Longitudinal Relations Between Marital Aggression and Alcohol Problems

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Abstract

Relations between couples' (N = 158) marital aggression and alcohol problems were examined across a two-year period. Alcohol problems and aggression were assessed via self-report and partner-reports. Results support bidirectional relations between marital aggression and problem drinking. T1 wife problem drinking was associated with decreased T2 verbal aggression; T1 husband problem drinking was associated with increased T2 physical aggression. T1 physical aggression predicted increased T2 wife problem drinking; it predicted increased T2 husband problem drinking only when wife problem drinking was low. T1 verbal marital aggression predicted increased T2 husband problem drinking only when husbands engaged in greater problem drinking at T1. Results suggest that problem drinking may prevent couples from adequately handling marital disagreements, and that marital problems may lead to drinking as a form of coping with stress; couples in which the husband engages in greater problem drinking than the wife may be at increased risk.

Keywords

alcohol; drinking; physical aggression; verbal aggression

Heavy alcohol use is associated with concurrent marital conflict and aggression (Walton-Moss, Manganello, & Frye, 2005) and increases the use of marital verbal aggression and physical aggression over time (Leonard & Roberts; 1998; Pan, Neidig, and O'Leary, 1994). The literature on the link between marital conflict and alcohol problems has emphasized the influence of drinking on marital conflict. However, it is also likely that marital conflict contributes to later alcohol use, and additional research is needed on this direction of possible effects (Leonard & Rothbard, 1999). The primary objective of this study is to examine destructive marital conflict—verbal and physical aggression—as a predictor of longitudinal alcohol use.

In cross-sectional and longitudinal studies, alcohol use has been shown to predict marital aggression (Heyman, O'Leary, & Jouriles, 1995; Leonard & Quigley, 1999; Quigley & Leonard, 1999). Husbands with a drinking problem engage in greater violence against their partners than husbands without drinking problems (Heyman et al., 1995; Pan et al., 1994). In

episodes of man-to-woman abuse, 22% of men and 10% of women report drinking alcohol, and greater alcohol consumption is associated with more severe violence (Kantor & Straus, 1987). Abusive episodes are more likely on days when men consume alcohol and occur in close temporal proximity to the alcohol consumption (Fals-Stewart, 2003). Forty to sixty percent of abusive husbands are labeled by their wives as heavy drinkers, problem drinkers, or alcoholics (Fagan, Stewart, & Hansen, 1983; Roy, 1982). Violence may be especially likely in couples where husbands drink substantially more than their wives (Quigley & Leonard, 2000).

Alcohol use has also been shown to predict verbal aggression. Couples characterized by problem drinking exhibit poor communication practices, such as interruption, difficulty listening, and speaking ineffectively (Kelly, Halford, & Young, 2002). A comparison of alcoholic and non-alcoholic men and their partners found that the prevalence of clinically elevated verbal aggression was five to seven times higher for alcoholic men and their wives than for the control group (O'Farrell, Murphy, Neavins, & Hutton, 2000). Leonard and Roberts (1998) reported that when husbands were administered alcohol, both partners exhibited greater negativity towards their spouses, including criticism, insult, and interruption. Similarly, Floyd, Cranford, Daugherty, Fitzgerald, & Zucker, (2006) found that couples with a history of husband alcohol problems experienced greater hostility (i.e., insult, blame, complaint, and dogmatic disagreement). Greater symptoms of problem drinking are associated with increased verbal aggression and stonewalling during disagreements one year later, even after controlling for earlier levels of these behaviors (Keller, Cummings, Davies, & Mitchell, 2008).

In an effort to explain the possible effects of alcohol use on marital aggression, several models have been proposed. The alcohol expectancy model holds that marital aggression might be influenced by partners' beliefs about the effects of alcohol on self and others (Kantor & Asidigian, 1997). For example, a violent episode may be excused by the perpetrator and others when the perpetrator is drunk, reducing the negative consequences of aggression and increasing the likelihood that violence will continue. The proximal model suggests that alcohol intoxication causes physiological, emotional, and cognitive changes that may lead to aggressive behavior, such as partner abuse (Bushman, 1997; Chermack & Taylor, 1995; Leonard & Senchak, 1996). For example, heavy consumption of alcohol may lead to hostile attributions and problems regulating emotion, increasing the risk for aggressive behavior. The spurious model proposes that drinking and domestic violence are associated due to factors that are related to both domestic violence and drinking, such as mental health or personality (Anderson, 2002).

Despite the emphasis on the possible effects of alcohol use on marital functioning, it is also possible that marital functioning has effects on alcohol use. For example, marital problems may increase motivations for alcohol consumption. Negative affect strongly predicts high levels of alcohol and drug use (Labouvie, Pandina, White, & Johnson, 1990). Cooper, Frone, Russell, and Mudar (1995) tested an affect-regulation model of alcohol consumption in which drinking is used to cope with negative affect. That is, individuals drink to reduce or avoid negative affect. Several studies have tested similar models for alcohol use and problems (Cooper, Agocha, & Sheldon, 2000; Read, Wood, Kahler, Maddock, & Palfai,

2003; Simons, Gaher, Correia, Hansen, & Christopher, 2005; Weller, 2000). The results generated from these studies indicated that coping motives exhibited both an indirect and direct association with increased alcohol problems (Cooper et al., 1995; Simons et al., 2005). Thus, the experience of negative affect may motivate individuals to increase alcohol consumption over time.

Marital aggression might serve as a stressor that generates negative affect in a couple's relationship, providing coping motives for increased drinking over time. According to the behavioral exchange theory (Jacobson & Margolin, 1979; Pasch & Bradbury, 1998; Weiss, 1978; Weiss & Dehle, 1994; Weiss & Heyman, 1990) distressed couples show a tendency toward mutual aversive responses and remain caught in a vicious cycle. Similarly, cognitive attribution theory (Fincham & Bradbury, 1992; Gordon, Friedman, Miller, & Gaertner, 2005; Miller & Rempel, 2004) proposes that distressed couples interpret the positive and negative behaviors of their partners in a way that casts their partners in a negative light. Essentially, distressed partners minimize positive behavior and maximize negative behavior. Marital discord is therefore strongly characterized by the presence of negative affect, which may motivate increased alcohol consumption and the development of alcohol problems.

Although theory suggests marital aggression may lead to increased problem drinking over time, little longitudinal research has considered this question. The purpose of the current study is to address this gap. Specifically, it is hypothesized that marital physical and verbal aggression at T1 will predict increased drinking in husbands and wives two years later. Based on previous research (Clark & Hilton, 1991; Cunradi, Caetano, & Schafer, 2002; Park, 1983; Selin, 2005; Wilt & Olson, 1996), analyses will control for participants' age, the length of their relationship, minority status, and SES. The current study considers both physical and verbal aggression as predictors of problem drinking, building on previous literature that has focused almost exclusively on physical aggression. To ensure confidence in study findings, the present investigation employs a cross-informant approach to the assessment of both alcohol problems and aggression. That is, self-reports of behavior were supplemented with collateral reports provided by spouses. These multiple reports were then submitted to latent variable modeling in order to reduce any potential bias individuals may have had toward under-reporting their aggressive and alcohol consumption behaviors. Furthermore, analyses controlled for earlier levels of problem drinking, permitting the study of marital aggression as a predictor of change in alcohol problems over time.

This study also makes a novel contribution to the literature by exploring possible interactions between aggression and problem drinking in the prediction of alcohol problems over time. Identification of simple bivariate relations between marital aggression and increased problem drinking offers a limited understanding of the likely complex processes involved in the development of alcohol problems (Quigley & Leonard, 1999). For example, consistent with a moderation effects model (Baron & Kenny, 1986), marital aggression may have different consequences for problem drinking depending on the initial levels of problem drinking. If partners exhibit a propensity toward alcohol problems early on, marital aggression may trigger increased reliance on alcohol as a coping mechanism. Similarly, aggression that takes place in the context of already high levels of problem drinking may have a greater negative impact on couples' behavior. It is therefore possible that the

combination of high levels of drinking and aggression will be associated with especially increased drinking over two years. Alternatively, aggression may be predictive of increased drinking over time only for couples that were not initially drinking at high levels. That is, aggression may make little difference to those couples that already exhibit problem drinking. On the other hand, aggression may predict increased alcohol problems for those couples that had not yet reached the "ceiling" of problem drinking. Because of the novelty of these research questions, no specific interaction hypotheses are made.

Method

Participants

As part of a larger research project assessing vulnerability and protective factors for parental drinking, marital conflict, and children's adjustment, families were recruited via birth announcements, newspaper advertisements, and flyers posted throughout the community and distributed through schools. Families were eligible to participate if children were between the ages of 6 and 12 and two parents were present in the home. A total of 158 married or cohabiting couples participated in the first wave study. Couples had been living together for an average of 13 years ($SD = 6$). Socioeconomic backgrounds (SES; Hollingshead, 1975) encompassed the full possible SES range (levels 1–5) with a mean of 4.02 ($SD = 1.06$), indicative of upper middle class status. Ethnicity was 67% European-American, 26% African-American, 3% Native American, 1% Asian, 1% Hispanic; the remainder was multiethnic. The sample was thus representative of the percentages of ethnic groups in the recruitment area. Mean age of husbands was 40 ($SD = 6.8$ years) and ranged from 23 to 71. Mean age of wives was 38 ($SD = 6.3$ years) and ranged from 25 to 57.

Two years following the initial time point, families were assessed again. A total of 113 couples (72% of original sample) participated at T2. Reasons for attrition included inability to contact, lack of interest, and couple separation or divorce (no couples who had separated or divorced chose to participate at the second time point). Couples lost to attrition included younger mothers, $t(148) = 2.00$, $p < .05$, had a lower SES, $t(156) = 2.71$, $p < .01$, had been living together for a shorter period of time, $t(151) = 2.78$, $p < .01$, and were more likely to be an ethnic minority, $\chi^2(1) = 15.79$, $p < .001$. There were also significant differences between retained and dropped couples for the primary study variables. Retained couples demonstrated less problem drinking than dropped couples based on wives' partner-reported ADS scores, $t(147) = 2.45$, $p < .05$, husbands' self-reported MAST scores, $t(151) = 2.89$, $p < .01$, husbands' self-reported ADS scores, $t(150) = 4.55$, $p < .001$, and husbands' partner-reported ADS scores, $t(150) = 3.03$, $p < .01$. Retained couples also demonstrated lower aggression than dropped couples based on wives' self-reported physical aggression scores, $t(151) = 2.50$, $p < .05$, wives' partner-reported verbal aggression, $t(146) = 2.28$, $p < .05$, and husbands' self-reported verbal aggression, $t(149) = 2.19$, $p < .05$.

Procedure

After responding to advertisements, families were sent an initial set of questionnaires assessing demographic information and drinking practices. Families were then invited to the

laboratory at each time point to complete additional questionnaires. If a partner could not come on that day, his/her additional questionnaires were mailed home.

Measures

Marital aggression.—Husbands and wives each completed the Conflict Tactics Scale (CTS; Straus, 1979) with regard to their own behavior and the behavior of their partners. The CTS is designed to assess the prevalence and frequency of acts of physical and verbal aggression. Internal consistency, test-retest reliability, and validity have been well established (Straus & Gelles, 1990). At T2, the CTS-2 (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) was used to examine marital conflict. Details regarding differences between the CTS and CTS-2 are provided by Straus et al. (1996) and include a larger number of items assessing verbal and physical aggression. Specifically, two items were added to the verbal aggression scale ("I called my partner fat or ugly" and "I accused my partner of being a lousy lover."). One item was deleted from the physical aggression scale ("Threatened him/her with a knife or gun") and four items were added to the physical aggression scale ("I twisted my partner's arm or hair"; "I slammed my partner against the wall"; "I burned or scalded my partner on purpose"; and "I grabbed my partner"). Good internal consistency, construct validity, and discriminant validity is established for the CTS-2 (Newton, Connelly, & Landsverk, 2001). The variables included in analyses were the self- and partner- report of physical and verbal aggression on either the CTS or CTS-2. In the current study, internal consistencies ranged from .60 to .93.

Alcohol problems.—At both T1 and T2, husbands and wives completed the Michigan Alcohol Screening Test (MAST; Selzer, 1971) and Alcohol Dependence Scale (ADS; Skinner & Horn, 1984) for their own drinking behavior and that of their partners. The internal consistency and validity of the MAST has been well established (Selzer, 1971; Selzer, Vinokur, & van Rooijen, 1975). The MAST also has good psychometric properties when completed regarding other members of the family (McAuley, Long-abaugh, & Gross, 1978). The ADS is used to examine the severity of alcohol dependence by assessing tolerance to alcohol and withdrawal symptoms. The ADS has established strong predictive value in association with DSM diagnosis. It also has good reliability and validity (Ross, Gavin, & Skinner, 1990) and collateral reports have been used reliably (Marlatt et al., 1998). Internal consistencies in the current sample ranged from .61 to .80.

Ethnicity.—A dummy variable representing ethnicity was computed by assigning the value of 0 for European-American participants and 1 for participants from minority backgrounds.

Results

Preliminary Analyses

Table 1 presents the means, standard deviations, and range for all study variables. Mean scores on the MAST and ADS indicated relatively low levels of problem drinking, which is consistent with a community sample. However, 34% of husbands and 19% of wives exhibited potentially clinical levels of problem drinking at T1 (MAST scores from at least one informant > 5; Selzer, 1971; Selzer et al., 1975). At T2, 23% of husbands and 15% of

wives exhibited potentially clinical levels of problem drinking. Further, as shown in Table 1, there was a wide range of both alcohol consumption behaviors and marital aggression. At T1, 20 to 24% of couples exhibited some form of physical marital aggression within the past year (depending on report), and 90 to 96% of couples exhibited some form of verbal aggression. At T2, 10 to 21% of couples exhibited some form of physical marital aggression, and 72 to 81% exhibited verbal aggression. All variables demonstrated skew and were therefore log-transformed for all analyses.

Table 2 presents the intercorrelations among all study variables. Correlations were estimated using SPSS 16.0 for Windows (SPSS Inc., 2007), which employs listwise deletion with missing data. Measures of the same construct were highly and positively correlated with each other. Similarly, measures of the same construct over time were correlated, and measures of problem drinking for husbands and wives also tended to be positively correlated. Measures of marital aggression at T1 tended to be positively associated with problem drinking at T1 and T2. In addition, some of the measures of problem drinking at T1 were positively associated with marital aggression at T2.

Determination of Latent Constructs

Given the large number of measured variables, initial analyses evaluated the use of latent constructs. With regard to problem drinking, the goal of the study was to consider husband and wife drinking as separate constructs. Measures of problem drinking at T1 (all reports of husband or wife problem drinking) were submitted to an exploratory factor analysis, using principal components analysis for factor extraction with nonorthogonal (Oblimin) rotation. The analysis yielded a two-factor solution (two factors had eigenvalues greater than 1). Consistent with the goals of the study, the four measures of husband problem drinking loaded onto a single factor (factor loadings ranged from .85 to .90; loadings on the second factor ranged from −.04 to .07), while the four measures of wife problem drinking loaded onto a second factor (factor loadings ranged from .71 to .83; loadings on the second factor ranged from −.13 to .07). The first factor accounted for 49% of the variance in the measures of problem drinking, while the second factor accounted for 20% of the variance. The two factors were correlated, $r = .39$. Similar findings were obtained when measures of problem drinking at T2 were submitted to exploratory factor analysis.

When submitted to a confirmatory factor analysis, the two-factor solution was a significant improvement over a single-factor solution treating problem drinking by both partners at T1 as a single construct, $\chi^2(1) = 128.7$, $p < .001$. Similar findings were obtained for T2 problem drinking. Thus, for all subsequent analyses, husband and wife problem drinking were treated as separate latent constructs, indicated by self- and partner report on the ADS and MAST.

Next, measures of marital aggression at T1 were submitted to exploratory factor analysis. This analysis also yielded a two-factor solution. Measures of verbal marital aggression (perpetrated by either husband or wife) loaded highly onto the first factor (loadings ranged from .82 to .89; loadings for the second factor ranged from −.04 to .05). Measures of physical marital aggression loaded highly onto the second factor (loadings ranged from .90 to .95; loadings for the first factor ranged from −.01 to .01). The first factor accounted for

61% of the variance in the measures of marital aggression, while the second factor accounted for 18% of the variance. The two factors were correlated, $r = .54$. Similar findings were obtained when measures of marital aggression at T2 were submitted to exploratory factor analysis.

When submitted to a confirmatory factor analysis, the two-factor solution was a significant improvement over a single-factor solution treating verbal and physical marital aggression by both partners at T1 as a single construct, $\chi^2(1) = 194.8$, $p < .001$. The two-factor solution was also compared to a four-factor solution in which husband and wife verbal aggression and husband and wife physical aggression were treated each as separate constructs. Although this model was a better fit for the data than the two-factor solution, $\chi^2(5) = 19.8$, $p < .01$, an examination of the estimated coefficients revealed that the correlation between husband and wife verbal aggression exceeded one, $r = 1.11$. The estimated correlation between husband and wife physical aggression approached one, $r = .98$. Similar findings were obtained for T2 marital aggression, except that both correlations exceeded one. These findings suggest that separating husband and wife aggression is a model misspecification. Therefore, for all subsequent analyses, marital aggression was treated as two latent constructs: verbal aggression (perpetrated by both husband and wife) and physical aggression (perpetrated by husband and wife).

Longitudinal Associations Between Marital Aggression and Problem Drinking

Structural equation modeling (SEM) was used to test associations between marital aggression and problem drinking at T1 and marital aggression and problem drinking at T2 (see Figure 1). Analyses were conducted using AMOS 16.0.1, which uses maximum likelihood to handle missing data. In each model described below, T1 physical aggression, verbal aggression, wife alcohol problems, and husband alcohol problems were included as predictors of T2 physical aggression, verbal aggression, wife alcohol problems, and husband alcohol problems. Thus, models included autoregressive controls (associations between the same variable over time, e.g., husband problem drinking at T1 with husband problem drinking at T2). The inclusion of autoregressive effects permits the study of T1 variables as predictors of change in alcohol problems or marital aggression. All T1 latent variables were permitted to correlate, as were T1 latent and control variables. Error variance across time and within reporter or measure was also allowed to correlate. To improve parsimony, nonsignificant correlations between error terms were deleted from the models.

Before interpreting parameter estimates, model fit was examined. Currently, there is no statistic that is generally accepted as an unbiased index of model fit. Thus, common practice is to consider several different indices (Bentler, 1990; Duncan et al., 1999). Models are considered to be a good fit, for example, if the χ^2/df ratio is between 1 and 3 (Arbuckle & Wothke, 1999), the comparative fit index (CFI), normed fit index (NFI) or the Tucker Lewis Index (TLI) are above .95 (.90 for acceptable model fit), and the root mean square error of approximation (RMSEA) is below .05 (.08 for acceptable fit; Browne & Cudek, 1993). In the current study, models were considered a good fit for the data if at least three of these five criteria for good fit were met. Models that did not meet criteria for good or acceptable fit

were considered to be a poor fit to the data. To compare nested models, the delta chi square test was used.

An initial model was fit in which the only between-time associations estimated were the autoregressive relations; this model was used as a baseline or comparison model. This model met criteria for acceptable model fit, $\chi^2(395) = 606.2$, $p < .001$, $\chi^2/df = 1.535$, CFI = .939, NFI = .847, TLI = .918, and RMSEA = .058. An examination of the autoregressive effects revealed that each construct was significantly associated with itself over time: $\beta = .40$, $p < .001$, for verbal aggression; $\beta = .47$, $p < .001$, for physical aggression; $\beta = .84$, $p < .001$, for husband problem drinking; and $\beta = .40$, $p < .001$, for wife problem drinking.

Next, several control variables were added to the model: length of time couple had been living together, age of husband, age of wife, SES, and ethnicity. This model was also an acceptable fit for the data, $\chi^2(515) = 817.4$, $p < .001$, $\chi^2/df = 1.587$, CFI = .921, NFI = .820, TLI = .893, and RMSEA = .061. Husbands drank more at T2 in couples who had been living together for longer, $\beta = .25$, $p < .01$. Minority couples had lower levels of husband and wife problem drinking at T2, $\beta = -.26$, $p < .001$, and $\beta = -.34$, $p < .001$, respectively. Although these covariates were significantly correlated with most T1 variables, no other associations with T2 variables were observed. These nonsignficant paths were deleted from the model. This did not significantly reduce model fit, $\chi^2(17) = 19.4$, $p = .31$, and the resulting model was an acceptable fit for the data, $\chi^2(532) = 836.8$, $p < .001$, $\chi^2/df = 1.573$, CFI = .921, NFI = .816, TLI = .895, and RMSEA = .061.

To determine whether problem drinking at T1 was associated with increased marital aggression at T2, the following associations were added to the model: (1) T1 husband problem drinking as a predictor of T2 verbal aggression; (2) T1 husband problem drinking as a predictor of T2 physical aggression; (3) T1 wife problem drinking as a predictor of T2 verbal aggression; and (4) T1 wife problem drinking as a predictor of T2 physical aggression. This model was an acceptable fit for the data, $\chi^2(528) = 826.4$, $p < .001$, $\chi^2/df = 1.565$, CFI = .922, NFI = .818, TLI = .897, and RMSEA = .060. Wife problem drinking at T1 was associated with decreased verbal aggression at T2, $\beta = -.22$, $p < .05$. In contrast, husband problem drinking at T1 was associated with increased physical aggression at T2, $\beta = .34$, $p < .01$. Further, constraining these paths to zero resulted in a significant reduction in model fit, $\chi^2(2) = 10.2$, $p < .01$.

To determine whether marital aggression at T1 was associated with increased problem drinking at T2, the following associations were added to the model: (1) T1 verbal aggression as a predictor of T2 husband problem drinking; (2) T1 verbal aggression as a predictor of T2 wife problem drinking; (3) T1 physical aggression as a predictor of T2 husband problem drinking; and (4) T1 physical aggression as a predictor of T2 wife problem drinking. This model was an acceptable fit for the data, $\chi^2(524) = 799.2$, $p < .001$, $\chi^2/df = 1.525$, CFI = .928, NFI = .824, TLI = .904, and RMSEA = .058. Verbal aggression was associated with increased husband problem drinking at T2, $\beta = .17$, $p < .01$. Physical aggression was associated with increased husband and wife problem drinking at T2, $\beta = .16$, $p < .05$, and $\beta = .42$, $p < .001$, respectively. Further, constraining these paths to zero significantly reduced model fit, $\chi^2(3) = 19.0$, $p < .001$.

Thus, results indicated bidirectional associations in which problem drinking at T1 was associated with later marital aggression, and marital aggression at T1 was linked to later problem drinking. This model is shown in Figure 1. As a final test of relations, paths representing the opposite directions of effects were constrained to be equal (e.g., the path estimating T1 husband alcohol problems as a predictor of T2 verbal aggression was constrained to equal the path estimating T1 verbal aggression as a predictor of T2 husband alcohol problems). Reduction in model fit indicates that the two paths are significantly different from each other (i.e. one direction of effects is stronger than the other). The association between T1 wife problem drinking and T2 verbal aggression was not significantly different from the association between T1 verbal aggression and T2 wife problem drinking, $\chi^2(1) = 2.9$, $p = .09$. The association between T1 husband problem drinking and T2 verbal aggression was not significantly different from the association between T1 verbal aggression and T2 husband problem drinking, $\chi^2(1) = 0.0$, $p = 1.0$. The association between T1 husband problem drinking and T2 physical aggression was not significantly different from the association between T1 physical aggression and T2 husband problem drinking, $\chi^2(1) = 1.4$, $p = .24$. However, the association between T1 physical aggression and T2 wife problem drinking was significantly stronger than the link between T1 wife problem drinking and T2 physical aggression, $\chi^2(1) = 14.7$, $p < .001$. Thus, problem drinking appeared to be as strong a predictor of later marital aggression as marital aggression was a predictor of later problem drinking, with one exception: physical aggression appears more likely to precede increased wife problem drinking than the reverse direction.

Interactions Between Problem Drinking and Marital Aggression

Four interactions were tested in four separate models as predictors of wives' and husbands' problem drinking and marital aggression over time: (1) wives' T1 alcohol problems × T1 verbal aggression; (2) wives' T1 alcohol problems × T1 physical aggression; (3) husbands' T1 alcohol problems × T1 verbal aggression; and (4) husbands' T1 alcohol problems × T1 physical aggression (see Figure 2 for an example). Latent variable interactions were tested following Marsh, Wen, and Hau (2004), in which the indicators of problem drinking were matched with indicators of aggression to form cross products that served as indicators of the latent interaction. Matching was based on estimated factor loadings provided by an initial measurement model. For example, the first indicator of the wife problem drinking × verbal marital aggression latent interaction was the product of wives' self-reported MAST and wives' self-reported verbal aggression, as the factor loadings for each of these was fixed for their respective latent constructs. Similarly, the next indicator of the latent interaction was the product of wives' partner-reported ADS and wives' partner-reported verbal aggression, as these each had the highest estimated factor loadings for their respective latent constructs. These latent variable interactions were included along with the main effects of the constituent variables and the same controls included in prior models. Variables were centered before interaction terms were computed. Following the recommendations of Marsh et al. (2004), an unconstrained approach (i.e., the factor loadings for the indicators of the latent interaction were freely estimated) was employed in order to reduce the complexity of model specification and maximize the power and robustness of the analyses. The four models included exactly the same variables and estimated structural paths. Models did differ

slightly with regard to some of the intercorrelations among the error variance terms with the latent interaction, which were significant and retained for some models but not for others. An example is provided in Figure 2; all models described below share this same structural parameterization.

The model examining the interaction between wife problem drinking and verbal aggression was a poor fit for the data, $\chi^2(635) = 1174.0$, $p < .001$, $\chi^2/df = 1.849$, CFI = .867, NFI = .759, TLI = .828, and RMSEA = .074. Further, the interaction term was not significantly related to any T2 construct.

The model examining the interaction between wife problem drinking and physical aggression was an acceptable fit for the data, $\chi^2(642) = 1060.9$, $p < .001$, $\chi^2/df = 1.652$, CFI = .905, NFI = .799, TLI = .873, and RMSEA = .064. This model is shown in Figure 2. The interaction term was significantly related to T2 husband problem drinking, $\beta = -.15$, $p < .05$. This interaction has been plotted in Figure 3A. Physical aggression was only associated with higher husband problem drinking over time for couples in which the wife had low levels of problem drinking. As shown in Figure 2, the interaction between wife problem drinking and physical aggression was also significantly related to T2 physical aggression, $\beta = -.19$, $p < .01$. This interaction has been plotted in Figure 3B. Physical aggression at T1 was associated with increased physical aggression at T2 only for those couples in which wives had low levels of problem drinking.

The model examining the interaction between husband problem drinking and verbal aggression was an acceptable fit for the data, $\chi^2(648) = 1062.2$, $p < .001$, $\chi^2/df = 1.639$, CFI = .905, NFI = .796, TLI = .873, and RMSEA = .064. The interaction term was significantly related to T2 husband problem drinking, $\beta = .28$, $p < .05$. As shown in Figure 4, verbal aggression was associated with increased husband problem drinking over time only for those husbands who engaged in greater problem drinking at T1.

The model examining the interaction between husband problem drinking and physical aggression was a poor fit for the data, $\chi^2(637) = 1306.2$, $p < .001$, $\chi^2/df = 2.051$, CFI = .850, NFI = .753, TLI = .807, and RMSEA = .082. Further, the interaction term was not related to any of the T2 constructs.

Discussion

The current study examined relations between couples' marital aggression and alcohol problems over a two year period and employed a rigorous design in which cross-informant reports of problem drinking and marital aggression were obtained, autoregressive effects were included in analyses, and possible interactions between variables were considered. Results supported marital aggression as a predictor of both husbands' and wives' increased alcohol problems over time. Greater physical aggression led to increased wife problem drinking, and this association was stronger than the reverse direction. Physical aggression was associated with increased husband problem drinking only when wife problem drinking was low; verbal aggression was associated with increased husband problem drinking only when husband problem drinking was already high. Wives' alcohol problems were linked to

lower verbal marital aggression over time, while husbands' alcohol problems were linked to higher physical marital aggression over time. Very few studies have investigated bidirectional relations between marital conflict and alcohol problems, and this study therefore contributes to the literature by demonstrating that both directions may be important pathways of effects.

Findings are consistent with prior research demonstrating the strong link between alcohol and marital aggression. For example, 40% to 60% of battered women label their husbands as problem drinkers (Fagan et al., 1983; Roy, 1982). Researchers have theorized that alcohol problems play a causal role in this association, for example, by reducing the negative consequences of abuse by providing an excuse for the violent behavior (Kantor & Asidigian, 1997), by impairing cognition and behavioral control (Flanzer, 1993), or by promoting maladaptive problem-solving strategies that increase the severity of conflict (Leonard & Quigley, 1999). However, the current study suggests that physical aggression may also be involved in the development of alcohol problems. It is possible that marital aggression represents a particularly stressful experience, one that places a heavy burden on an individual's coping abilities. Given that negative affect has been shown to motivate alcohol and drug use (Labouvie, Pandina, White, & Johnson, 1990), couples who engage in aggressive conflict may turn to drinking as a form of coping.

The current study broke new ground by considering previous levels of problem drinking as moderators of the relation between aggression and changes in problem drinking over time. While aggression was associated with husband problem drinking only for certain husbands (those who already had high levels of drinking problems or whose wives had low levels of drinking problems), physical marital aggression predicted increased wife problem drinking regardless of her or her husband's prior levels of problem drinking. It is possible that physical aggression places a greater burden on women's coping skills than on men's, perhaps because of women's smaller size and social status. For example, battered women may become isolated from family and friends and have fewer financial resources needed to escape the abusive relationship. In this setting, alcohol may represent the only coping strategy available to them.

Verbal marital aggression was more strongly associated with increased husband problem drinking over time when husbands engaged in higher levels of problem drinking initially. These findings suggest that marital aggression may be more likely to affect men who are already demonstrating unhealthy drinking behavior. Such men may be characterized by an inability to effectively cope with stress. In contrast, physical marital aggression was only linked to increased husband problem drinking for those men with wives who had low levels of problem drinking. Taken along with the finding that greater wife problem drinking was associated with lower levels of verbal marital aggression, findings are consistent with drinking discrepancies within marital couples as problematic. Specifically, when wives drink less than their husbands, couples are at risk for increased marital aggression and husband problem drinking over time. Wife problem drinking is often associated with husband problem drinking, meaning both partners share impaired judgment regarding appropriate drinking behavior. However, because of the lower base rate of women's alcohol problems, husbands with drinking problems are often paired with women who have low levels of

problem drinking. In these couples, wives may recognize their husbands' inappropriate and dangerous behavior and have little tolerance for it, leading to increased marital disagreements (Floyd et al., 2006; Leonard & Roberts, 1998). Although additional research is needed to address these possibilities, the current findings suggest that a fuller understanding of the development of alcohol problems requires sophisticated process-oriented models rather than simple direct effects.

Results also indicated that minority ethnic status was associated with both husbands' and wives' decreased alcohol problems over time. However, minority status was associated with higher initial levels of problem drinking. Experience of racial discrimination has been tied to greater alcohol consumption (Terrell, Miller, Foster, & Watkins, 2006), perhaps because drinking offers a form of escape (Martin, Tuch, & Roman, 2003). However, while there is a between-person difference in drinking problems based on ethnicity, within-person change indicates that alcohol problems may decline over time for minorities. In addition, longitudinal patterns of alcohol consumption appear to differ between racial groups. For example, alcohol consumption peaks during the summer for Hispanic men, but in the winter for European- and African-American men (Carpenter, 2003). Additional research on the trajectories of alcohol use for different ethnicities and explication of variables associated with ethnicity that may be related to alcohol consumption patterns is needed to further explicate these findings.

Results should be interpreted in light of study limitations. Notably, all participants in the current study were parents of young children and were generally from high SES backgrounds. Thus, findings may not generalize to other groups. Also, the lack of experimental design limits the ability to draw causal inferences about relations between marital aggression and alcohol use. Further, selective attrition is also a limitation; couples with greater problem drinking and aggression were more likely to drop out of the study, perhaps because couples who had separated or divorced were not included at the second time point. Although the use of collateral reports is an important strength of the current study, observations of marital conflict behaviors and clinical interviews assessing alcohol problems represent an important next step for research. Another potential limitation is that the constructs of physical aggression and verbal aggression were not differentiated by wife-to-husband physical and verbal aggression and husband-to-wife physical and verbal aggression, which limited the investigation of gender difference in marital aggression. In the current sample, husband and wife aggression were highly related. Research on marital relations has often found that husband and wife conflict behaviors are highly related and treat them as the same construct (e.g., Cummings, Schermerhorn, Davies, Goeke-Morey, & Cummings, 2006; Kaczynski, Lindahl, Malik, & Laurenceau, 2006). Further, research on marital conflict in the context of mental health issues such as depression or alcohol problems has considered general marital conflict styles (Du Rocher Schudlich & Cummings, 2007; Quigley & Leonard, 1999). However, future studies comparing couples in which husbands, wives, or both partners are aggressive would be beneficial. Furthermore, studies employing larger sample sizes and including wider ranges of marital aggression and alcohol problems would enable more complex model tests with more diverse samples in relation to key constructs. It should also be noted that a number of potential confounds or mediating variables (e.g., mental health status such as depression, antisocial personality, or family

history of alcohol use) were not assessed. Inclusion of these possible correlates may change the associations found in this study.

Despite the limitations of the current study, the examination of longitudinal relations between marital aggression and alcohol problems and the consideration of interactions between marital aggression and problem drinking addresses an important gap in research. Furthermore, obtaining multiple reports of alcohol problems and marital aggression permitted the utilization of latent variable modeling, providing measurement of these constructs with less error than using only self-report. Using data from a community sample also allows greater confidence in generalizing findings to the broader population. Findings therefore provide important evidence for the complex nature of relations between problem drinking and marital aggression and support bidirectional relations between marital aggression and problem drinking over time.

Acknowledgments

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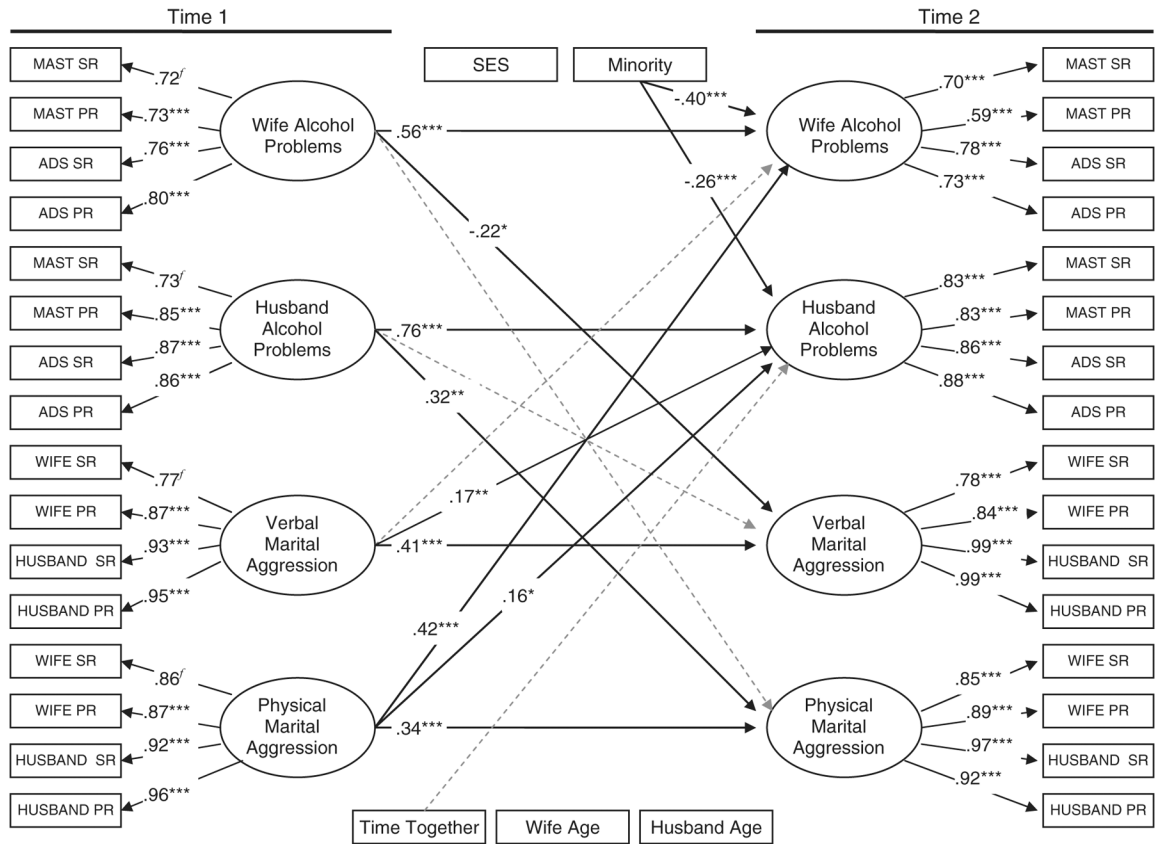
Figure 1.
Model of longitudinal relations between marital aggression and problem drinking. Path coefficients are standardized. Significant pathways are presented as solid lines while non-significant pathways are presented as dotted lines. Latent variables within the same time point were allowed to correlate, as were error variance across time and within report. These correlations are not shown to improve the clarity of presentation. f denotes a fixed path, $*$ $p < .05$, $**$ $p < .01$, $***$ $p < .001$. SR = Self-report, PR = Partner-report; MAST = Michigan Alcoholism Screening Test; ADS = Alcohol Dependence Scale. $\chi^2(524) = 799.2$, $p < .001$, $\chi^2/df = 1.525$, CFI = .928, NFI = .824, TLI = .904, and RMSEA = .058.
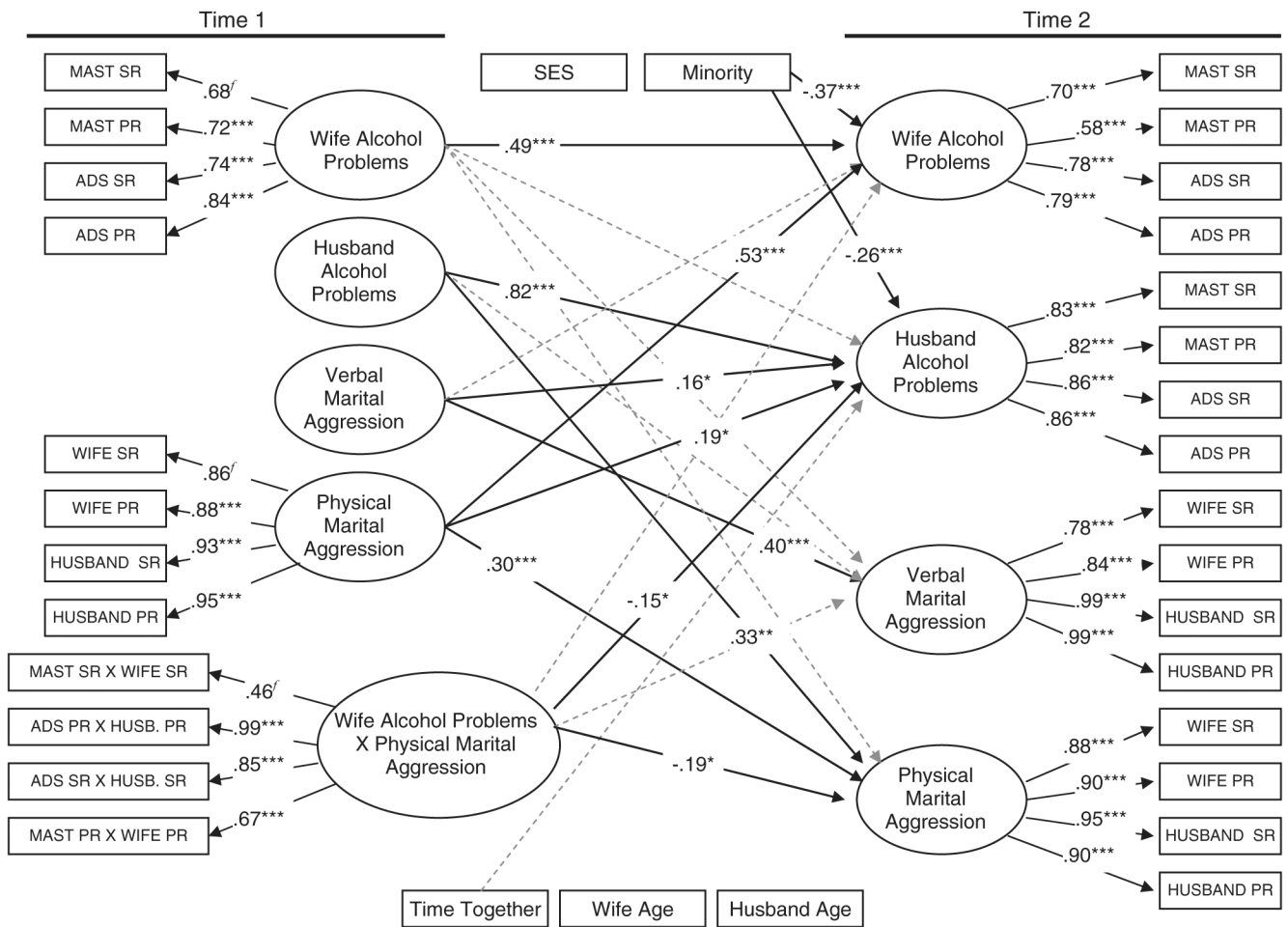
Figure 2.
Interaction between wife alcohol problems and physical marital aggression. Path coefficients are standardized. Significant pathways are presented as solid lines while non-significant pathways are presented as dotted lines. Latent variables within the same time point were allowed to correlate, as were error variance across time and within report. These correlations are not shown to improve the clarity of presentation. f denotes a fixed path, $* p < .05$, $** p < .01$, $*** p < .001$. SR = Self-report, PR = Partner-report; MAST = Michigan Alcoholism Screening Test; ADS = Alcohol Dependence Scale. $\chi^2(642) = 1060.9$, $p < .001$, $\chi^2/df = 1.652$, CFI = .905, NFI = .799, TLI = .873, and RMSEA = .064.

A.

B.
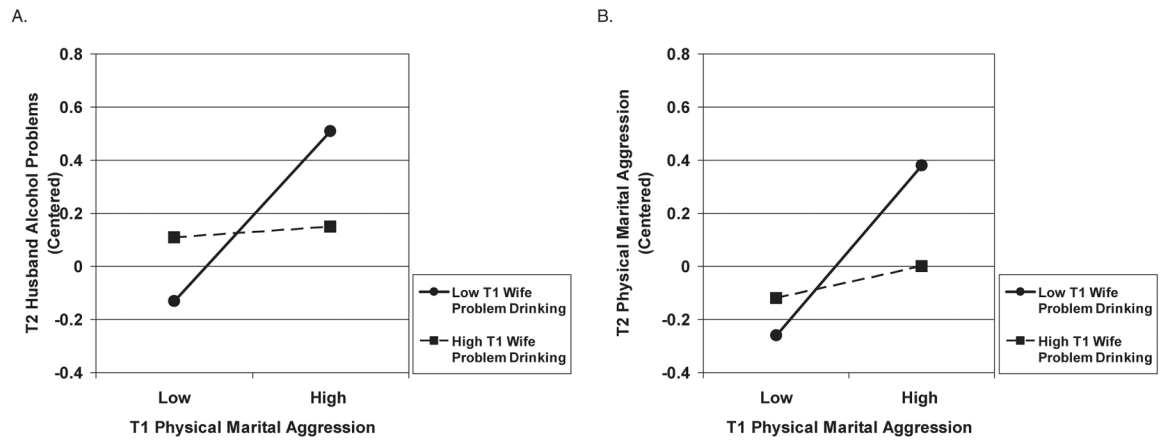
Figure 3.
Plotted interactions between T1 wife alcohol problems and T1 physical marital aggression.
T2 husband problem drinking is centered ($SD = 0.41$). T2 physical marital aggression is also
centered ($SD = .55$).
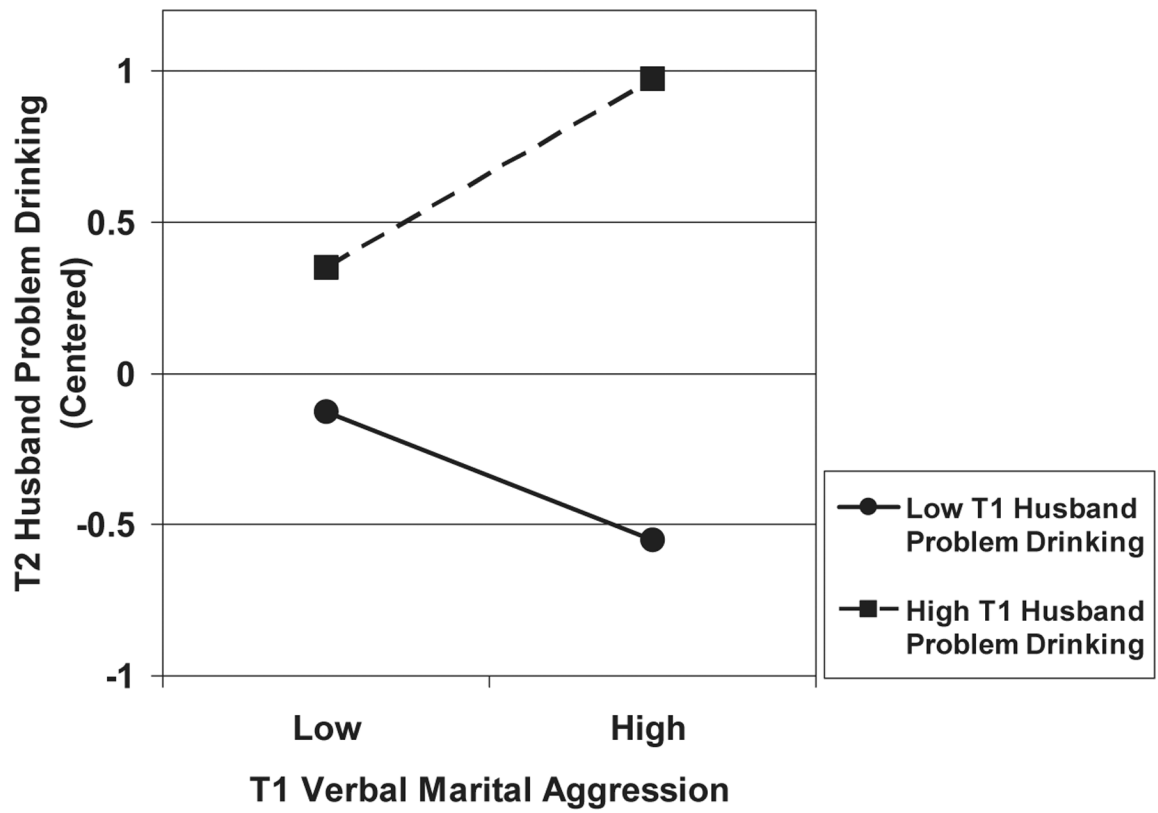
Figure 4.
Plotted interaction between T1 husband alcohol problems and T1 verbal marital aggression.
T2 husband problem drinking is centered ($SD = 0.41$).

Table 1

Mean, Standard Deviation, and Range of Variables Note.

| | Husbands | | | | | | Wives | | | | | |
| | Time 1 (N = 158) | | | Time 2 (N = 98) | | | Time 1 (N = 158) | | | Time 2 (N = 110) | | |
	Mean	SD	Range	Mean	SD	Range	Mean	SD	Range	Mean	SD	Range
Marital Aggression												
Physical (SR)	2.30	6.35	0–38	.44	1.80	0–13	2.27	6.26	0–46	1.32	5.95	0–46
Physical (PR)	2.76	7.60	0–41	1.94	6.42	0–45	2.19	5.99	0–37	.73	3.18	0–25
Verbal (SR)	9.47	8.15	0–36	5.32	6.16	0–36	10.36	7.73	0–36	5.94	6.13	0–30
Verbal (PR)	10.10	8.20	0–36	5.78	7.83	0–34	9.22	7.31	0–31	5.07	5.66	0–30
Alcohol Problems												
MAST (SR)	4.79	8.61	0–49	2.25	5.26	0–35	2.68	6.31	0–45	1.93	5.15	0–43
MAST (PR)	4.03	8.05	0–51	3.34	7.86	0–47	2.46	5.61	0–42	.96	1.68	0–6
ADS (SR)	2.60	6.34	0–19	.93	3.32	0–24	1.38	3.85	0–25	.90	2.86	0–18
ADS (PR)	3.24	7.29	0–42	1.81	6.01	0–39	.58	2.38	0–19	.22	1.01	0–7

SR = Self Report; PR = Partner (Spouse) Report.

Table 2

Correlations Between Study Variables

Variable T1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1. SES																																				
2. H. Age	.36*																																			
3. W. Age	.28*	.73*																																		
4. Minority status	−.22*	−.10	−.04																																	
5. Time Together	.25*	.58*	.67*	−.18*																																
6. H. Phys SR	−.45*	−.20	−.29*	.34*	−.14																															
7. H. Verb SR	−.21	−.08	−.03	.30*	−.14	.47*																														
8. W. Phys PR	−.38*	−.17	−.24*	.35*	−.24*	.80*	.40*																													
9. W. Verb PR	−.20	−.11	−.06	.32*	−.18*	.46*	.79*	.53*																												
10. W. Phys SR	−.36*	−.16	−.27*	.54*	−.31*	.77*	.44*	.84*	.46*																											
11. W. Verb SR	−.19	−.19	−.19	.22	−.35*	.41*	.44*	.48*	.56*	.44*																										
12. H. Phys PR	−.38*	−.22	−.33*	.39*	−.22*	.94*	.49*	.76*	.45*	.83*	.43*																									
13. H. Verb PR	−.25*	−.12	−.13	.19	−.24*	.45*	.52*	.44*	.45*	.45*	.73*	.48*																								
14. H. MAST SR	−.37*	−.16	−.20*	.35*	−.27*	.47*	.42*	.40*	.35*	.42*	.31*	.43*	.30*																							
15. W. MAST PR	−.29*	−.22*	−.24*	.26*	−.23*	.26*	.19*	.29*	.18*	.24*	.09	.28*	.15	.46*																						

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
16. W. MAST SR	-.34*	-.18*	-.09	.09	-.22*	.17	.13	.13	.09	.17*	.21*	.21*	.19*	.36*	.51*																					
17. H. MAST PR	-.30*	-.14	-.21*	.22*	-.29*	.35*	.40*	.28*	.32*	.39*	.42*	.42*	.41*	.67*	.19*	.32*																				
18. H. ADS SR	-.31*	-.16	-.22*	.37*	-.29*	.48*	.43*	.46*	.38*	.49*	.36*	.42*	.36*	.74*	.37*	.24*	.55*																			
19. W. ADS PR	-.23*	-.20*	-.16	.17*	-.19*	.35*	.22*	.32*	.20	.35*	.24*	.44*	.17*	.26*	.59*	.46*	.14	.41*																		
20. W. ADS SR	-.31*	-.16	-.18*	.12	-.21*	.29*	.21*	.27*	.21*	.27*	.25*	.32*	.28*	.35*	.53*	.51*	.24*	.41*	.56*																	
21. H. ADS PR Variable T2	-.29*	-.08	-.17*	.20	-.21*	.43*	.44*	.39*	.40*	.48*	.44*	.48*	.48*	.68*	.22*	.25*	.71*	.75*	.32*	.42*																
22. H. Phys SR	-.06	-.13	-.12	.06	-.05	.29*	.23*	.28*	.29*	.32*	.21*	.43*	.29*	.32*	.13	.01	.29*	.25*	-.09	-.06	.35*															
23. H. Verb SR	-.06	-.13	-.05	.00	.01	.15	.47*	.14	.54*	.20	.39*	.30*	.38*	.18	-.01	-.01	.20*	.12	.03	-.06	.26*	.43*														
24. W. Phys PR	-.10	-.21*	-.18	.13	-.13	.31*	.18	.36*	.32*	.33*	.26*	.44*	.26*	.32*	.17	.04	.27*	.16	-.10	-.03	.24*	.88*	.42*													
25. W. Verb PR	-.13	-.17	-.09	.00	-.06	.12	.44*	.20	.52*	.20	.42*	.24*	.35*	.17	.02	.09	.16	.14	.03	-.01	.22*	.38*	.88*	.44*												
26. W. Phys SR	-.17	-.27*	-.31*	.24*	-.19*	.29*	.25*	.37*	.28*	.41*	.30*	.40*	.34*	.29*	.18	-.07	.31*	.28*	-.06	.06	.38*	.42*	.36*	.53*	.35*											
27. W. Verb SR	-.20*	-.24*	-.27*	.06	-.21*	.18	.34*	.22*	.54*	.29*	.47*	.27*	.36*	.06	.02	-.02	.15	.10	-.01	.04	.15	.35*	.67*	.40*	.65*	.45*										
28. H. Phys PR	-.21*	-.22*	-.25*	.13	-.08	.40*	.27*	.36*	.31*	.46*	.32*	.51*	.39*	.25*	.22*	.00	.28*	.24*	.03	.08	.32*	.61*	.38*	.62*	.27*	.79*	.51*									
29. H. Verb PR	-.18	-.19	-.18	.02	-.11	.21*	.40*	.20*	.49*	.29*	.33*	.28*	.40*	.13	.03	.02	.18	.20*	-.09	.03	.25*	.46*	.71*	.45*	.69*	.48*	.84*	.52*								
30. H. MAST SR	-.25*	-.27*	-.25*	.20	-.22*	.48*	.33*	.42*	.33*	.47*	.36*	.46*	.40*	.59*	.16	.14	.57*	.49*	.06	.25*	.55*	.40*	.35*	.40*	.35*	.32*	.32*	.41*	.41*							
31. W. MAST PR	-.03	.02	.11	.05	.01	.11	.09	.08	.08	.14	.06	.16	.10	.25*	.32*	.05	.07	.21*	.12	.19	.16	.22*	.04	.14	.04	-.01	.15	.12	.12	.34*						

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
32. W. MAST SR	-.23*	-.06	.01	-.01	-.09	.27*	.29*	.22	.23*	.35*	.29*	.33*	.36*	.34*	.34*	.40*	.37*	.38*	.35*	.42*	.36*	.24*	.16	.19	.14	.07	.24*	.14	.14	.35*	.40*					
33. H. MAST PR	-.24*	-.08	-.06	.14	-.10	.47*	.30*	.48*	.41*	.52*	.45*	.52*	.43*	.63*	.11	.16	.67*	.56*	.06	.24*	.72*	.42*	.34*	.37*	.32*	.15	.35*	.22*	.22*	.67*	.27*	.43*				
34. H. ADS SR	-.26*	-.28*	-.34*	-.04	-.19	.55*	.32*	.40*	.35*	.35*	.32*	.50*	.34*	.52*	.06	.03	.43*	.64*	-.02	.20*	.57*	.33*	.33*	.27*	.31*	.24*	.31*	.37*	.37*	.67*	.09	.33*	.65*			
35. W. ADS PR	-.15	-.09	-.09	-.07	-.09	.42*	.00	.42*	.23*	.26*	.18	.33*	.13	.19	.00	-.22*	.02	.25*	.01	.04	.17	.25*	.09	.28*	.07	.08	.14	.12	.12	.37*	.29*	.23*	.39*	.48*		
36. W. ADS SR	-.22*	-.23*	-.22*	-.18	-.21*	.24*	-.03	.28*	.11	.17	.15	.21	.10	.21*	.21*	.34*	.25*	.28*	.42*	.54*	.33*	.07	.05	.11	.07	.06	.22*	.08	.08	.41*	.25*	.55*	.33*	.52*	.41*	
37. H. ADS PR	-.24*	-.13	-.15	-.09	-.08	.52*	.20	.37*	.35*	.31*	.33*	.48*	.37*	.52*	.52*	.19	.59*	.49*	.13	.30*	.74*	.46*	.31*	.37*	.25*	.10	.28*	.22*	.22*	.66*	.22*	.41*	.77*	.87*	.55*	.53*

Note. SES = Socioeconomic Status; W = Wives; H = Husbands; Phys = Physical Aggression; Verb = Verbal Aggression; SR = Self Report; PR = Partner Report; MAST = Michigan Alcohol Screening Test; ADS = Alcohol Dependence Scale.

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p < .05.