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Husbands' and Wives' Alcohol Use Disorders and Marital Interactions as Longitudinal Predictors of Marital Adjustment

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Abstract

This longitudinal study tested the hypothesis that marital interactions mediate the associations between wives' and husbands' lifetime alcoholism status and their subsequent marital adjustment. Participants were 105 couples from the Michigan Longitudinal Study (MLS), an ongoing multimethod investigation of substance use in a community-based sample of alcoholics, nonalcoholics, and their families. At baseline (T1), husbands and wives completed a series of diagnostic measures and lifetime DSM-IV diagnosis of alcohol use disorder (AUD) was assessed. Couples completed a problem-solving marital interaction task 3 years later at T2, which was coded for the ratio of positive to negative behaviors (P/N) was calculated. Couples also completed the Dyadic Adjustment Scale (DAS; Spanier, 1976) at T4 (9 years after T1 and 6 years after T2). Moderate to strong positive correlations were observed between husbands' and wives' lifetime AUD, P/N ratio, and dyadic adjustment. Based on an Actor-Partner Independence Model (APIM) framework, results from structural equation modeling showed that husbands' lifetime AUD was negatively associated with wives' P/N ratio at the 3 year point, but was not related to their own or their wives' marital adjustment 9 years from baseline. However, wives' lifetime AUD had direct negative associations with their own and their husband's marital satisfaction 9 years later, and wives' P/N ratio was positively related to their own and their husband's marital satisfaction 6 years later. Results indicate that marital adjustment in alcoholic couples may be driven more by the wives' than the husbands' AUD and marital behavior.

Keywords

marital interaction; behavioral observation; alcoholic couples; marital adjustment; actor-partner independence model

What are the predictors of dyadic adjustment in alcoholic (ALC) and nonalcoholic (NALC) couples? Marital quality is inversely related to psychological distress (Proulx, Helms, & Buehler, 2007) and poor marital quality is associated with declines in physical health (Umberson, Williams, Powers, Liu, & Needham, 2006). Although problem alcohol use and

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alcoholism are conceptualized as individual-level phenomena, a good deal of research has shown associations of alcoholism with variations in quality and outcomes of the marital relationship (Jacob, 1992; Leonard & Rothbard, 1999; Marshal, 2003). Recent reviews have noted lower levels of marital satisfaction among ALC couples (defined as couples where the husband and/or the wife meet criteria for alcohol use disorder, i.e., alcohol abuse or dependence) compared to NALC couples (Marshal, 2003; Leonard & Eiden, 2007). However, longitudinal studies of this association and the extent to which husbands' and wives' alcohol use disorder (AUD) influence their own and each other's dyadic adjustment are rare (Leonard & Eiden, 2007; for earlier reviews, see Paolino, McCrady, & Diamond, 1978; Zucker & Gomberg, 1986).

The present research attempts to address these gaps in our knowledge by examining longitudinal predictors of dyadic adjustment in a community sample of ALC and NALC couples. Using a prominent model of marital functioning known as the Vulnerability-Stress-Adaptation model (VSA; Karney & Bradbury 1995), we addressed the following questions: 1) Do husbands' and wives' AUD status predict dyadic adjustment 9 years later? 2) If so, are these longitudinal associations mediated by marital interaction in the intervening period? 3) If so, do these associations differ for husbands and wives?

Alcohol Use Disorders and Marital Adjustment

Research documenting the association between alcohol involvement and marriage disruption has a long history, going back almost 100 years (Heron, 1912; see Paolino et al., 1978). Heron analyzed data that had been collect from 865 female "inebriates" who were committed to British Inebriate Reformatories between 1907 and 1909. He reported that, compared to non-inebriate women of similar ages, 1) inebriate women were less likely to be married, and 2) married inebriate women were more likely to be "living apart from their husbands." Wittman (1939) found that alcoholic males had lower ratings on a measure of "congeniality of married life" than nonalcoholic males. Bacon (1944) also found that "arrested inebriates" were less likely to be married and had high rates of marital separation. Paolino et al. (1978) reviewed studies from the 1940s through the 1970s showing higher rates of marital problems among those with AUDs or alcohol problems.

Recent reviews (Halford, Bouma, Kelly, & Young, 1999; Leonard & Eiden, 2007; Leonard & Rothbard, 1999; Marshal, 2003) have also documented the negative effects of alcohol involvement and AUD on marital quality and suggested possible mechanisms whereby these effects unfold. Leonard and Rothbard (1999) reviewed research on "the marriage effect," the finding that married persons report lower levels of alcohol involvement and alcohol-related problems. Differential selection out of marriage among those with higher levels of alcohol involvement is one mechanism underlying the marriage effect, and Leonard and Rothbard reviewed studies that supported the hypothesis that "excessive and problem drinking exert deleterious effects on marriages" (p. 144). In an extensive review of the literature on alcohol involvement and marital functioning, Marshal (2003) reviewed 24 studies that focused on marital satisfaction, eight of which involved comparisons between alcoholic and nonalcoholic participants. Generally, these studies found lower levels of marital satisfaction among ALC compared to NALC couples. For example, Jacob and Leonard (1992) found that ALC husbands and their wives both had lower marital satisfaction than a control group of NALC husbands and their NALC wives

The majority of studies of ALC couples have focused on couples with an ALC husband and a NALC wife (see McCrady & Epstein, 1995), due in part to the fact that in the population as a whole, and in the population of married and cohabiting adults 18 and older, male ALCs outnumber females ALCs by a ratio of more than 2:1 (Dawson et al., 2007; see Nolen-Hoeksema & Hilt, 2006). A smaller set of studies has examined the associations of wives'

alcohol involvement and marital outcomes. Earlier research showed that alcoholic women had higher rates of marital disruption than nonalcoholic women (Lisansky, 1957; Rosenbaum, 1958), and longitudinal research showed that heavy drinking among women predicted later marital separation and divorce (Wilsnack & Wilsnack, 1991). Subsequent studies have yielded inconsistent findings. For example, Dumka and Roosa (1993) found no direct associations between husbands' or wives' problem drinking and wives' marital satisfaction. By contrast, Noel et al. (1991) reported that female alcoholics and their husbands reported *higher* marital satisfaction than a sample of male alcoholics and their wives.

Marital Interaction as a Mediator of the Effects of Alcoholism on Marital Satisfaction

Why might AUD have an association with marital satisfaction? In an extensive review of theory and research on the longitudinal course of marital quality and stability, Karney and Bradbury (1995) advanced a Vulnerability-Stress-Adaptation Model (VSAM) of marriage. The VSAM includes three broad classes of variables: 1) *enduring vulnerabilities* (stable personal characteristics, such as lifetime AUD); 2) *stressful events* (acute and chronic stressors that couples face, such as financial strain); and 3) *adaptive processes* (the behaviors that spouses exchange, e.g., marital interactions that involve problem-solving or provision of social support). According to the VSAM, enduring vulnerabilities and stressful events may have independent effects on marital satisfaction, and these effects are mediated by marital interactions. As noted by Karney and Bradbury (1995, p. 23), the hypothesized mediational role of marital interaction is based on the idea that "any variable that affects a close relationship can do so only through its influence on ongoing interaction."

Longitudinal research on NALC couples has supported the hypothesis that marital interactions mediate the effects of enduring vulnerabilities and stress on negative marital outcomes. For example, Conger, Reuter, and Elder's (1999) family stress model proposes that the effects of economic pressure on marital distress are mediated by negative marital interactions. A sample of over 400 married couples for 3 years provided self-reports of economic pressure and marital distress, and also completed a 25-min marital interaction task. Results showed that the effects of economic pressure at T1 on martial distress at T3 were mediated by marital conflict behaviors observed at T2. More recently, Story, Karney, Lawrence, and Bradbury (2004) followed a sample of 60 newlywed couples for 4 years and showed that the effect of negativity in the husband's family of origin on poor marital outcomes 4 years later among newlywed couples was mediated by couples' negative interactions (based on ratings of husband's and wife's anger and contempt during an audiotaped 15-min marital problem-solving task).

Research on ALC couples has also focused on marital interaction as a mediating variable (Testa, 2004). For example, Leonard's (1993) heuristic model of alcohol use and marital aggression suggested the hypothesis that the effects of distal factors on marital aggression are mediated by aversive marital interactions (also see Leonard & Senchak, 1996; Quigley & Leonard, 2000). Heyman, O'Leary, and Jouriles (1995) elaborated this *marital mediational model* and hypothesized that alcohol abuse predicts higher levels of marital conflict, which in turn increases the risk for marital dissatisfaction, marital aggression, and marital dissolution. Yet, to our knowledge, the mediational effects of marital interaction on marital outcomes have not been tested in ALC couples (cf. Marshal, 2003). Generally, the available evidence from behavioral observation studies indicates that alcoholic couples initiate fewer problem-solving behaviors than NALC couples (Floyd et al., 2006; Jacob, Ritchey, Cvitkovic, & Blane, 1981; for a review, see Marshal, 2003). Accordingly, we advance the hypothesis that the effects of AUD on dyadic adjustment will be mediated by marital interaction.

The Present Study

As already noted, the available evidence indicates negative associations between AUD and marital adjustment, and research on nonalcoholic couples suggests that these associations may be mediated by marital interactions. However, to our knowledge these associations have not been tested using longitudinal designs. Further, the hypothesized mediational role of marital interactions has not yet been tested. In addition, the extent to which these associations hold for the alcoholic proband, the spouse, or both remains unclear (e.g., Zweben, 1986). The present study was designed to address these gaps in our knowledge by 1) examining the associations between AUD and marital quality over a relatively long span of time; 2) using a conceptual model that emphasizes the mediating role of marital interactions, and 3) simultaneously examining the associations between AUDs and marital quality for both partners using the Actor-Partner Independence Model (APIM; Kenny, Kashy, & Cook, 2006). Based on previous research and theory, we tested the following hypotheses:

H1: Husbands' and wives' lifetime AUD will have a negative association with their own and their spouse's P/N ratio 3 years later at T2;

H2: Husbands' and wives' AUD will have a negative association with their own and their spouse's marital satisfaction 9 years later at T4;

H3: The negative effects of husbands' and wives' AUDs on their own and their spouse's marital satisfaction 9 years later at T4 will be mediated by their own and their spouse's P/N ratio at T2.

Method

Participants

This research is based on the ongoing Michigan Longitudinal Study (Zucker et al., 2000), a prospective study that is following a community sample of initially intact families with high levels of substance use/abuse, along with a community contrast sample of families drawn from the same neighborhoods, but without the high substance abuse profile. The long term focus of the project is the emergence and development of substance abuse and problems in the children, and the patterns of stability and change in alcohol and drug involvement among the parents.

A community-based but high alcohol-involved sample of initially intact families was recruited by identifying fathers on the basis of a drunk driving conviction with a high blood alcohol level (0.15 percent if a first conviction, 0.12 percent if not the first). Families were required to have at least one son in the 3–5 year old age range, and daughters in the 3–11 year old age range were recruited when present. Presence of fetal alcohol syndrome in the children was ruled out by study exclusionary criteria. Both biological parents were required to be living with the child at the time of recruitment, and mothers' substance use status was free to vary. A contrast/control group of families who resided in the same neighborhoods as the drunk driver families but had no substance abuse history for either parent was also recruited. A second subset of families with a father who also had an alcohol use disorder was uncovered and recruited during the community canvass for controls (Zucker et al., 2000). After initial recruitment and assessment, individuals participated in multi-session assessments every 3 years. Data collection was completed by professional staff, graduate students, and carefully trained and supervised undergraduates.

A total of 323 families completed the study protocol at T1. Three years later at T2, 138 couples completed a videotaped marital problem-solving task as part of the study protocol (see Floyd et al., 2006). Of these 138 couples, a total of 105 couples completed the Dyadic

Adjustment Scale (DAS; Spanier, 1976) at T4 (nine years after T1 and six years after T2). Attrition analyses (Menard, 1991) showed that divorce was the primary reason for attrition. Of the n=33 couples who completed T2 assessment but had missing DAS data at T4, n=24 (73%) divorced prior to DAS administration, and n=9 couples (27%) had missing DAS data with no evidence of divorce. By contrast, n=16 (15%) of those with DAS data were found to be divorced at subsequent waves of data collection. There were no significant differences between stayers and leavers on 1) husband or wife P/N ratio; 2) husband or wife AUD; 2) husband or wife current age; 3) husband or wife age at marriage; 4) husband or wife education level; 5) husband or wife yearly income; 6) years married; or 7) number of children. With respect to divorce, we found that wife's age at marriage was somewhat younger among those who subsequently divorced (M=21.8) compared to those who did not (M=23.0), though this difference only approached statistical significance, $t(120)=1.8$, $p = .07$. Husband and wife lifetime alcoholism and husband and wife marital behaviors were not correlated with divorce.

The current research focuses on the n=105 couples who had data on the DAS[1]. At T1, husbands had a mean age of 33.1 years (SD = 5.0) and had an average of 13.7 years (SD=2.0) of education. Their wives had a mean age of 31.0 years (SD=4.4) and had an average of 13.4 years (SD=2.0) of education. These couples had been married for an average of 8.3 years (SD=3.6), and typically had two or three children (range = 1–5).

Measures

Husband and Wife Lifetime Alcohol Use Disorder (AUD)—We used several measures to assess DSM–IV lifetime alcoholism diagnosis for husbands and wives, including: 1) the Short Michigan Alcoholism Screening Test (SMAST; Selzer, Vinokur, & van Rooijen, 1975), a 13-item screening inventory that assesses alcohol problems. The SMAST has good internal consistency, test–retest reliability, and concurrent validity (Dyson et al., 1998). 2) The Drinking and Drug History Questionnaire (DDH; Zucker, 1991), which contains items on alcohol and other drug use from the American Drinking Practices Survey (Cahalan, Cisin, & Crossley, 1969) and a series of 22 items on alcohol-related consequences over the past 6 months from the VA Medical Center Research Questionnaire (Schuckit, 1978). Participants responded to the latter set of items using a yes-no format and reported age of first and most recent occurrence of each problem they experienced. 3) The National Institute of Mental Health Diagnostic Interview Schedule-Version IV (DIS-IV; Robins, Helzer, Croughan, & Ratcliff, 1981), a structured diagnostic interview that queries participants about physical, alcohol- and drug-related symptoms, and other psychiatric symptoms. Evidence showed that the alcohol section of the DIS had acceptable reliability and validity (Erdman et al., 1992; Hasin, 1991). A best-estimate diagnosis (Leckman, Sholomskas, Thompson, Belanger, & Weisman, 1982) for husbands and wives was made based on data from all three measures, using the DIS data as the base supplemented by data from the SMAST and the DDH, and working under the assumption that a symptom was probably present even if admitted from only one source. Two independent raters diagnosed a series of 26 protocols, and agreement as evaluated by kappa was .81, indicating acceptable reliability.

Husband and Wife Marital Adjustment—At T4, husbands and wives completed the 32-item Dyadic Adjustment Scale (DAS; Spanier, 1976). The DAS measures marital adjustment, defined by Spanier (1976, p. 17) as "a process of movement along a continuum which can be evaluated in terms of proximity to good or poor adjustment." Spanier (1976) developed a pool of approximately 300 items from previous studies of marital adjustment

[1]Floyd et al. (2006) reported on results from all 138 couples who completed the videotaped marital problem-solving task at T2.

and selected items based on content and discriminant validity. Results from a factor analysis indicated four factors: *dyadic satisfaction* (10 items), *dyadic cohesion* (5 items), *dyadic consensus* (13 items), and *affectional expression* (4 items). Following Spanier's suggestion, we used the total DAS score as an indicator of overall marital adjustment. The DAS has a theoretical range of 0–151, and items are scored so that higher scores indicate higher levels of dyadic adjustment. The subscales and the total score appear to have good psychometric properties (Carey, Spector, Lantinga, & Krauss, 1993; Eddy, Heyman, & Weiss, 1991; Kurdek, 1992).

Procedures

At T2, couples completed a marital problem-solving task at the university laboratory. We used this task as a way of engaging couples in problem solving in areas known to be critical for marital adaptation and satisfaction. After couples were given an overview of the task, each partner completed the Marital Problem Inventory, which includes a list of 10 common marital problems (e.g., money; children; communication; and so forth; taken from Knox, 1971). Partners rate the current importance of each marital problem on a scale of 0 (minor) to 5 (major) and then work together to identify the marital problem that causes the most intense disagreement between them. The most severe marital problem identified by both partners served as the topic of the marital discussion, and couples were asked to talk about for 10 min with a specific focus on 1) what the problem meant to both of them and 2) how to resolve the problem in a way that was satisfying to them. During the marital interaction task, the task administrator left the room, and couples were videotaped from behind a one-way mirror. No participants were intoxicated at the time the task was administered.

Husband and Wife Ratio of Positive to Negative Marital Behaviors—The Communication Skills Test (CST; Floyd, 2004; Floyd & Markman, 1984) was used to code all marital videotapes. The CST assesses couples' communication and problem-solving behaviors in the context of marital problem-solving interactions. The CST uses the *speech turn* (i.e., each spouse's verbal and nonverbal behaviors when he or she has the floor and the other spouse is listening) as the coding unit. Each speech turn is evaluated based on the verbal and nonverbal aspects of all marital behaviors enacted and its timing, sequence, and context. Using the CST, 40 specific verbal and nonverbal actions are classified into broader categories, which are typically used as guidelines for the assignment of ratings along a 5-point scale where *1=very negative* (e.g., put-down, blaming, off topic), *2=negative* (e.g., negative nonverbal, disruptive extraneous comment), *3=neutral* (e.g., problem talk, question, providing information), *4=positive* (e.g., empathy, agree, positive nonverbal), and *5=very positive* (e.g., solution proposal, opinion probe, accept responsibility). Evidence showed that the CST behavioral codes distinguished satisfied married couples from distressed couples, including couples with alcohol problems (e.g., Floyd, O'Farrell, & Goldberg, 1987).

Marital videotapes were coded by a professional coder supervisor and several undergraduate psychology students. All student raters completed six sessions of training with the CST manual, and when interrater reliability between each coder and the supervisor reached κ=.70, training was concluded. During the actual coding we monitored coder reliability on approximately 20% of all videotapes, and results showed that interrater reliabilities ranged from κ=.60 to .90 (average κ=.83). Because we were interested in the ratio of positive-to-negative behaviors displayed by each spouse, the very negative and negative codes were collapsed into a "total negative behaviors" category, and the very positive and positive codes were collapsed into a "total positive behaviors" category. We calculated this ratio by dividing the total number of positive behaviors by the total number of positive and negative behaviors. Scores for this P/N ratio ranged from 0 to 1.0, with scores of .50 indicated an

equal number of positive and negative behaviors, scores exceeding .5 indicated relatively more positive than negative behaviors, and scores lower than .5 indicated relatively more negative than positive behaviors.

Data Analysis

Kenny et al. (2006) outlined methods for dyadic data analysis (also see Kashy & Snyder, 1995). The current study is a *reciprocal standard dyadic design*, in that each participant was a member of only one dyad or couple, and both couple members were assessed. Kenny et al. described *between-dyads variables* (i.e., variables that differ from couple to couple, but partners in each couple have the same score); *within-dyads variables* (i.e., partners have different scores, but when averaged across partners, couples have identical average scores); and *mixed variables* (i.e., variables that vary both between and within couples). In the present study, all focal variables were mixed in nature.

Given our focus on mixed independent variables, we used the *Actor-Partner Independence Model* (APIM; Kenny et al., 2006) to test associations between husband and wife variables as described in hypotheses 1, 2, and 3. The APIM "is a model of dyadic relationships that integrates a conceptual view of interdependence in two person relationships with the appropriate statistical techniques for measuring and testing it" (Cook & Kenny, 2005, p. 101). Briefly, the APIM distinguishes between *actor effects* and *partner effects*. As described by Kenny et al. (2006, p. 145), "an actor effect occurs when a person's score on a predictor variable affects that same person's score on an outcome variable." By contrast, "a partner effect occurs when a person's score on a predictor variable affects his or her partner's score on an outcome variable." The full APIM model for this study is presented in Figure 1. We used structural equation modeling (SEM) with the Mplus computer software program (Muthen & Muthen, 2007) to estimate the parameters in this APIM.

Results

Distinguishability of Dyad Members

Gender – a within-dyads variable – was used to distinguish dyad members. Kenny et al. (2006) suggested that the hypothesis of distinguishability of dyad members should be tested empirically (also see Gonzalez & Griffin, 1999). Dyad members are indistinguishable if 1) the means for each dyad member are the same on all variables; 2) the variances of each variable are the same for each dyad member; and 3) the intrapersonal (e.g., husband-husband and wife-wife) correlations and the interpersonal correlations (i.e., husband-wife) for each pair of variables are equal. All three assumptions can be tested simultaneously using SEM with $k(k + 1)$ constraints, where k is the number of variables per dyad member. The chi-square test of model fit serves as an omnibus test of distinguishability (Gonzalez & Griffin, 1999; Kenny et al., 2006). The model was tested with the Mplus program (Muthen & Muthen, 2007), using the sample covariance matrix as input and maximum likelihood (ML) estimation. Results showed that the omnibus test of distinguishability was statistically significant, χ^2 (12) = 42.2, p <.01, thus leading to rejection of the hypothesis that dyad members were indistinguishable.

Descriptive Statistics and Correlations

Table 1 presents descriptive statistics and correlations between all study variables for 1) husbands and wives separately and 2) between husbands and wives. In this sample of 103 couples, 71 (67.6%) had a husband with a lifetime DSM–IV diagnosis of alcohol use disorder, and 39 (37.1%) had a wife with a lifetime AUD. The ratio of positive to negative behaviors was .63 (about 1.7 to 1) for husbands and .66 (about 1.9 to 1) for wives, and a correlated groups *t*-tests showed that husband and wife ratios were not significantly

different, $t(98) = -1.1$, *ns*. Husband and wife scores on the DAS were virtually identical at about 110, slightly lower than the mean of 114.8 for married participants reported in Spanier (1976) and higher than the mean of 70.7 for divorced participants reported by Spanier.

Within-spouse correlations are presented in the diagonal matrices in Table 1. Results showed that lifetime AUD, P/N ratio, and marital adjustment were not significantly correlated among husbands. Similarly, lifetime AUD and P/N ratio were not correlated among wives. However, wives lifetime AUD was negatively associated with her own marital satisfaction, and wives P/N ratio was positively associated with her own marital satisfaction.

Assessment of Nonindependence

Following Kenny et al.'s recommendations, we first assessed the degree of nonindependence between husband and wife variables (Kenny, 1996). Kenny et al. (2006) indicated that nonindependence in distinguishable dyads can be assessed with correlational analyses. Correlations between husband and wife variables are presented in the off-diagonal in Table 1. Bolded coefficients in the diagonal of the off-diagonal matrix indicate the degree of nonindependence between husbands' and wives' scores on the same variables (Kenny et al.). For all variables, there were positive and significant associations between husband's and wife's lifetime AUD, P/N ratio, and marital satisfaction (see Kenny et al. for a discussion of assortative mating, common fate, partner effects, and mutual influence as sources of nonindependence). Correlations were in the moderate-to large range (Cohen, 1992), and those above .45 are indicative of *consequential nonindependence* (Kenny et al.). Other husband-wife correlations were generally small in magnitude, and only the positive correlation between wife's P/N ratio and husband's marital satisfaction was significant.

Estimation of APIM

The full APIM model for this study is presented in Figure 1. There are six actor effects: 1) the effect of husbands' lifetime AUD on his P/N ratio at T2, 2) the effect of husbands' lifetime AUD on his marital adjustment at T4, 3) the effect of husbands' P/N ratio at T2 on his marital adjustment at T4, 4) the effect of wives' lifetime AUD on her P/N ratio at T2, 5) the effect of wives' lifetime AUD on her marital adjustment at T4, and 6) the effect of wives' P/N ratio at T2 on her marital adjustment at T4. There are also six partner effects: 1) the effect of husbands' lifetime AUD on wives' P/N ratio at T2, 2) the effect of husbands' lifetime AUD on wives' marital adjustment at T4, 3) the effect of husbands' P/N ratio at T2 on wives' marital adjustment at T4, 4) the effect of wives' lifetime AUD on husbands' P/N ratio at T2, 5) the effect of wives' lifetime AUD on husbands' marital adjustment at T4, and 6) the effect of wives' P/N ratio at T2 on husbands' marital adjustment at T4. Finally, there are three correlations in the model; 1) the correlation between husbands' and wives' lifetime AUD; 2) the correlation between husbands' and wives' residualized P/N ratio; and 3) the correlation between husbands' and wives' residualized marital adjustment.

We then used SEM to estimate the APIM in Figure 1 and to test hypotheses 1, 2, and 3, using the sample covariance matrix as input ML estimation. Results from SEM analysis of the APIM are presented in Figure 3. The model is just-identified with no degrees of freedom and thus no test of model fit can be calculated. Results showed that husbands' lifetime AUD was not associated with his own P/N ratio or with his own or his wife's marital adjustment. However, husbands' AUD was negatively associated with his wife's P/N ratio three years later. By contrast, wives' AUD was not related to her own or her husband's P/N ratio, but was negatively associated with her own and her husband's marital adjustment 9 years later. In addition, wives' P/N ratio was positively associated with her own and her husband's marital adjustment 9 years later.

Taken as a whole, results were 1) generally not supportive of hypothesis 1 (with the exception of the negative association between husbands' AUD and wives' P/N ratio); and 2) consistent with hypothesis 2 for wives but not husbands. Recall that hypothesis 3 predicted that the negative effects of husbands' and wives' AUDs on their own and their spouse's marital adjustment at T4 would be mediated by their own and their spouse's P/N ratio at T2. Results suggested that the effect of husbands' AUD on their own and their wives' marital adjustment might be mediated by wives' P/N ratio. However, contrary to hypothesis 3, both indirect effects were statistically nonsignificant (*z*s = −1.3 and −1.4, respectively).

Discussion

The purpose of this research was to test three hypotheses about the associations between AUD, marital interaction, and marital adjustment over a relatively long span of time. We used a conceptual model that emphasizes the mediating role of marital interactions, and simultaneously examined the associations between AUDs and marital quality for both partners using the Actor-Partner Independence Model (APIM; Kenney et al., 2006). As noted earlier, we tested six actor effects (three for husbands, three for wives) and six partner effects (three for husbands, three for wives). We observed two significant actor effects (both for wives) and two significant partner effects (one for husbands and one for wives). In this sample of alcoholic couples, the associations between lifetime AUD, marital interaction and marital adjustment were more robust for wives than husbands. Results bearing on each hypothesis are discussed in turn.

Hypothesis 1 predicted that both husbands' and wives' lifetime AUD would have a negative association with their own and their spouse's P/N ratio 3 years later at T2. However, only one of the four tests of hypothesis 1 was supportive (i.e., the negative relationship between husbands' lifetime AUD and wives' P/N ratio). This finding is partially consistent with results reported by Noel et al. (1991), who found that male alcoholics showed more negative nonverbal behavior to their spouses compared to female alcoholics. Although we did not observe a gender difference in P/N ratios, our results suggest that the effects of AUD on marital interactions may be limited to husbands' AUD and wives' behaviors. Past research showed that, generally, ALC couples initiate fewer positive and problem solving behaviors and more negative behaviors during a marital interaction task (e.g., Jacob et al., 1981; for a review, see Marshal, 2003). However, such effects are not always observed (e.g., Becker & Miller, 1976). The current results highlight the importance of simultaneously testing the effects of husbands' and wives' AUDs on their own and their spouse's marital interactions.

Hypothesis 2 predicted that husbands' and wives' AUD would have a negative association with their own and their spouse's marital satisfaction 9 years later at T4. This hypothesis was supported for wives but not for husbands. The lack of association between husbands' AUD and his own and his wife's marital satisfaction is not consistent with some previous research (Jacob & Leonard, 1992; O'Farrell & Birchler, 1987). However, this result is partially consistent with those reported by Zweben (1986), who collected data over one year from n=87 couples (83% males) seeking treatment for alcohol problems. Zweben reported that correlations between alcoholics' heavy drinking days and their own DAS scores were "low or nonsignificant." By contrast, Jacob et al. classified 27 male alcoholics as "binge" versus "steady" drinkers based on quantity and frequency of alcohol consumption over the past 30 days. Results showed that husbands' alcohol consumption was *positively* related to their own and their wives' marital satisfaction for "steady" drinkers but was generally *negative and nonsignificant* among "binge" drinkers (cf. Kahler, McCrady, & Epstein, 2003). Jacob et al. noted that this pattern of results was consistent with the hypothesis that alcohol consumption may have adaptive consequences for marital and family interactions (Steinglass, 1981). Finally, with few exceptions (e.g., Dunn, Jacob, Hummon, & Seilhamer,

1987), most research on AUDs and marital satisfaction has used cross-sectional designs that focused on between-couple differences in marital satisfaction. The current results indicate that husband's AUD is not associated with their own or their wives' marital satisfaction over a relatively long time interval.

In sharp contrast to the null effects for husbands, results showed that wives' P/N ratio and lifetime AUD independently predicted lower levels of both her own and her husband's marital satisfaction 9 years later. Findings are partially consistent with those of McLeod (1993), who found that wives (but not husbands) past 12-month alcohol dependence was associated with lower MS for the wife; by contrast, husbands' MS did not vary by his own or his wife's past 12-month alcohol dependence. 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 no association between husbands' heavy drinking and subsequent marital satisfaction was observed.

The current results indicate that wives' but not husbands' AUD and marital behavior predict her own and also her husband's marital adjustment. Contrary to hypothesis 3, there was no evidence that the effects of wives' AUD were mediated by her own or her husband's P/N ratio. Rather, wives' AUD and P/N ratio were independent predictors. Is this pattern of associations indicative of unique aspects of wives' AUD and marital interactions that influence the couple's marital adjustment? A study by Olenick and Chalmers (1991) found that ALC women were more likely to consume alcohol following marital conflict than ALC men; this gender difference was not observed in a sample of NALC women and men. Previous work showed that levels of marital stress are higher among problem-drinking women compared to problem-drinking men (e.g., Brennan & Moos, 1990). To the extent that married ALC women have greater reactivity to marital conflict than ALC men, this may be one reason for the negative effects of wives' AUD and P/N ratio on their own and their husband's marital satisfaction (cf. Noel et al., 1991; see Lemke, Schutte, Brennan, & Moos, 2008 for conflicting evidence on reactivity). More generally, findings are consistent with negative developmental cascade models of psychopathology (Masten et al., 2005) in showing independent effects of wives' AUD and marital behavior on her own and her husband's marital adjustment.

Limitations and Contributions of the Present Study

This study had several limitations. First, the behavioral observation data were obtained from a subset of couples who were participating in the larger study. Second, couples in this study were diverse with respect to number of marriages and length of marriage. Although we statistically controlled for these variables in our analysis, it is likely that patterns of marital interaction differ across stages of the marital career (cf. Bradbury & Karney, 2004). Third, like most other behavioral observation studies of marital interaction, we focused on behaviors enacted during the course of a marital problem-solving task. This focus is based on the premise that marital problem-solving behaviors are important for subsequent marital outcomes. However, other domains of marital interaction (e.g., the provision of social support; Pasch & Bradbury, 1998) are also important to consider (Heyman, 2001). Fourth, although the study used a longitudinal design, we did not begin assessing marital adjustment until study wave four, which precluded examination of changes in marital adjustment over time. Also, while longitudinal research can potentially advance understanding of AUDs and marital processes, the time course of these effects is unknown. As Fincham et al. (1997, p. 356) noted in their longitudinal study of depression and marital satisfaction, "the appropriate time frame within which to observe causal effects between marital satisfaction and depression is not known." The same holds true for the associations between AUD, marital interaction, and marital adjustment.

The current study also has several notable strengths. The Michigan Longitudinal Study is unique in its extensive assessment of child and family functioning over a long time span, and to our knowledge is the first to test hypotheses about the direct and mediated effects of AUDs on marital adjustment over 9 years. The use of multiple methods also minimized the influence of method variance on the observed associations (see Lorenz, Conger, Simon, Whitbeck, & Elder, 1991). In addition, the assessment of both partners allowed us to test our hypotheses within a well-established theoretical model (i.e., the VAS) using a conceptual and statistical framework that models the inherent interdependence within couples (i.e., the APIM). Finally, results from the present study are consistent with previous evidence reported by our group showing that wives' AUD is negatively associated with their husband's recovery from AUD (McAweeney, Zucker, Fitzgerald, Puttler, & Wong, 2003).

Future Directions

This study suggests several directions direction for further work. First, the current study focused on the marital dyad. Other models have emphasized the importance of stable personality variables (e.g., Zucker & Barron, 1971) and the broader family environment (e.g., Moos & Moos, 1984) for alcoholic couples, and research on marital and parent-child interactions might shed light on the family processes that are most closely connected to individual and marital outcomes. Second, previous theoretical and empirical work highlighted the importance of ethnic variation among alcoholic couples (Finney, Moos, Cronkite, & Gamble, 1983). In the current study, the sample was constricted to Caucasians by design, and future studies should examine race and ethnic differences in marital processes. Finally, a substantial body of research has documented the importance of spouse and partner behaviors for various phases of substance abuse treatment (e.g., O'Farrell & Fals-Stewart, 2006; Tracy, Kelly, & Moos, 2005) and recovery (e.g., McAweeny et al., 2003). The current results indicate that wives' behaviors may be particularly important for subsequent outcomes, and future work should attempt to replicate this finding and identify those behaviors that may be particularly problematic.

Summary and Conclusions

In conclusion, the current study tested hypotheses about the longitudinal association between husbands' and wives' AUD, martial interactions, and marital adjustment. Husbands' AUD predicted a lower P/N ratio among wives 3 years later but was not associated with their own marital behavior or with their own or their wives' marital adjustment 9 years later. By contrast, wives' AUD and P/N ratio were independently association with their own and their husbands' marital adjustment. These findings suggest that marital adjustment in alcoholic couples may be driven more by the wives' than the husbands' AUD and marital behaviors. More generally, the current study highlights the importance of assessing both partners over time to better understand the effects of AUDs on marriage.

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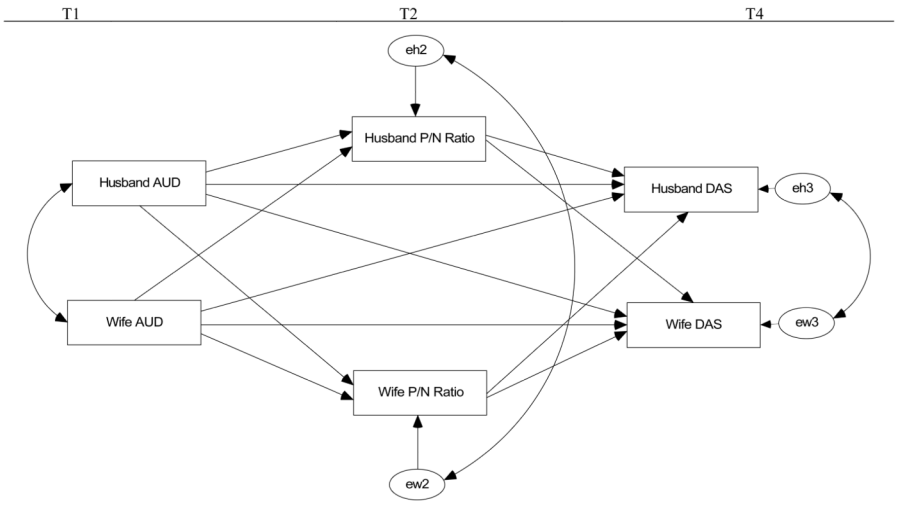

Figure 1. Actor-Partner Independence Model of Husbands' and Wives' Lifetime AUD, Ratio of Positive to Negative Behaviors, and Marital Adjustment (N=105 couples)

Note. eh2 = residual for husband P/N ratio, ew2 = residual for wife P/N ratio, eh3 = residual for husband DAS, ew3 = residual for wife DAS.

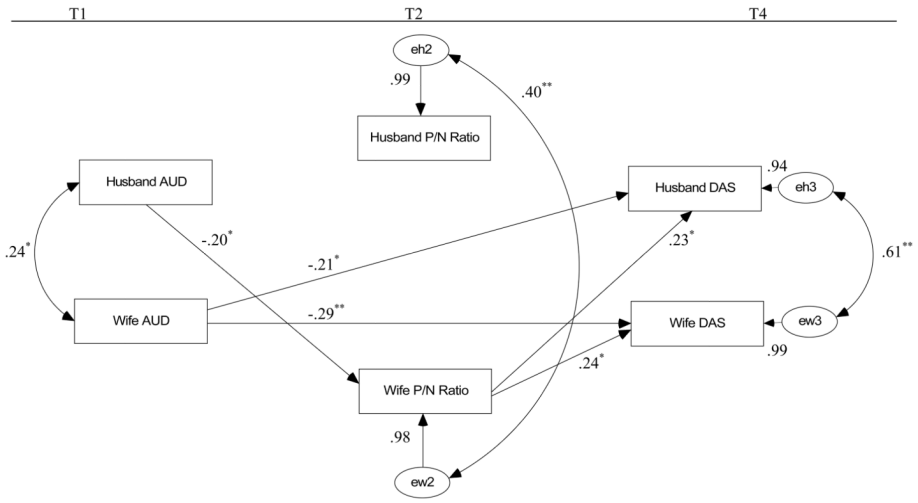

Figure 2. Parameter Estimates for Actor-Partner Independence Model of Husbands' and Wives' Lifetime AUD, Ratio of Positive to Negative Behaviors, and Marital Adjustment (N=105 couples)

Note. eh2 = residual for husband P/N ratio, ew2 = residual for wife P/N ratio, eh3 = residual for husband DAS, ew3 = residual for wife DAS. Coefficients are standardized parameter estimates.

Table 1

Zero-Order Correlations and Descriptive Statistics for Husbands' and Wives' T1, T2, and T4 Variables (N = 105 Couples)

Variable	H1.	H2.	H3.	W1.	W2.	W3.
H1. T1 H's Lifetime AUD	--					
H2. T2 H's P/N Ratio	−.02	--				
H3. T4 H's Dyadic Adjustment	−.02	.06	--			
W1. T1 W's Lifetime AUD	**.20***	.10	−.18^{a}	--		
W2. T2 W's P/N Ratio	−.17^{a}	**.40****	.20*	.06	--	
W3. T4 W's Marital Satisfaction	−.15	.15	**.71****	−.28**	.26**	--
M	.68	.63	109.7	.37	.66	109.7
SD	.47	.29	18.4	.49	.30	18.7

Note. Bolded coefficients test the hypothesis that husbands' and wives' scores on the same variables are independent (Kenny et al., 2006). P/N = ratio of positive to negative behaviors. Means for dichotomous variables are proportions, correlations between dichotomous variables are kappa coefficients, and correlations between dichotomous and continuous variables are point-biserial coefficients.

^{a} p<.10.

* p < .05.

** p < .01.