sample design of NESARC, using Efron's approximation (1977) to handle ties.

Results

Lifetime alcohol use disorder and lifetime marital dissolution at W1

As noted earlier, 24.7% of the W1 sample ($n = 12,004$) was currently separated, currently divorced, or previously divorced. Results from bivariate analyses showed that, among participants who reported ever being married in their lifetime at W1, rates of lifetime marital dissolution were elevated among those with versus without a lifetime AUD (48.3% vs. 30.1%), $\chi^2(1) = 344.6, p < .05$.

Multiple logistic regression analyses simultaneously tested, as correlates of lifetime marital dissolution, all W1 demographic variables, lifetime AUD, DUD, mood and anxiety disorders, all personality disorders, and ever having lived as if married with someone who was an alcoholic or problem drinker. Results showed that lifetime AUD remained a statistically significant correlate of lifetime marital dissolution,

even when all other covariates were statistically controlled (adjusted odds ratio = 1.3, 95% CI [1.2, 1.5]). These findings are consistent with Hypothesis 1. However, results from multiple logistic regression analyses that tested the two-way interaction between gender and AUD showed that, when all covariates were statistically controlled, the interaction between gender and lifetime AUD was not statistically significant. This finding does not support Hypothesis 3.

W1 predictors of W2 marital dissolution

Among those who (a) were currently married at W1, (b) participated in W2, (c) responded to the questions about change in marital status at W2, and (d) reported on their age at marriage to current spouse at W1 and age at marital change at W2 ($n = 17,192$), a total of 923 participants (5.0%) reported a separation or divorce from W1 to W2, 92.9% of participants reported that they were still married to their W1 spouse, and 2.1% were widowed. There was a statistically significant bivariate association between W1 AUD and marital dissolution at W2. Among those participants who were currently married at W1, the incidence of marital dissolution (divorce or separation) from W1 to W2 was 4.8% for those with no past-12-month AUD at W1, compared with 15.5% among those with past-12-month AUD at W1, $\chi^2(1) = 48.7, p < .05$.

Preliminary gender-specific bivariate analyses showed that, for men, the incidence of marital dissolution from W1 to W2 was 4.6% for those with no past-12-month AUD compared with 14.6% among those with past-12-month AUD, $\chi^2(1) = 23.8, p < .05$. For women, the incidence of marital dissolution from W1 to W2 was 5.0% for those with no past-12-month AUD compared with 17.4% among those with past-12-month AUD, $\chi^2(1) = 24.5, p < .05$.

Figure 1 plots the hazards of marital dissolution at W2 as a function of the length of marriage in years for those with and without a past-12-month AUD at W1. Participants who remained married or were widowed at W2 were censored. As seen in Figure 1, the hazard of W2 marital dissolution was elevated in the first 10 years of marriage for those with and without a past-12-month AUD, and this pattern was more pronounced (but not statistically significant) among those with AUD. For both groups, the hazards of marital dissolution leveled off and were relatively stable for those married 10 to 25 years and were lowest for those married more than 25 years.

Before estimating proportional hazards models, we tested the proportionality assumption for gender and AUD based on guidelines in Allison (2010). Product terms between (a) gender and marital duration and (b) AUD and marital duration were calculated and tested simultaneously. Neither product term was statistically significant; thus, we failed to reject the null hypothesis of proportionality. We then conducted a series of proportional hazards regression analyses of W1

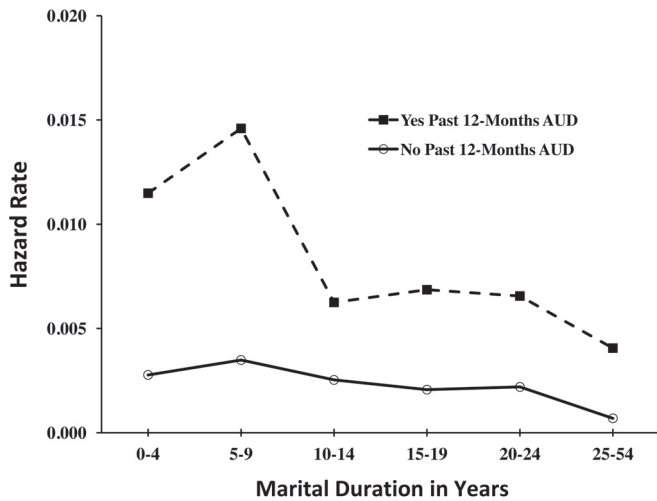


FIGURE 1. Life-table estimates of nonparametric baseline hazard functions for marital dissolution at Wave 2 by marital duration and past-12-month alcohol use disorder (AUD) at Wave 1. Hazard estimates are based on unweighted data.

predictors of W2 marital dissolution. Results in Table 1 show that the hazard of marital dissolution was about two times larger for those with versus without a past-12-month AUD at W1, even when demographic variables and other theoretically relevant covariates were statistically controlled. Results also indicate that the number of past-12-month stressful life events at W1 was significantly related to marital dissolution at W2, and each 1-unit increase in stressful events was associated with a 15% increase in the hazard of marital dissolution at W2. These findings are supportive of Hypothesis 2.

To test Hypothesis 3, we first tested gender-specific proportional hazards models of W1 predictors of W2 marital dissolution. Statistically controlling for all relevant covariates, the hazard ratios (HRs) for past-12-month AUD were very similar for women and men (HR = 1.44, 95% CI [1.01, 2.1] and HR = 1.33, 95% CI [0.8, 2.4], respectively). Proportional hazards regression analyses were also conducted to formally test the two-way interaction between gender and past-12-month AUD at W1 as a predictor of marital dissolution at W2. Although the association between AUD and marital dissolution was stronger for women, this effect was not statistically significant (HR = 1.25, 95% CI [0.6, 2.6]). This result does not support Hypothesis 3.

Other W1 predictors of W2 marital dissolution

In addition to past-12-month AUD, other statistically significant W1 predictors of the hazard of W2 marital dissolution were observed. As seen in Table 1, older age at W1 predicted lower hazard of marital dissolution. By contrast, older age at marriage, being married more than once, and perceiving one’s spouse as an alcoholic or problem drinker at W1 were associated with greater hazards of W2 marital

TABLE 1. Proportional hazards regression analysis of Wave 1 (W1) predictors of Wave 2 (W2) marital dissolution^a

W1 Predictor	HR [95% CL]
Sex	
Female	1.1 [0.9, 1.3]
Male	–
Age, in years	
18–29	12.8* [10.2, 16.0]
≥30	–
Race/ethnicity	
African American	1.9* [1.1, 3.1]
Asian or Pacific Islander	–
American Indian/Alaska Native	1.3 [0.7, 2.5]
White	0.9 [0.6, 1.5]
Hispanic or Latino	1.5 [0.9, 2.6]
Education	
More than high school	1.2 [0.9, 1.6]
Completed high school	1.3 [0.9, 1.5]
Less than high school	–
Income, in U.S. \$	
≥\$70,000	1.1 [0.8, 1.5]
\$35,000–\$69,999	1.3* [1.0, 1.6]
\$20,000–\$34,999	1.3* [1.1, 1.6]
\$0–\$19,999	–
Age at marriage	1.04* [1.03, 1.05]
Married two or more times	2.1* [1.7, 2.7]
Past-12-month alcohol use disorder	2.0* [1.4, 2.8]
Past-12-month drug use disorder	1.5 [0.7, 3.5]
Past-12-month tobacco use disorder	1.8* [1.4, 2.3]
Past-12-month mood disorder	1.8* [1.5, 2.2]
Past-12-month anxiety disorder	0.9 [0.7, 1.2]
Any lifetime personality disorder	1.2 [0.9, 1.4]
Current spouse alcoholic	1.9* [1.2, 3.1]
Number of stressful events, past 12 months	1.15* [1.09, 1.21]

Notes: HR = adjusted hazards ratio; CL = Wald 95% confidence limits; – = reference group. ^aThe analytic sample for proportional hazards regression analyses comprised N = 17,192 participants who (a) were “currently married” at W1, (b) completed W2, (c) responded to the W2 question about changes in marital status since the W1 interview, and (d) responded to the W1 question, “How old were you when you and your (current) (husband/wife) got married?” and to the W2 question, “How old were you when this marital change took place?” (asked of those who reported a marital change between W1 and W2).

*p < .05.

dissolution (cf. Dawson et al., 2007; Smith et al., 2012b). Past-12-month tobacco use disorder (but not DUD) and mood disorder (but not anxiety or any lifetime personality disorder) also were predictive of W2 marital dissolution.

Discussion

This study tested several hypotheses, derived from the VSA model of marriage, about the concurrent and longitudinal associations among AUD, stress, and marital dissolution. Lifetime AUD was associated with higher odds of ever being divorced. Findings are consistent with a long line of evidence showing associations between alcohol involvement and marital dissolution, based on archival data (U.S. Bureau of Labor, 1889); data from clinical samples (Mulford, 1977); aggregate data on per capita alcohol consumption and divorce rates (Caces et al., 1999); and epidemiological data from community samples (Kessler et al., 1998; Power

and Estauigh, 1990). These associations persisted even when demographics, other substance use disorders, and psychiatric disorders were statistically controlled, suggesting that the linkage between AUD and divorce is not simply a function of some other common cause.

Past-12-month AUD and stressful life events at W1 were associated with greater hazards of subsequent marital dissolution 3 years later at W2, even after controlling for demographics, marital variables, other substance use disorders, and psychiatric disorders. Although some previous longitudinal evidence suggested that alcohol involvement might be a unique risk factor for marital dissolution (Collins et al., 2007), our results indicated that AUD, along with nicotine dependence, mood disorder, being married to an alcoholic, and being married more than once, are all risk factors for marital dissolution. At the same time, these findings argue against the possibility that the longitudinal association between AUD and subsequent divorce is spurious (cf. Whisman, 1999).

Support for the VSA model of marriage

The VSA model adapted here holds that AUD and other substance use and psychological disorders may represent enduring vulnerabilities that are linked to marital instability via their negative effects on adaptive processes and marital quality (Karney and Bradbury, 1995; also see Bruce, 1998). Our results are supportive of the VSA model in showing that past-12-month AUD and stressful life events are independently predictive of subsequent marital dissolution.

However, results also indicated that AUD and other substance use and psychiatric disorders may influence marital stability via different mechanisms. Although the evidence for distinct marital interaction patterns between alcoholic and nonalcoholic couples is mixed (McCrary and Epstein, 1995), some evidence has shown that alcoholic couples display more negative and fewer positive behaviors during marital interaction tasks (e.g., Floyd et al., 2006; Jacob et al., 1981). AUD and alcohol involvement are associated with lower levels of marital satisfaction (Cranford et al., 2011; Marshal, 2003) and higher levels of intimate partner violence (Leonard, 2005; Leonard and Eiden, 2007; Murphy and O'Farrell, 1996), which is highly correlated with divorce (e.g., Sanchez and Gager, 2000). Infidelity was ranked as a common reason for divorce in several studies (e.g., Amato and Previti, 2003), and those with AUD are more likely to engage in extramarital sex (Hall et al., 2008). Although multiple mechanisms for the effects of AUD on marital dissolution are plausible, our findings indicate that these effects cannot be attributed to other psychiatric disorders, being married for the first time, being married to an alcoholic spouse, or demographic variables.

Consistent with the VSA model's focus on predictors of marital quality and stability, the present study examined

W1 AUD as a predictor of marital dissolution at W2. Other findings from NESARC showed that W1 marital status (i.e., being separated, divorced, or widowed) predicted onset of AUD at W2 (Grant et al., 2009). Taken together, findings from these two studies support the hypothesis that the association between AUD and marital dissolution is bidirectional (i.e., AUD and other psychiatric disorders may be both a cause and a consequence of marital dissolution; Leonard and Rothbard, 1999). Longitudinal studies that assess both the wife and the husband will clarify the mechanisms underlying these associations (Leonard and Eiden, 2007).

Does the association between alcoholism and marital dissolution vary by gender?

Contrary to Hypothesis 3, the association between lifetime AUD and lifetime marital dissolution did not vary by gender. Also, gender did not moderate the relationship between past-12-month AUD at W1 and marital dissolution at W2. Results do not support the hypothesis that the association between AUD and marital dissolution is stronger among women than among men. However, there are some alternative explanations for these null findings. Although the overall associations between AUDs and divorce may be stronger for women, this may not be the case for the specific temporal pattern of AUDs followed by divorce. Another possible explanation is that the interval between W1 and W2 (3 years) was not long enough to reveal this interaction effect. Because the process of marital dissolution may unfold over relatively long periods (e.g., Bruce, 1998), longer intervals may be needed to detect gender differences in predictors of divorce.

Limitations and strengths

We acknowledge several limitations to this research. Although we statistically controlled for several demographic and clinical variables, the possibility that the associations between AUDs and marital dissolution are attributable to some other confounding variable(s) cannot be ruled out. Further, because the NESARC is based on a large national sample, DSM-IV diagnoses were based on data collected by lay interviewers rather than trained clinicians (see Schuckit, 2006). At W1, participants who reported multiple marriages were asked only about how their first marriage ended. Similarly, participants may have experienced multiple marital changes between W1 and W2, but at W2 they were only asked about the first marital change. The NESARC was not a study of couples, and therefore only one partner was assessed. Highlighting the importance of assessing both spouses, previous studies found that discrepant drinking is related to subsequent divorce (see Ostermann et al., 2005). Finally, because W1 of NESARC does not include measures of marital interactions or marital quality, we were unable

to test the complete version of the VSA model. However, evidence from other studies supported the hypothesis that AUDs are linked to marital interactions and marital quality (Marshal, 2003). The full VSA model can be tested in future longitudinal research with multiple measures of stress, marital interactions, and marital quality, preferably with large samples of couples over extended periods. In addition, we note that the VSA's central constructs (enduring vulnerabilities, stressful events, and adaptive processes) are relevant for a broad range of outcomes (e.g., suicide, violence).

This research also has several strengths. The use of a large representative national sample increases confidence in the generality of our results. By simultaneously examining the associations of AUD and other psychiatric disorders, we were able to rule out the possibility that the relationship between AUD and marital dissolution is attributable to comorbid psychopathology or to demographic variables that are known to correlate with marital status. The longitudinal design of NESARC allowed us to establish that AUD and other psychiatric disorders are prospectively associated with subsequent marital dissolution.

Summary and conclusions

Analyses of cross-sectional data from a nationally representative sample showed that lifetime AUD was associated with higher odds of ever having been divorced, but this association did not vary by gender. Longitudinal analyses showed that past-12-month AUD at W1 was associated with greater hazard of subsequent marital dissolution 3 years later at W2. Tobacco use disorder, mood disorder, being married to an alcoholic, and being married for the first time all had independent effects on subsequent divorce and/or separation. Results supported the VSA model of marital dissolution. Further research is needed to (a) determine if AUD symptoms are more incompatible with the marital role for women than for men, (b) identify the multiple mechanisms linking various forms of psychopathology to marital dissolution, and (c) better characterize the temporal dynamics of alcohol involvement and marital processes.

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