Discordant and Concordant Alcohol Use in Spouses as Predictors of Marital Dissolution in the General Population: Results from the Hunt Study

Fartein A. Torvik, Espen Reysamb, Kristin Gustavson, Mariann Idstad, and Kristian Tambs

Background: Previous studies have demonstrated that high alcohol consumption is a predictor of divorce. However, there is a lack of studies with prospective data from both spouses. The effects of drinking among husbands versus wives and of concordant versus discordant drinking in couples are therefore unknown. Concordant drinking may lead to increased divorce rates because the malignant effects of heavy drinking are experienced in double doses; alternatively it may lead to marital stability due to partner compatibility.

Methods: All inhabitants in a Norwegian county were invited to participate in a health study. We identified 19,977 married couples where both spouses participated. Respondents provided information on alcohol use and mental distress. Survival analysis was applied to study the risk of divorce over the next 15 years. Demographics and mental distress were used as covariates.

Results: Heavy drinking among men (hazard ratio [HR] = 1.39) and women (HR = 1.41) increased the risk of future marital dissolution, even after adjusting for demography (reference group “light drinkers”). The HR for divorce was 1.51 when only the husband was a heavy drinker, while it was 3.07 when only the wife was a heavy drinker. Moreover, there were strong interaction effects: concordant abstainers (HR = 0.40) and concordant heavy drinkers (HR = 0.35) had lower risks of divorce compared to the risk expected from combining the main effects. Nevertheless, couples with 2 heavy drinkers (HR = 1.63) had higher risk of divorce than couples with 2 light drinkers.

Conclusions: This study demonstrated that both the level of alcohol use and compatibility in alcohol use are important predictors of marital dissolution.

Key Words: Alcohol, Concordance, Discordance, Divorce, Marital Dissolution.

Married people generally have better health than unmarried people (Amato and James, 2010; Hemminki and Li, 2003). This is partly due to selection of healthy people into marriage and partly due to positive health effects of being married (Amato and James, 2010). At the same time, divorce is a stressful experience with risk of negative long-term effects on the former spouses and their children (Amato and James, 2010; Brockmann and Klein, 2004; Johnson and Wu, 2002; Størksen et al., 2005, 2006; Thompson et al., 2008). Projected divorce rate estimates suggest that a little less than half of all new marriages will end in divorce in countries such as Norway (Statistics Norway, 2011) and the United Kingdom (Wilson and Smallwood, 2008). Given its high prevalence and potential harm, it is important to identify factors that affect the risk of divorce.

Divorced individuals are known to drink more heavily than their married counterparts (Lee et al., 2010; Leonard and Rothbard, 1999; Power et al., 1999). This may partly be due to selection out of marriage, that is, heavy drinkers are more likely to become divorced. This may also be due to transition out of marriage, that is, increased drinking associated with the divorce (Leonard and Rothbard, 1999; Waldron et al., 2011).

High alcohol consumption has repeatedly been found to be an independent risk factor for later divorce (Collins et al., 2007; Ostermann et al., 2005), although 1 study did not find this (Power et al., 1999). For example, Waldron and colleagues (2011) found a 2.5-fold increase in separation rates among individuals with alcohol dependence. However, some of the effect was attributable to other characteristics associated with alcohol abuse. Alcohol or drug use is also the third most commonly reported reason for divorce in the United States (Amato and Previti, 2003). The most cited explanation for the increased divorce rates among heavy drinkers is that excessive alcohol use disrupts daily tasks and functioning and increases spousal conflicts (Collins et al., 2007; Kearns-Bodkin and Leonard, 2005; Leadley et al., 2000; Marshal, 2003; Ostermann et al., 2005; Zweben, 1986). Poor marital quality can in turn increase the risk of divorce (Karney and Bradbury, 1995). Nevertheless, some of these
effects may be due to unmeasured third-factors, such as personality traits, attitudes, religiosity, or initial marital satisfaction.

Concordant excessive drinking in spouses has been studied less than drinking in 1 spouse (Marshall, 2003; Ostermann et al., 2005). Because alcohol use in 1 spouse increases the risk of divorce, one might expect that concordant heavy drinking increases the risk of divorce even more, because of the doubling of the malignant factors (Marshall, 2003). One study did find that concordant heavy drinkers reported more maladaptive marital interactions, such as more negativity and less congeniality (Haber and Jacob, 1997).

However, other studies indicate that a substantial part of the marital stress stems from differences in alcohol use between spouses, rather than alcohol use per se. Partners concordant in heavy drinking are likely to have similar behaviors and attitudes toward drinking and may therefore be less divided than couples with 1 heavy drinker, particularly if they drink together (Haber and Jacob, 1997; Homish and Leonard, 2005; Marshall, 2003; Roberts and Leonard, 1998). Consequently, these couples may experience less stress and have a lower risk of divorce. More generally, having similar personalities has been found to promote relationship quality (Gonzaga et al., 2007). In addition, couples concordant in heavy drinking may believe they have less to gain by divorcing, even if they are distressed (Pinsof, 2002).

Few studies have investigated divorce with alcohol data from both spouses. A notable exception is the study by Ostermann and colleagues (2005), who followed 4,589 middle-aged married couples over 8 years. Discordant alcohol use was found to be more predictive of future divorce than the level of alcohol use. Couples with 1 heavy drinker had the highest divorce rates, while couples with 2 abstainers, 2 heavy drinkers, or 2 light drinkers had similar divorce rates. Discordant drinking couples have also been found to have lower marital quality than couples where both or none were drinking much (Homish and Leonard, 2007; Leadley et al., 2000; Mudar et al., 2001; Roberts and Leonard, 1998). Thus, divorce risk may be lower in couples with 2 heavy drinkers compared to couples with 1 heavy drinker.

From previous research, it may be suspected that alcohol use increases the risk of future divorce, but that similar alcohol use among spouses reduces the risk of relationship dissatisfaction and thus the risk of divorce. The present study investigates how alcohol use might predict selection out of marriage, that is, divorce, in a large general population sample of married couples, with data from both husbands and wives. Couples of different ages and different levels and combinations of drinking, from abstinence to heavy drinking, were followed over time. The study has 3 aims, namely to investigate (i) the degree to which alcohol use in husbands and wives is prospectively predictive of marital dissolution; (ii) whether discordant and concordant alcohol use are associated with marital dissolution; and (iii) the degree to which the aforementioned associations may be attributed to other characteristics of the spouses, such as demographical background or mental distress.

**MATERIALS AND METHODS**

**Sample and Design**

This study combined longitudinal demographic data from government registries with cross-sectional data from the Nord-Trøndelag Health Study (HUNT 1). The entire population of the Nord-Trøndelag County in Norway, aged 20 years or older, was invited to participate in HUNT 1 between 1984 and 1986. This screening study consisted of 1 health examination and 2 questionnaires. The first questionnaire was enclosed with the invitation letter and returned at the examination site; the second questionnaire was taken home from the examination site and returned by prepaid mail. The questionnaires included a battery of self-report measures.

In total, 85,427 individuals were invited to participate in the HUNT 1 study. Of these, 77,230 (90.4%) responded to the first questionnaire and 63,943 (74.9%) to both questionnaires. Among the invited persons, 64.9% were married, 4.0% were already divorced or separated, 9.5% were widowed, and 20.9% were unmarried. We identified 27,307 heterosexual couples registered as married at the time of the study. The registries did not include data on same-sex couples or on nonmarital cohabitation. Among the married couples, there were 19,977 couples (73.2%) where both spouses returned both questionnaires. These constitute the sample of this study. The husbands had an average age of 51.0 years (SD = 15.2; range, 22 to 95), and the wives had an average age of 47.9 years (SD = 15.0; range, 21 to 92) at baseline.

The couples were followed through governmental registries until 2000, for an average of 15.0 years. More details on the HUNT study are described elsewhere (Holmen et al., 1990) and are available at the HUNT website: www.ntnu.edu/hunt.

**Measures**

Table 1 shows the distribution of the variables.

**Registry Data.** Data on sex, age, education, income, and marital status were collected from population registries administered by Statistics Norway.

**Marriage and marital dissolution:** Statistics Norway provided annual information on individuals’ marital status, the personal identification number of their spouse, and whether and when they divorced or separated. Marriages were considered dissolved when, at any time, the spouses were registered as separated or divorced.

**Age:** The ages of both partners were used as linear covariates.

**Education:** There were registry data on the highest completed education from 1985 on 98.7% of the participants. Education in 1990 or 1980 was used for the remainder of participants. Education was categorized into 4 groups (see Table 1).

**Income:** Information on income was provided by Statistics Norway for the years 1980, 1984, 1985, and 1990 and was adjusted for inflation. Income from the year closest to the year of participation was used. For a few respondents (0.02%), income from 1984 to 1985 was missing, and an average of their income in 1980 and 1990 was used instead. The income of both partners was used as linear covariates.

**Questionnaire Data.**

**Alcohol use:** The alcohol consumption index was based on 3 questions—1 on frequency of drinking, and 2 indications of hazardous drinking: “How often did you drink alcohol over the last 14 days?” (total abstainer, 0 times, 1 to 4 times, 5 to 10 times, 10 times, or more), “If you drank alcohol during the last 14 days, did it make...”
Drinking days
Abstainer 1.228 (6.3%) 2.772 (14.4%)
Light 11.827 (60.5%) 14.351 (74.5%)
Moderate 4.118 (21.1%) 1.707 (8.9%)
Heavy 2.389 (12.2%) 440 (2.3%)

Too much
Abstainer 0.0% 14.8%
1st 3.5% 38.8%
5th 2.0% 0.0%
28.2% 0.0%
4.1% 4.2%
5.2% 38.6%
1.1% 92.0%

You feel influenced by alcohol on any occasion? (no, yes), and "Have there been periods in your life during which you have drunk excessively or at least a bit too much?" (no, not sure, yes), "Not sure" and "yes" were treated equally to limit the number of categories. Individuals who reported that they had been influenced during the last 14 days, but that they had not drunk alcohol (N=132) were set to missing on this item. These questions mainly measure current drinking and have been used in previous studies on the same material (Hagen et al., 2002, 2006). Responders were coded into 4 drinking categories: heavy drinkers, moderate drinkers, light drinkers, and abstainers.

Responders were coded as "heavy drinkers" if they either drank more than 10 times during the last 2 weeks and admitted to 1 of the indications of hazardous drinking, or if they had both indications and had been drinking during the last 2 weeks. Responders were coded as "moderate drinkers" either if they had drunk alcohol more than 10 times over 2 weeks without reporting any other indication of heavy drinking or if they had drunk alcohol 1 to 10 times over last 2 weeks and reported 1 of the indications. As abstainers differ from people with very low consumption (Skogen et al., 2009), current abstainers without a history of drinking too much were coded as a separate group. The remaining responders were labeled "light drinkers" and were used as the reference group. In an alternative set of analyses, we extracted 1 factor from the alcohol questions, which was then divided into percentile categories. Although groups sizes and hazard ratios (HRs) varied somewhat, the main findings remained the same with this alternative alcohol variable, and the results from these supplementary analyses will not be shown.

Table 2 shows the drinking behaviors of men and women within each category. Actual consumption within each group is likely to be considerably higher, as underreporting is common (Rehm, 1998).

**Mental distress:** The anxiety and depression index (ADI-12) consisted of 12 items. Weights for inclusion in a weighted sum were assigned by Tams and Moen (1993) to optimize correlation (r=0.82) with the Hopkins Symptom Checklist (SCL-25) (Derogatis et al., 1974). The 3 highest loading items were "Over the last month, have you suffered from nervousness (irritability, anxiety, tension or restlessness)?", "Do you mostly feel strong and fit, or tired and worn out?", and "Do you often feel lonely?" The ADI-12 had a theta reliability of 0.83 (Tams and Moen, 1993) and has been used in a range of studies (e.g., Hildrum et al., 2008; Idstad et al., 2010). In this study, the mental distress of both partners was used as linear covariates.

**Employment:** Employment status was assigned to 4 categories: working full time, working part time, working at home, or not working. A second question separated students and pensioners from the involuntarily unemployed. The employment situation of both spouses was used as categorical covariates, with full-time work as the reference category.

**Children:** Respondents completed a checklist specifying with whom they were living. The response categories included children aged 5 years or younger, 5 to 15 years old, and 15 or older. Most inconsistencies between spouses on this question are likely to stem from item nonresponse; therefore, when only 1 of the spouses indicated that they were living with children, the responses of that spouse were used. A dummy variable was generated for each of the categories, with no children as reference category. As inconsistencies in reporting may also stem from arising marital disruption, a dummy variable coding for inconsistencies in reporting was also computed and entered as a predictor of marital dissolution.

**Missing values:**
After treating data as described above, the data from governmental registries had no missing values. Multiple imputation with 10 repetitions was applied to avoid excluding couples with partial responses to the questionnaires. Multiple imputation produces multiple copies of the data set, each with random variation around the maximum likelihood estimate, thereby avoiding deflation of the standard errors. This way, data from 1,322 couples who had incomplete questionnaire responses were imputed, and the total sample included 19,977 couples. Multiple imputation provides more accurate estimates than listwise deletion (Graham, 2009), because it allows preserving all valid data. However, in the present analyses, we found only negligible differences between results from pooled

### Table 1. Distribution of Sample on All Variables, N in Groups or Mean (No Imputed Data)

<table>
<thead>
<tr>
<th>Alcohol use</th>
<th>Husbands</th>
<th>Wives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstainer</td>
<td>1.228 (6.3%)</td>
<td>2.772 (14.4%)</td>
</tr>
<tr>
<td>Light</td>
<td>11.827 (60.5%)</td>
<td>14.351 (74.5%)</td>
</tr>
<tr>
<td>Moderate</td>
<td>4.118 (21.1%)</td>
<td>1.707 (8.9%)</td>
</tr>
<tr>
<td>Heavy</td>
<td>2.389 (12.2%)</td>
<td>440 (2.3%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education</th>
<th>Husbands</th>
<th>Wives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>7,947 (39.8%)</td>
<td>8,691 (43.5%)</td>
</tr>
<tr>
<td>Secondary, lower</td>
<td>5,295 (26.5%)</td>
<td>7,744 (38.8%)</td>
</tr>
<tr>
<td>Secondary, higher</td>
<td>4,365 (21.9%)</td>
<td>1,534 (7.7%)</td>
</tr>
<tr>
<td>University or college</td>
<td>2,370 (11.9%)</td>
<td>2,008 (10.1%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employment</th>
<th>Husbands</th>
<th>Wives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, full time</td>
<td>13,703 (68.6%)</td>
<td>3,209 (16.1%)</td>
</tr>
<tr>
<td>Yes, part time</td>
<td>911 (4.6%)</td>
<td>7,125 (35.7%)</td>
</tr>
<tr>
<td>At home or student</td>
<td>217 (1.1%)</td>
<td>5,764 (28.9%)</td>
</tr>
<tr>
<td>Pensioner</td>
<td>4,847 (24.3%)</td>
<td>3,461 (17.3%)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>287 (1.4%)</td>
<td>404 (2.0%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age in years, mean</th>
<th>Husbands</th>
<th>Wives</th>
</tr>
</thead>
<tbody>
<tr>
<td>51.2 (SD = 15.3)</td>
<td>48.9 (SD = 15.0)</td>
<td></td>
</tr>
<tr>
<td>Mental distress, mean&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.1 (SD = 0.9)</td>
<td>0.1 (SD = 1.1)</td>
</tr>
<tr>
<td>Income, mean&lt;sup&gt;b&lt;/sup&gt;</td>
<td>90.8 (SD = 68.5)</td>
<td>38.2 (SD = 41.1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Children</th>
<th>Husbands</th>
<th>Wives</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 years</td>
<td>3,554 (17.8%)</td>
<td>7,215 (36.2%)</td>
</tr>
<tr>
<td>5-15 years</td>
<td>6,404 (32.1%)</td>
<td>1,473 (7.4%)</td>
</tr>
<tr>
<td>Marital dissolution</td>
<td>1,473 (7.4%)</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2. Reported Drinking Patterns Within Each Drinking Category (No Imputed Data)**

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abstainer</td>
<td>Light</td>
</tr>
<tr>
<td>Drinking days&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Drunk&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Too much&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.0%</td>
<td>14.8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abstainer</td>
<td>Light</td>
</tr>
<tr>
<td>Drinking days&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.0</td>
<td>0.8</td>
</tr>
<tr>
<td>Drunk&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Too much&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.0%</td>
<td>4.2%</td>
</tr>
</tbody>
</table>

<sup>a</sup>Drinking days during the last 2 weeks.
<sup>b</sup>Admitting to being drunk during the last 2 weeks.
<sup>c</sup>Answering "yes" or "in doubt" to have been drinking too much in periods of life.

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### Notes
- Mental distress was standardized.
- Income in 1,000 NOK.
multiple imputed data and from data with listwise deletion: the HRs varied at most by ±0.03. Only results from multiple data are reported.

Statistical Analyses

The relative hazards of marital dissolution were studied by survival analysis, with time from the observation to divorce or separation as the time variable. An observation was registered as right censored before the end of the study when either of the spouses died. Predictors of divorce were analyzed with several multivariate Cox proportional hazards regression models. First, the main effects of alcohol use among husbands and wives were analyzed. Second, the interaction term between husbands and wives was included in the analysis. These analyses were run 4 times: unadjusted, adjusted for age, adjusted for age and other demographic variables, and then adjusted for mental distress as well. Finally, to estimate the HRs associated with each combination of husbands’ and wives’ drinking habits, all combinations were entered as separate categories and adjusted for demographics.

Software: All statistical analyses were run in IBM SPSS 19.0 (Chicago, IL) and R 2.11.1 (R Foundation for Statistical Computing, Vienna, Austria).

Ethics

The data matching between spouses were carried out by the governmental agency Statistics Norway, using personal birth identity numbers assigned to every Norwegian citizen. All person-identifiable data were deleted before the data were returned to the researchers. The Norwegian Data Inspectorate and the Regional Ethics Committee approved the study.

RESULTS

Descriptive Results

During the follow-up time from 1984–1986 to 2000, 7.6% of the couples divorced or separated. Table 3 summarizes the bivariate distribution of couples with complete responses in 4 × 4 possible drinking categories and the frequency of marital dissolution within each category. The polychoric correlation between spouses’ alcohol use was 0.40. The vast majority of heavy-drinking men did not have a heavy-drinking wife, while approximately half of heavy-drinking women had a heavy-drinking husband. Marital dissolution was considerably more common among couples with high rates of alcohol consumption. However, the rate of marital dissolution was not highest among couples with 2 heavy drinkers, but among couples where only the wife was a heavy drinker.

Main Effects of Alcohol Use

HRs associated with alcohol use were investigated with multivariate analyses. Table 4 summarizes the results of the survival analyses. The upper part shows the main effects of drinking on marital dissolution. The first column shows the crude associations between alcohol use and marital dissolution. Heavy drinking among husbands and wives predicted an increased risk of marital dissolution. The results in the next columns are consecutively adjusted for age, demography, and mental distress. With each addition of covariates, the effect sizes were somewhat reduced. The main effect of the wives’ drinking was no longer statistically significant in the final model. The magnitude of the effect of husbands’ drinking was similar to that of wives’ drinking throughout the adjustments.

Interactions Between Husbands’ and Wives’ Alcohol Use

Adding the interaction term between male and female drinking to the analyses altered the results considerably. Because all other drinking patterns are partialled out by the interaction terms, the main effects shown in the lower part of Table 4 reflect effects when only 1 spouse deviate from light drinking (discordant drinkers) compared to when both partners are light drinkers. The results for each combination of male and female categories show the HRs compared to what could be expected from the combined main effects. Thus, to obtain HRs for divorce due to any combination of husband and wife drinking, one must multiply the 2 main effects and the corresponding interaction effect. For example, among concordant heavy drinkers, the demography-adjusted HR of divorce would be $1.52 \times 3.08 \times 0.35 = 1.64$ compared to 2 light drinkers.

Moderate or heavy drinking in one spouse combined with light drinking in the other spouse had strong effects. In addition, there are substantial interaction effects between the husbands’ and wives’ alcohol use. Compared to what could be expected from the combined main effects, the risk of divorce
was reduced among concordant abstainers (HR = 0.40; numbers adjusted for demography), concordant heavy drinkers (HR = 0.35), and the combination of a moderate-drinking husband and a heavy-drinking wife (HR = 0.41). Heavy drinking in only the wife (HR = 3.08) was a stronger predictor of divorce than heavy drinking in only the husband (HR = 1.52). The same pattern prevailed throughout all adjustments, although the HRs were somewhat reduced by each step of adjustment.

**All Drinking Combinations as Separate Categories**

To provide more readily interpretable results for specific combinations of drinking, the demographics-adjusted analyses were run with all combinations of drinking among husbands and wives as separate drinking categories. The results are displayed in Table 5. Compared to couples concordant in light drinking, couples concordant in abstention had a lower risk of marital dissolution, while couples concordant in heavy drinking showed elevated risks of marital dissolution.

The highest HR was seen in couples where the wife was a heavy drinker and the husband a light drinker. The confidence interval did not overlap with the confidence interval of the opposite combination, that is, only the husband was a heavy drinker. Concordant heavy-drinking couples had approximately the same divorce risk as couples where only the husband drank heavily, and they appeared to have a lower risk of divorce than couples where only the wife drank heavily.

**DISCUSSION**

Alcohol use among men and women was associated with an elevated risk of future marital dissolution, whether one or both partners drank excessively. The risk associated with heavy drinking in both spouses did not exceed the risk expected from each of the individual risk estimates. On the contrary, over and above expectations based on joint individual effects, concordance seems to protect against marital dissolution. The divorce risk of couples with 2 heavy drinkers was similar to that of couples where only the husband drank heavily and appeared to be lower than that of couples where only the wife drank heavily. Heavy drinking among wives increased the risk of divorce significantly more than drinking among husbands. Alcohol use remained an important predictor of marital dissolution even after controlling for demography and mental distress.

Our results are consistent with most other studies investigating alcohol use as a risk factor for selection out of
marriage (Amato and Previti, 2003; Collins et al., 2007; Ostermann et al., 2005; Waldron et al., 2011) in suggesting that alcohol use has indeed a negative effect on relationship functioning (Collins et al., 2007; Kearns-Bodkin and Leonard, 2005; Marshal, 2003). The finding that similar alcohol consumption protected against divorce confirms findings in a previous study on divorce (Ostermann et al., 2005) and is consistent with findings on marital satisfaction and related outcomes (Homish and Leonard, 2007; Leadley et al., 2000; Mudar et al., 2001). Unlike Ostermann and colleagues (2005), we demonstrated evidence suggesting that risk of divorce is associated with both discordance in alcohol use and the level of alcohol consumption. The discrepancy between results may be due to our larger sample size.

As our results demonstrate that alcohol use does not merely have a dose–response effect on the probability of divorce, but that the combination of the partners’ drinking is essential, one must search for explanations in the characteristics of the couple rather than only within each individual. One explanation may be related to compatibility. Most people prefer partners who are similar to themselves (Gonzaga et al., 2007). In correspondence with our results, incompatibility is the second most commonly stated reasons for divorce, after infidelity (Amato and Previti, 2003). Compared to discordant drinkers, concordant drinkers are more likely to have similar attitudes toward alcohol, spend more time together, and fight less over alcohol.

Another explanation may be related to the relative advantage of remaining married compared to separating. Most people who divorce have judged that staying in the relationship is less advantageous than leaving. Individuals in poor-quality relationships are likely to become happier after divorce (Amato and Hohmann-Marriott, 2007; Hawkins and Booth, 2005). Accordingly, in some cases, divorce can reflect an ability to leave a poor relationship (Pinsof, 2002). For spouses discordant for heavy drinking, leaving the partner may be perceived as a way to improve life. However, among concordant heavy drinkers continuing a marriage may be considered better than life after a divorce, even if they are not highly satisfied, perhaps because dealing with an alcohol problem alone may seem scaring and because heavy drinkers may fear that finding a new partner may be difficult. If that is the case, drinking may harm relationships more than reflected by increased divorce rates. Although correlated, factors predicting marital dissatisfaction and marital dissolution are not identical (Rogge and Bradbury, 1999).

The lowered risk of divorce among concordant abstainers may have the same explanations as suggested for heavy drinkers, that is, compatibility and relative satisfaction. In addition, several religious faiths promote abstention from alcohol while opposing divorce (Michalak et al., 2007; Spein et al., 2011). Moreover, because abstainers have smaller social networks than social drinkers (Graham, 1998), the partners may be more interdependent.

The finding that heavy drinking among wives is more strongly related to divorce than heavy drinking among husbands is consistent with a nonsignificant trend observed in Ostermann and colleagues’ (2005) smaller sample. Women are in general more strongly affected by drinking than men (Becker and Hu, 2008), and as women in general drink less alcohol than men, heavy drinking may be considered more extreme when it occurs in women (Hill et al., 2011) and may be judged as incompatible with female roles.

A nontrivial part of the effects associated with drinking can be attributed to age, demographical differences, and mental distress. Each of these adjustments reduced the effect sizes. As these variables were measured cross-sectionally, we could not test whether they were confounders or mediators. We believe mental distress is a likely mediator between drinking and marital dissolution. This implies that adjusting for mental distress removes some of the “true” associations between alcohol use and marital dissolution. Therefore, the model adjusting only for demography are probably the most correct, and the model also adjusting for mental distress is only realistic to the extent that mental distress causes drinking and not the other way around.

**Table 5.** Main Effects (HR) for All Combinations of Husband and Wife Drinking Categories, Compared to Concordant Light Drinkers. Adjusted for Demography

<table>
<thead>
<tr>
<th>Husband drinking</th>
<th>Wife drinking</th>
<th>Abstainer</th>
<th>Light</th>
<th>Moderate</th>
<th>Heavy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HR</td>
<td>95% C.I.</td>
<td>p</td>
<td>HR</td>
<td>95% C.I.</td>
</tr>
<tr>
<td>Abstainer</td>
<td>0.51</td>
<td>0.31 to 0.84</td>
<td>0.008</td>
<td>1.26</td>
<td>0.71 to 2.24</td>
</tr>
<tr>
<td>Light</td>
<td>1.01</td>
<td>0.72 to 1.41</td>
<td>0.963</td>
<td>Ref.</td>
<td>Ref.</td>
</tr>
<tr>
<td>Moderate</td>
<td>1.08</td>
<td>0.58 to 2.02</td>
<td>0.806</td>
<td>1.13</td>
<td>0.98 to 1.31</td>
</tr>
<tr>
<td>Heavy</td>
<td>1.76</td>
<td>0.83 to 3.74</td>
<td>0.139</td>
<td>1.51</td>
<td>1.29 to 1.78</td>
</tr>
</tbody>
</table>

HR, hazard ratio.
Some limitations must be mentioned. First, the alcohol measures are self-reported; therefore, underreporting and misclassification may have occurred. Whereas random misclassification will attenuate the results, a systematic underreporting may have inflated the dose–response relationship. Second, heavy drinkers may be underrepresented in surveys like this one. However, the response rate at baseline was high. Moreover, alcohol use was found to be only a modest predictor of nonresponse in the HUNT studies (Torvik et al., 2012). Third, alcohol use was only measured once and may have increased or decreased before a divorce. Taken together, these inaccuracies in measurement of alcohol use at the time it mattered may imply that the association between alcohol use and marital dissolution may actually be larger than observed here. Fourth, the questionnaire data were cross-sectional, and the study was observational; therefore, we could not draw any conclusions about causality, and about whether the included covariates were confounders or mediators. Although we included many covariates, the results may still have been affected by unmeasured third-variables related to divorce and alcohol use or differences in alcohol use. Personality, impulse control, religiosity, and spousal similarity from the start of the marriage are such possible confounders. As personality is associated with both alcohol use (Hong and Paunonen, 2009) and marital satisfaction (Malouff et al., 2010), a part of the associations seen in this study may actually be confounded by personality. Fifth, we had no data on relationship satisfaction and could not study its role in the process of marital breakdown. Sixth, it is possible that poor marriages cause divergent alcohol use, rather than the other way around. Seventh, there may be limitations in the generalizability to same-sex couples, nonmarital cohabitators, and newlyweds. Marriage-like cohabitation is becoming more common, and nonmarital cohabitation seems to be less stable than formal marriages (Liefbroer and Dourleijn, 2006). Moreover, alcohol use appears to be important for marital outcome.

CONCLUSION

Alcohol use had strong effects on selection out of marriage, especially when it occurred among women. Both low alcohol use and compatible alcohol use appear to protect against divorce. A part of the association seems to be related to demography and mental distress. The results of this study underline the importance of considering both partners in research and evaluations of alcohol effects on couples. Compatibility in alcohol use appears to be important for marital outcome.

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