Published in final edited form as:
Addict Behav. 2015 February ; 41: 192–198. doi:10.1016/j.addbeh.2014.10.009.

Using Multiple Methods to Examine Gender Differences in Alcohol Involvement and Marital Interactions in Alcoholic Probands

James A. Cranford,
Addiction Research Center, Department of Psychiatry, University of Michigan, Rachel Upjohn Building, 4250 Plymouth Road, Ann Arbor, MI 48109-2700, Phone: (734) 232-0215, Fax: (734) 998-7992

Howard Tennen, and
University of Connecticut, Department of Community Medicine, and Health Care, University of Connecticut Health Center, 263 Farmington Avenue, MC 6325, Farmington, CT 06030-6325

Robert A. Zucker
University of Michigan, Addiction Research Center, Department of Psychiatry, University of Michigan, Rachel Upjohn Building, 4250 Plymouth Road, Ann Arbor, MI 48109-2700

Abstract

Background—This study examined gender differences in alcohol involvement and marital interactions among probands with a past 1-year alcohol use disorder (AUD).

Methods—Adults with alcohol dependence (37 males and 17 females) and their spouses were recruited from a local substance abuse treatment center and from the local community. Couples completed a series of self-report measures and a 15-min videotaped marital interaction task that was coded for negative and positive behaviors and sequential interactions. Couples also separately called in to an interactive voice response (IVR) system every night for 14 consecutive nights and reported on their spouse's negative and positive marital behaviors.

Results—Compared to male probands, female probands reported a) more negative marital interactions in the previous month; b) higher levels of negative reciprocity and a lower positive-to-negative ratio in the marital interaction task; and c) more daily and nightly marital conflict over the 14-day diary period. Negative marital behaviors in the evening by female spouses were

Correspondence to: James A. Cranford.

Contributors
Authors J. A. Cranford, H. Tennen, and R. A. Zucker designed the study. Author J. A. Cranford managed the literature searches and summaries of previous related work, and undertook the statistical analysis. All authors contributed to and have approved the final manuscript.

Conflict of Interest
All authors declare that they have no conflicts of interest.

associated with higher odds of intoxication among male probands on the following day. By contrast, a) negative marital behaviors by male spouses were cross-sectionally associated with higher odds of intoxication among female probands within the same day; and b) positive marital behaviors by male spouses during the day were associated with lower odds of intoxication among female probands that night.

Conclusions—Marital conflict, assessed via multiple methods over multiple time scales, appears to be more frequent among female compared to male alcoholics. Marital conflict predicts daily intoxication among male and female probands.

1. Introduction

The present study used self-report, behavioral observation, and daily process methods (Mohr et al., 2010) to examine gender differences in the associations between alcohol involvement and marital interactions among married alcoholics. Extensive evidence has documented relationships between alcohol involvement and negative marital interactions, marital dissatisfaction, and marital violence (Leonard & Eiden, 2007; Marshal, 2003), and relationship factors are important predictors of treatment outcomes among adults with alcohol and other substance use disorders (McCrady et al., 2009; for a review, see O'Farrell & Clements, 2012). Yet, consistent with studies showing gender differences in the associations between marital functioning and health (e.g., Kiecolt-Glaser & Newton, 2001), there is some evidence that the association between alcohol involvement (including alcohol use disorders, or AUDs) and marital discord may be stronger for women than men (Paolino et al., 1978).

Several theoretical models can illuminate the nature of the association between alcohol involvement and marital interactions. Karney and Bradbury's (1995) Vulnerability-Stress-Adaptation (VSA) model of marriage hypothesizes that the development of marital quality and stability are influenced by three broad classes of variables: 1) *enduring vulnerabilities*; 2) *stressful events*; and 3) *adaptive processes* (e.g., marital interactions that involve problem-solving). Psychiatric disorders such as AUD are enduring vulnerabilities that may a) confer greater risk of exposure to stressors and b) compromise couples' coping efforts (Bruce, 1998; Johns et al., 2007). Consistent with this hypothesis, evidence showed that more than 80% of women and men seeking counseling for marital problems reported frequent marital disagreements about alcohol use (Halford & Ogarsby, 1993).

A more general theoretical model of linkages between marriage and physical health was advanced by Kiecolt-Glaser and Newton (2001). They reviewed evidence that positive marital interactions are directly associated with lower probability of risky health behaviors. Evidence also showed that "marital conflict may be both a precursor and consequence of alcohol and drug abuse" (p. 491). Kiecolt-Glaser and Newton summarized several lines of research showing that the physiological effects of negative marital interactions are stronger for women than men (e.g., Kiecolt-Glaser et al., 1993).

Consistent with this model, Kessler et al. (1998) reported that AUDs were significantly associated with divorce for women but not for men, and Ramisetty-Mikler and Caetano (2005) found that female (but not male) alcohol problems predicted higher odds of marital

separation over time. Other longitudinal 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 couples with a female alcoholic proband compared to couples with a male alcoholic proband or no alcoholic proband (Haber & Jacob, 1997). However, a study based on a nationally representative sample found no evidence for gender differences in the relationship between AUD and marital dissolution (Cranford, 2014).

The present study used multiple methods to test hypotheses about gender differences in the relationships between alcohol involvement and marital behaviors in a sample of married alcoholics. A limitation of some previous studies is that they focused on between-persons associations between alcohol involvement and marital interactions. Researchers have increasingly turned to daily process methods (Tennen et al., 2000, 2005) to examine the within- and between-persons associations between alcohol involvement and variables such as coping (Park et al., 2004), daily stress (Armeli et al., 2003), and social interactions (Mohr et al., 2001). Drawing on the VSA model, role incompatibility theory, and previous findings on gender differences in reactivity to marital conflict, we tested the following hypotheses:

Hypothesis 1 Negative marital interactions will be more frequent, and positive marital interactions will be less frequent, among females compared to males with AUDs.

Hypothesis 2 Daily alcohol involvement will be associated with more negative and fewer positive marital interactions among females compared to males with AUDs.

2. Method

2.1. Participants

Alcoholic probands and their spouses were recruited from a local substance abuse treatment center (n=20 couples) and from the local community (n=34 couples). Probands from the clinical sample met DSM-IV clinical diagnosis of past 1-year alcohol abuse or dependence, and probands from the community sample screened positive for a past 1-year AUD based on responses to the Rapid Alcohol Problem Screen 4 (RAPS4; Cherpitel, 2002). A total of 54 couples (37 couples with an alcoholic male proband/female partner and 17 couples with an alcoholic female proband/male partner) comprised the final sample (see Cranford et al., 2010). As shown in Table 1, female probands reported significantly lower personal income than male probands, but no other statistically significant differences were observed.

2.2. Procedures

2.2.1. Baseline interview, marital interaction task, and interactive voice response (IVR) system training—At **baseline**, couples completed a series of questionnaires asking about past 1-month moods, marital interactions, and drinking behaviors. Couples then completed a ***15-minute marital interaction task***. For this task, couples rated the importance of 10 common marital problems (e.g., money; children) using the Marital Interaction Inventory (Knox, 1971), selected the problem that causes the most intense disagreement between them, and discussed it for 15 minutes. Videotapes were coded

at the Rapid Marital Interaction Coding System (RMICS) Coding Center under the supervision of Dr. Richard Heyman (Heyman, 2004). Equipment problems led to the loss of data from six couples, leaving us with n=48 codeable interactions. Couples completed an IVR training session immediately following the marital interaction task. Participants called an IVR system separately every day for 14 days, between the hours of 5:00pm and 9:00pm, and reported on their drinking behaviors and marital interactions for two periods: 1) *last night after you completed the telephone interview*, and 2) *since you woke up today*.

2.3. Measures

2.3.1. Past month and daily negative marital interactions—We assessed *past-month negative marital interactions* with the 7-item Social Undermining Scale (Vinokur et al., 1996) and three items from the Withdrawn Marital Behavior Scale (Schulz et al., 2004). Participants rated the frequency of their spouse's negative behaviors (e.g., criticism) during the past one month using a 5-point scale (0 = *not at all* to 4 = *about every day*), and scores were calculated as the mean of the item scores (Cronbach's alpha = .93). *Daily negative marital interactions* were assessed using 5 of these 10 items, and participants used a yes/no response scale to report on the two time periods. Items were summed to create an index of the total number of negative marital interactions for each period.

2.3.2. Past month and daily positive marital interactions—We assessed *past one month positive marital interactions* with nine items from Manne et al. (2004) and de Koning and Weiss (2002). Participants rated the frequency of their spouse's positive behaviors during the past one month, and scores were calculated as the mean of the item scores (Cronbach's alpha = .89). *Daily positive marital interactions* were assessed using 5 of these 9 items, using the same format and response options as those for the daily negative marital interaction items. Items were summed to create an index of the total number of positive marital interactions for each period.

2.3.3—Real-time negative and positive marital interactions were coded from the behavioral observation data with the RMICS, which categorizes behavior into a) five *negative* codes: *psychological abuse* (PA), *distress-maintaining attribution* (DA), *hostility* (HO), *dysphoric affect* (DY), and *withdrawal* (WI); b) four *positive* codes: *acceptance* (AC), *relationship-enhancing attribution* (RA), *self-disclosure* (SD), and *humor* (HM); c) one *neutral* code: *constructive problem discussion/solution* (PD): and d) one *other* code (Heyman, 2004). In the present study, base rates for PA, DY, and WI were too low to be coded. Kappa coefficients were .92 for DA, .65 for HO, .92 for AC, .85 for RA, .51 for SD, . 78 for HM, and .57 for PD.

2.3.4. Past 1 month and daily alcohol involvement—Past 1-month alcohol consumption was assessed with three items: *1) number of days consumed one or more alcoholic beverages* (frequency), *2) usual number of drinks per drinking day* (quantity), and *3) frequency of binge drinking*, defined as consuming 5 drinks for men (4 for women) within a 2-hour period (NIAAA, 2004). Frequency of alcohol-related problems in the past 3 months was measured with the Short Inventory of Problems (SIP; Miller et al., 1995; Cronbach's alpha = .95). Items asking about *daily alcohol involvement* were adapted from Helzer et al.

(2002) and Kranzler et al. (2004) using the standard definitions of alcoholic beverages (NIAAA, 2007). Variables for *number of drinks since waking up today* and *number of drinks after completing the IVR last night* were calculated by summing responses across three beverage types (beer, wine, and hard liquor). For both time periods, participants were asked to indicate their *highest level of intoxication* (0=*perfectly sober* and 10=*as drunk as you've ever been*). As this variable was positively skewed, we created a binary version coded 0 = no intoxication, 1 = at least some intoxication (Searles et al., 1995).

2.4. Analytic Approach

Analyses for this report focus on the alcoholic proband in each couple. To test hypothesis 1, male and female probands were compared on daily, past one month, and past one year alcohol involvement. Gender differences in past one month, daily, and real time marital interactions were also tested. All comparisons were between-groups *t*-tests and Cohen's *d* (Cohen, 1992) was used as the measure of effect size.

We used multilevel modeling (MLM; Bolger et al., 2003) to test hypothesis 2. Generalized linear mixed effects models (GLMMs; Fitzmaurice et al., 2004) using the GLIMMIX procedure in SAS (SAS Institute, 2009) were estimated to examine last night's alcohol use and marital interactions as predictors of 1) today's intoxication and 2) today's negative and positive marital interactions. We also tested today's alcohol involvement and marital interactions as predictors of 1) tonight's intoxication and 2) tonight's negative and positive marital interactions. Random intercepts were included to account for individual differences in the outcomes of interest, and within-person residual correlations were modeled with an autoregressive (AR1) structure. All models included age as a level-2 covariate (Birditt et al., 2005). Weekend (operationalized as Friday, Saturday, and Sunday) was also included as a covariate based on evidence that alcohol involvement is higher on weekends compared to weekdays (e.g., Carney et al., 2000). Because random intercepts were included in all models, coefficients are interpretable as unit-specific or conditional multiplicative effects (see Atkins et al., 2013).

3. Results

3.1. Compliance with IVR Protocol

Participants completed a total of 1,418 out of a possible 1,512 (54 × 2 × 14) = daily process reports, for an overall compliance rate of 93.8%. There was no difference in compliance rates between male (94.6%) and female (93.7%) probands. Participants completed an average of 13.1 (*SD* = 1.1) out of a possible 14 IVR days (range = 9–14 days, median = 13 days, mode = 14 days).

3.2. Gender Differences in Alcohol Involvement and Marital Interactions

Mean levels of alcohol involvement in the past one year, past 30 days, and over the course of the two-week diary period are presented in Table 2. As expected, male probands reported higher levels of alcohol involvement across all measures, but none of the gender differences was statistically significant. Mean levels of marital interactions in the past 30 days, during the 15-min behavioral observation task, and over the course of the ensuing two-week diary

period are presented in Table 3. Female probands reported significantly more negative interactions with their husbands a) over the past 1-month and b) during the day and in the evening across the two-week diary period. However, no gender differences in positive marital interactions were observed for either time period. For the behavioral observation measures, three statistically significant differences were observed: female probands showed lower levels of humor, a lower positive-to-negative ratio, and higher levels of negative reciprocity compared to male probands. Most (90%) effect sizes were in the medium-to-large range (Cohen, 1992).

3.3. Predictors of Today's and Tonight's Intoxication

3.3.1. Today's intoxication—Results from GLMMs predicting today's intoxication are presented in the top panel of Table 4. Within-person correlations between last night's and today's negative and positive marital interactions were very high (*r*s = .88 and .91, respectively). Because of this, we estimated separate models for each set of predictors, i.e., model 1 is a prospective model that includes last night's negative and positive marital interactions as predictors of today's intoxication, and model 2 is a cross-sectional model that includes today's negative and positive marital interactions as predictors of today's intoxication. As seen in the top panel of Table 4, among male probands, last night's intoxication and last night's negative marital interactions predicted higher odds of today's intoxication. Today's marital interactions were not associated with today's intoxication. By contrast, among female probands, today's negative marital interactions predicted higher odds of today's intoxication. Last night's marital interactions were not associated with today's intoxication.

3.3.2. Tonight's intoxication—Results from GLMMs predicting tonight's intoxication are presented in the bottom panel of Table 4. Here, model 1 is a prospective model that includes today's negative and positive marital interactions as predictors of tonight's intoxication, and model 2 is a cross-sectional model that includes tonight's negative and positive marital interactions as predictors of tonight's intoxication. As seen in the bottom panel of Table 4, among male probands, weekend and today's intoxication predicted higher odds of tonight's intoxication. Neither today's nor tonight's marital interactions were associated with tonight's intoxication. By contrast, among female probands, today's positive marital interactions predicted lower odds of tonight's intoxication. Tonight's marital interactions were not associated with tonight's intoxication.

3.4. Predictors of Today's and Tonight's Negative and Positive Marital Interactions

3.4.1. Today's negative marital interactions—Results from GLMMs predicting today's negative marital interactions are presented in the top panel of Table 5. Among male probands, last night's and today's positive interactions and last night's negative marital interactions predicted lower and higher rates, respectively, of today's negative marital interactions. Neither last night's nor today's intoxication were associated with negative marital interactions. Similarly, among female probands, last night's negative interactions and today's positive interactions predicted the rate of today's negative marital interactions. Neither last night's nor today's intoxication predicted today's negative marital interactions.

3.4.2. Today's positive marital interactions—Results from GLMMs predicting the number of today's positive marital interactions are presented in the bottom panel of Table 5. Neither last night's nor today's intoxication were associated with the rate of today's positive marital interactions among male or female probands. Last night's positive and today's negative marital interactions emerged as common predictors of today's positive marital interactions among male and female probands. Weekend was associated with a higher rate of today's positive interactions among male (but not female) probands.

3.4.3. Tonight's negative and positive marital interactions—Results from GLMMs predicting the number of tonight's negative and positive marital interactions are presented Table 6. Neither today's nor tonight's intoxication was associated with tonight's negative or positive marital interactions for male or female probands. However, for male and female probands, tonight's negative marital interactions were predicted by a) today's and tonight's negative interactions and b) tonight's positive interactions.

4. Discussion

Although several studies used daily process methods to collect data from married alcoholics (Dunn et al., 1987), to our knowledge this is the first study to use IVR technology and behavioral observation methods in the same study to examine marital processes in this population.

4.1. Gender Differences in Marital Interaction Among Married Alcoholics

In partial support of hypothesis 1, female probands generally reported higher levels of negative marital interaction over the past 1 month and over the 14-day diary period compared to male probands. Contrary to hypothesis, this difference did not extend to the realm of positive behaviors. Results also showed that, during the 15-minute behavioral observation task, female probands displayed less humor, a lower positive-to-negative ratio of positive to negative behaviors, and more negative reciprocity. Taken together, results showed that marital conflict, assessed via multiple methods over multiple time spans, was higher in female proband/male spouse couples.

According to role incompatibility theory (Fu & Goldman, 2000), some behavior patterns (e.g., substance use) are incompatible with adult social roles (e.g., marriage). This role conflict may be exacerbated among alcoholic women, leading to greater strain on the relationship and increases in the frequency and severity of marital conflicts. Interestingly, with the exception of humor, the differences between male and female probands were limited to negative marital interactions. Indeed, all probands were characterized by relatively high levels of positive behaviors across time frames and assessment methods. With respect to the relatively high levels of both positive and negative marital interactions among female probands, Fincham and Linfield (1997) advanced a two-dimensional model of marital quality and found evidence for what they termed "ambivalent" spouses, i.e., those who report high levels of positive and negative marital quality. Similarly, Huston and Melz (2004) described a two-dimensional model of the "emotional climates" of marital relationships that included "tempestuous" couples that are characterized as "both highly

affectionate and antagonistic" (p. 952). The female proband/male spouse couples in the current study appear to fit this category.

4.2. Gender Differences in Associations between Marital Interaction and Alcohol Involvement

Neither last night's nor today's positive interactions were associated with today's intoxication for female or male probands. Among female probands, the only predictor of today's intoxication was today's negative marital interactions. In addition, today's positive interactions predicted lower odds of tonight's intoxication among female but not male probands. By contrast, among male probands, the only predictor of today's intoxication was last night's negative marital interactions. These findings suggest a closer temporal linkage between intoxication and negative marital interactions among female alcoholic/male spouse couples, and point to the possibly unique role of positive marital interactions as a buffer against heavy drinking among female probands.

To the extent that these results suggest a closer temporal linkage between drinking and marital conflict for female probands, they are consistent with previous work showing that wives' (but not husbands') AUDs predicted their own and their husband's marital dissatisfaction (Cranford et al., 2011). Results are also conceptually similar to those reported by Homish and Leonard (2007), who found a significant association between wives' heavy drinking and subsequent marital satisfaction, but found no association between husbands' heavy drinking and subsequent marital satisfaction.

Our findings are also similar to results reported by Olenick and Chalmers (1991). They showed that alcoholic and nonalcoholic men were more likely than women to report that their alcohol involvement was a source of marital conflict (drinking → marital conflict). By contrast, alcoholic women were more likely than alcoholic men to report that marital conflict led to their drinking (marital conflict → drinking). Thus, results for male probands are amenable to a stress-generation explanation (where intoxication → marital conflict; cf. Dunn et al., 1987) whereas results for female probands are consistent with a reactivity explanation (where marital conflict → intoxication).

4.3. Limitations and Future Directions

This study has several limitations. We were unable to determine the AUD status of the proband's spouse, making it impossible to test hypotheses about couple concordance on AUDs (e.g., Mudar et al., 2002). Results from previous work showed that marital outcomes varied as a function of couple concordance on alcohol involvement (for reviews, see Leonard & Eiden, 2007; Marshal, 2003). In addition, it has been suggested that couples recruited from clinical settings are less likely to be concordant for AUDs and may have higher levels of marital commitment (Leonard and Eiden, 2007). Thus, while our discussion has focused on gender differences, we cannot rule out the hypothesis that our findings are driven by dyad-level concordance on AUD.

Another limitation is that the relatively small sample size – particularly for female probands – imposes restrictions on the generalizability of our findings. Also, kappa coefficients for some of the behavioral observation codes were low. In addition, although we used a daily

process design, participants still relied on retrospection to report on today's and last night's drinking behaviors and marital interactions. While memory biases may be minimized in end-of-day reports of salient and discrete events (Stone and Shiffman, 2002), the accuracy of retrospective daily reports of drinking and marital interactions is unknown.

To summarize, compared to male probands, female probands a) reported more negative marital interactions in the previous month; b) displayed higher levels of negative reciprocity in a marital interaction task; and c) reported more daily and nightly marital conflict over a 14-day diary period. In addition, among female probands, today's negative marital interactions were associated with higher odds of today's intoxication, and today's positive interactions predicted lower odds of tonight's intoxication among female but not male probands. By contrast, among male probands, the only predictor of today's intoxication was last night's negative marital interactions. Although clinical implications are limited due to the small sample size, results suggest that negative marital interactions might be a particularly important intervention target for female probands. Future research using more intensive data collection protocols (i.e., ecological momentary assessment; Shiffman et al., 2008) and assessing drinking contexts (Levitt & Cooper, 2010) will further our understanding of the causal direction of these associations.

Acknowledgments

Role of Funding Sources

This research was support by Grant R21 AA015105 from the National Institute on Alcohol Abuse and Alcoholism, National Institutes of Health. The NIAAA had no further role in study design; in the collection, analysis and interpretation of data; in the writing of the report; or in the decision to submit the paper for publication.

The authors thank Janie Slayden, Jenna Johnson, Ann Mooney, Ashley Dominique, and the staff, clinicians, and director of the University of Michigan Addiction Treatment Services (UMATS) for their assistance with this research.

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HIGHLIGHTS

- Past 1-month marital conflict was more frequent among female than male alcoholics.
- Marital conflict over 14 days was more frequent among female than male alcoholics.
- Negative and positive marital behaviors were associated with daily intoxication.

Table 1

Differences between Male and Female Probands

	Male Probands (*n* = 37) *M* (*SD*) / %	Female Probands (*n* = 17) *M* (*SD*) / %	*t* /χ^2
Demographics[a]			
Age	44.5 (13.4)	40.9 (12.8)	0.9
Education[a]	4.6 (1.0)	4.5 (1.0)	0.5
Personal Income[b]	4.5 (2.3)	2.6 (2.2)	2.7*
Length of Marriage (in years)	15.4 (14.1)	9.7 (9.3)	1.1
Race/Ethnicity (White)	78.4	70.6	0.4
Worked in Past Week	64.9	47.1	1.5
Any Children (Yes)	61.1	80.0	1.7
Any Children at Home (Yes)	51.7	41.7	0.3
Substance Use			
Ever Smoked (Yes)	64.9	70.6	0.2
Ever Used Marijuana (Yes)	78.4	82.4	0.1
Ever Used Cocaine (Yes)	41.2	47.1	0.2

[a] Highest level of education completed ranged from 0 = never attended school to 7 = MD, PhD, JD.

[b] Personal income during the past one year ranged from 0 = less than $1,000 to 9 = $100,000 or more.

* $p < .05$.

Table 2

Differences between Male and Female Probands: Alcohol Involvement

	Male Probands (*n* = 37) *M* (*SD*)	Female Probands (*n* = 17) *M* (*SD*)	*t*	*d*
Alcohol Involvement: Past 1 Year				
Number of drinking days	200.7 (120.6)	130.8 (118.1)	2.0	0.58
Drinks per drinking day	6.2 (5.0)	5.7 (5.8)	0.3	0.09
Binge drinking days	118.7 (129.8)	92.1 (115.4)	0.7	0.21
Alcohol Involvement: Past 1 Month				
Number of drinking days	11.2 (11.0)	8.6 (8.8)	0.8	0.25
Drinks per drinking day	4.2 (5.5)	2.2 (1.8)	1.4	0.43
Binge drinking days	3.8 (5.9)	2.5 (4.2)	0.8	0.24
Alcohol-related problems[a]	13.3 (11.1)	13.6 (12.7)	−0.10	−0.03
Alcohol Involvement: 2 Week IVR Period				
Number of drinking days	8.1 (4.9)	6.9 (3.5)	0.7	0.26
Drinks per drinking day	5.9 (5.6)	2.8 (1.4)	1.6	0.66
Binge drinking days	1.9 (3.4)	1.1 (1.6)	0.7	0.27

Note. Degrees of freedom ranged from 48 to 52.

[a]The time frame for the SIP was the past 3 months.

d = Cohen's *d* (Cohen, 1992).

Table 3

Differences between Male and Female Probands: Marital Interactions

	Male Probands[a] *M* (*SD*)	Female Probands[a] *M* (*SD*)	*t*	*d*
Marital Interactions: Past 1 Month[b]				
Spouse undermining	0.9 (0.6)	1.3 (1.1)	−2.1*	−0.45
Spouse withdrawal	0.8 (0.8)	1.7 (1.3)	−3.1*	−0.84
Spouse acceptance	3.0 (1.2)	3.3 (0.8)	−0.9	−0.29
Spouse disclosure	2.8 (1.1)	2.8 (0.5)	−0.1	−0.05
Spouse humor	2.6 (1.0)	3.1 (1.1)	−1.5	−0.45
Marital Interactions: 15-Minute Behavioral Observation Task				
Distress-maintaining attributions	2.0 (4.3)	3.1 (3.0)	−0.9	−0.30
Hostility	4.3 (10.5)	9.5 (11.8)	−1.5	−0.47
Acceptance	1.2 (1.6)	2.5 (5.2)	−1.3	−0.34
Relationship-enhancing attributions	10.0 (5.5)	12.1 (6.3)	−0.7	−0.35
Self-disclosure	3.0 (4.2)	2.5 (2.0)	0.5	0.24
Humor	5.5 (6.4)	1.8 (3.1)	2.2*	0.74
Constructive problem discussion	71.3 (13.1)	68.0 (12.7)	0.8	0.26
Ratio of positive to negative behavior	0.82 (0.23)	0.66 (0.28)	2.2*	0.62
Proband HO →Spouse HO	0.19 (0.47)	0.88 (0.16)	−2.3*	0.62
Proband RA →Spouse RA	0.75 (0.88)	0.44 (0.73)	1.2	−1.95
Proband PD →Spouse PD	29.4 (14.7)	28.4 (14.0)	0.2	0.07
Marital Interactions: 2 Week IVR Period[c]				
Negative interactions last night	0.4 (0.4)	1.2 (1.1)	−3.6*	−0.90
Negative interactions today	0.5 (0.5)	1.3 (1.1)	−3.6*	−0.91
Positive interactions last night	3.9 (0.9)	3.4 (1.3)	1.5	0.41
Positive interactions today	3.8 (0.9)	3.5 (1.2)	1.0	0.28

Note. Degrees of freedom ranged from 46 to 52. HM = Humor, HO = Hostility, DA = Distress-Maintaining Attributions, RA = Relationship-Enhancing Attributions, PD = Constructive Problem-Solving Discussions.

[a] For the marital interaction results, $n = 32$ male probands and $n = 16$ female probands. All other results are based on $n = 37$ male probands and $n = 17$ female probands.

[b] Scaled so that 0 = “not at all,” 1 = “less than once a week,” 2 = “once a week,” 3 = “more than once a week,” and 4 = “about every day.”

[c] Average of the total number of spouse’s behaviors for a given time period (possible range 0 to 5 for last night and today).

d = Cohen’s *d* (Cohen, 1992).

* $p < .05$.

Table 4

Predictors of Today's and Tonight's Intoxication Among Male and Female Probands

	Male Probands (*n* = 37)		Female Probands (*n* = 17)	
	OR (95% CI)	**AOR (95% CI)**	**OR (95% CI)**	**AOR (95% CI)**
1. Predictors of Today's Intoxication				
Last night's intoxication	6.3* (2.7, 14.9)	6.7* (1.6, 15.9)	1.2 (0.6, 2.4)	1.2 (0.7, 2.2)
Weekend	1.2 (0.7, 2.0)	1.4 (0.7, 3.5)	0.8 (0.3, 2.5)	0.8 (0.2, 3.4)
Last night's negative interactions	1.8* (1.2, 2.7)	1.9* (1.2, 3.1)	1.2 (0.9, 1.7)	1.1 (0.8, 1.5)
Last night's positive interactions	0.9 (0.7, 1.3)	1.2 (0.8, 1.9)	0.8 (0.6, 1.1)	0.9 (0.6, 1.2)
2. Predictors of Today's Intoxication				
Last night's intoxication	6.1* (2.7, 14.9)	6.1*(2.5, 14.7)	1.2 (0.6, 2.3)	1.3 (0.4, 4.5)
Weekend	1.4 (0.7, 1.9)	1.3 (0.7, 2.3)	0.8 (0.2, 3.4)	0.8 (0.3, 2.3)
Today's negative interactions	1.1 (0.8, 1.5)	1.0 (0.6, 1.8)	1.4* (1.1, 2.0)	1.5* (1.1, 2.2)
Today's positive interactions	0.9 (0.7, 1.1)	0.9 (0.7, 1.4)	0.8 (0.6, 1.1)	1.0 (0.7, 1.6)
1. Predictors of Tonight's Intoxication				
Today's intoxication	3.2* (1.5, 6.6)	3.6* (1.6, 7.7)	0.4 (0.1, 2.0)	0.5 (0.1, 2.9)
Weekend	1.6 (0.9, 2.8)	1.9* (1.1, 3.4)	2.2 (0.9, 5.3)	2.0 (0.7, 5.5)
Today's negative interactions	1.0 (0.7, 1.4)	0.9 (0.6, 1.3)	1.1 (0.8, 1.5)	0.9 (0.6, 1.3)
Today's positive interactions	1.0 (0.7, 1.3)	0.9 (0.7, 1.3)	0.6* (0.4, 0.8)	0.5* (0.4, 0.8)
2. Predictors of Tonight's Intoxication				
Today's intoxication	3.2* (1.5, 6.6)	3.4* (1.6, 7.4)	0.4 (0.1, 2.0)	0.5 (0.1, 2.2)
Weekend	1.6 (0.9, 2.8)	1.8* (1.1, 3.1)	2.2 (0.9, 5.3)	2.0 (0.8, 5.4)
Tonight's negative interactions	1.4* (1.0, 2.0)	1.3 (0.9, 1.9)	0.9 (0.7, 1.2)	0.9 (0.6, 1.4)
Tonight's positive interactions	0.7* (0.6, 0.9)	0.8 (0.6, 1.1)	1.0 (0.7, 1.3)	1.0 (0.6, 1.4)

Note. OR = odds ratio, AOR = adjusted odds ratio from generalized linear mixed model analyses.

* $p < .05$.

Table 5

Predictors of Today's Marital Interactions Among Male and Female Probands

	Male Probands (*n* = 37)		Female Probands (*n* = 17)	
	RR (95% CI)	**ARR (95% CI)**	**RR (95% CI)**	**ARR (95% CI)**
1. Predictors of Today's Negative Interactions				
Weekend	1.0 (0.7, 1.5)	1.0 (0.8, 1.4)	1.1 (0.8, 1.5)	1.1 (0.8, 1.4)
Last night's intoxication	1.2 (0.8, 1.9)	1.0 (0.7, 1.5)	0.8 (0.6, 1.3)	0.9 (0.6, 1.3)
Last night's positive interactions	0.7* (0.6, 0.8)	0.8* (0.7, 0.9)	0.8* (0.7, 0.9)	1.0 (0.9, 1.1)
Last night's negative interactions	1.4* (1.2, 1.6)	1.2* (1.1, 1.4)	1.3* (1.2, 1.4)	1.2* (1.1, 1.4)
2. Predictors of Today's Negative Interactions				
Weekend	1.0 (0.7, 1.5)	1.1 (0.8, 1.6)	1.1 (0.8, 1.5)	1.1 (0.9, 1.5)
Today's intoxication	1.4 (0.9, 2.3)	1.2 (0.8, 1.9)	1.7* (1.2, 2.5)	1.4† (1.0, 2.0)
Today's positive interactions	0.65* (0.6, 0.7)	0.7*(0.6, 0.8)	0.8* (0.7, 0.9)	0.86* (0.8, 0.9)
Last night's negative interactions	1.4* (1.2, 1.6)	1.2* (1.1, 1.4)	1.3* (1.2, 1.4)	1.2* (1.1, 1.3)
1. Predictors of Today's Positive Interactions				
Weekend	1.0 (0.9, 1.1)	1.1*(1.01, 1.13)	1.0 (0.9, 1.1)	1.0 (0.9, 1.2)
Last night's intoxication	0.9 (0.8, 1.03)	1.0 (0.9, 1.05)	1.1 (0.9, 1.3)	1.1 (0.8, 1.2)
Last night's negative interactions	0.9* (.87, .95)	1.0 (0.9, 1.01)	.89* (.85, .93)	.92* (.87, .98)
Last night's positive interactions	1.24*(1.2, 1.3)	1.23* (1.2, 1.30)	1.15*(1.1, 1.2)	1.10*(1.03, 1.2)
2. Predictors of Today's Positive Interactions				
Weekend	1.0 (0.9, 1.1)	1.07*(1.02, 1.13)	1.0 (0.8, 1.1)	1.0 (0.9, 1.2)
Today's intoxication	1.0 (0.9, 1.1)	0.97 (0.9, 1.0)	0.9 (0.8, 1.2)	1.0 (0.8, 1.2)
Today's negative interactions	0.88* (0.8, 0.9)	0.94* (0.91, 0.98)	0.9* (0.86, 0.94)	.91* (.87, .96)
Last night's positive interactions	1.24*(1.2, 1.3)	1.22*(1.2, 1.3	1.15*(1.1, 1.2)	1.11*(1.06, 1.2)

Note. RR = rate ratio, ARR = adjusted rate ratio from generalized linear mixed model analyses.

*$p < .05$.

†$p = .06$.

Table 6

Predictors of Tonight's Marital Interactions Among Male and Female Probands

	Male Probands (*n* = 37)		Female Probands (*n* = 17)	
	RR (95% CI)	**ARR (95% CI)**	**RR (95% CI)**	**ARR (95% CI)**
1. Predictors of Tonight's Negative Interactions				
Weekend	1.3 (0.8, 1.9)	1.2 (0.9, 1.7)	1.0 (0.7, 1.5)	0.9 (0.7, 1.3)
Today's intoxication	0.9 (0.5, 1.5)	0.8 (0.5, 1.5)	1.1 (0.6, 2.1)	0.9 (0.5, 1.7)
Today's positive interactions	0.82* (0.70, 0.96)	0.9 (0.7, 1.01)	0.82* (0.69, 0.97)	0.9 (0.8, 1.04)
Today's negative interactions	1.4* (1.2, 1.6)	1.3* (1.1, 1.5)	1.2* (1.1, 1.4)	1.2* (1.0, 1.3)
2. Predictors of Tonight's Negative Interactions				
Weekend	1.3 (0.8, 1.9)	1.1 (0.8, 1.5)	1.0 (0.7, 1.5)	1.0 (0.7, 1.3)
Tonight's intoxication	1.5 (0.9, 2.5)	1.2 (0.8, 1.9)	0.8 (0.5, 1.4)	0.9 (0.5, 1.4)
Tonight's positive interactions	0.62* (0.5, 0.7)	0.61* (0.5, 0.7)	0.67* (0.6, 0.7)	0.66* (0.6, 0.7)
Today's negative interactions	1.4* (1.2, 1.6)	1.3* (1.1, 1.4)	1.2* (1.1, 1.4)	1.2* (1.1, 1.3)
1. Predictors of Tonight's Positive Interactions				
Weekend	1.0 (0.9, 1.1)	1.0 (0.9, 1.02)	1.0 (0.9, 1.2)	1.0 (0.8, 1.1)
Today's intoxication	1.0 (0.9, 1.1)	1.0 (0.9, 1.1)	1.0 (0.8, 1.3)	1.0 (0.8, 1.3)
Today's negative interactions	0.96* (0.93, 0.99)	1.0 (0.9, 1.01)	0.98 (0.93, 1.03)	1.0 (0.9, 1.1)
Today's positive interactions	1.0 (0.9, 1.05)	1.0 (0.9, 1.06)	1.1* (1.02, 1.2)	1.1* (1.01, 1.2)
2. Predictors of Tonight's Positive Interactions				
Weekend	1.0 (0.9, 1.1)	1.0 (0.9, 1.02)	1.0 (0.9, 1.2)	1.0 (0.9, 1.1)
Tonight's intoxication	0.9 (0.8, 1.01)	1.0 (0.9, 1.1)	1.1 (0.9, 1.3)	1.0 (0.8, 1.2)
Tonight's negative interactions	0.85* (0.82, 0.89)	0.85* (0.81, 0.88)	0.80* (0.76, 0.84)	0.85* (0.81, 0.90)
Today's positive interactions	1.0 (0.9, 1.05)	1.0 (0.9, 1.04)	1.1* (1.02, 1.2)	1.07* (1.01, 1.15)

Note. RR = rate ratio, ARR = adjusted rate ratio from generalized linear mixed model analyses.

* $p < .05$.

Addict Behav. Author manuscript; available in PMC 2016 February 01.