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THE RELATIONSHIP OF ALCOHOL PROBLEMS TO RISK FOR UNIDIRECTIONAL AND BIDIRECTIONAL INTIMATE PARTNER VIOLENCE AMONG A SAMPLE OF BLUE-COLLAR COUPLES

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Abstract

Understanding how each partner's alcohol problems may contribute to the risk of male-to-female only, female-to-male only, or bidirectional partner violence is important for prevention and treatment of these problems. Multinomial regression analysis was conducted using data from 848 blue-collar couples. Findings suggest that male alcohol problems are linked with male-to-female and bidirectional partner violence, but not to female-to-male partner violence. Female alcohol problems do not appear to be related to any type of partner aggression. Each partner's level of impulsivity was associated with bidirectional partner violence. Male impulsivity was associated with male-to-female violence, and female impulsivity was associated with female-to-male violence. Prevention of male alcohol problems and promotion of non-confrontational conflict solving techniques may help reduce partner aggression among couples in the general household population.

Keywords

Intimate partner violence; alcohol problems; impulsivity; childhood maltreatment

A considerable body of research has established that couples in which the male partner engages in heavy drinking are more likely to experience male-to-female intimate partner violence (IPV) compared to couples in which the male partner is not a heavy drinker (Klosternann & Fals-Stewart, 2006; Leonard, 2005). Research evidence is mixed, however, concerning the role of the female partner's heavy drinking. For example, in a longitudinal study of IPV among newly married couples, wives' alcohol problems were not predictive of husband's aggression, nor were they associated with wife-to-husband aggression (Schumacher, Homish, Leonard, Quigley, & Kearns-Bodkin, 2008). On the other hand, results of a path analysis based on a national sample of white, black, and Hispanic married/cohabiting couples showed that men's and women's alcohol problems were related to each partner's reports of aggression for all 3 racial/ethnic groups, but the magnitude of the association differed as a function of the couple's race/ethnicity (Schafer, Caetano, & Cunradi, 2004).

Most partner violence research has focused on the male's drinking in relation to male-to-female partner violence (MFPV), yet among couples that report any past-year partner violence in the general household population, approximately half report both MFPV and female-to-male partner violence (FMPV) (Caetano, Ramisetty-Mikler, & Field, 2005; Kwong, Bartholomew, & Dutton, 1999; Straus & Douglas, 2004). Among married enlisted U.S. Army soldiers over a 4-year period, approximately 42% of IPV victims reported

bidirectional or mutual abuse, and 58% were victims of non-mutual abuse (McCarroll, Ursano, Fan, & Newby, 2004). Despite the prevalence of bidirectional partner violence, relatively few studies have investigated how drinking problems and other risk factors may be differentially associated with these manifestations of partner violence. Understanding how each partner's alcohol problems and other characteristics may contribute to the risk of male-to-female only, female-to-male only, or bidirectional partner violence is important for prevention and treatment of these problems. Moreover, Caetano and colleagues (Caetano et al., 2005) suggest that there may be important qualitative differences between unidirectional partner violence and bidirectional partner violence. It is therefore reasonable to hypothesize that the factors associated with each type of IPV may differ from each other.

The current study explores these issues using survey data collected from an occupational sample of unionized construction workers and their cohabiting partners and spouses. Previous analysis of the sample revealed that approximately 20% of the couples reported past-year MFPV, and 24% reported past-year FMPV. The overwhelming majority of these behaviors consisted of 'moderate' IPV (e.g., pushing, shoving, grabbing; (Cunradi, Bersamin, & Ames, 2009). Couples in which the male partner was categorized as a problem drinker were significantly more likely to report past-year MFPV compared to couples in which the male partner was not categorized as a problems drinker. Couples in which the female partner was categorized as a problem drinker were not at greater risk for MFPV or FMPV compared to couples in which the female partner was not categorized as a problem drinker. In addition, the male partner's problem drinking was not associated with increased risk for FMPV (Cunradi, Todd, Duke, & Ames, 2009). The current study will extend this work by (1) assessing the prevalence of MFPV-only, FMPV-only and mutual or bidirectional IPV among the sample's couples, and (2) analyzing how each partner's alcohol problems, and other sociodemographic and psychosocial factors, may be differentially related to risk for unidirectional and bidirectional IPV.

METHODS

Sample and Data Collection

This mixed methods study (i.e., survey and ethnography) was carried out with the cooperation of a large union representing 35,000 construction industry workers in Northern California. The goal of the survey was to obtain separate, confidential telephone interviews on work, job stress, IPV and drinking with 1,000 married/cohabiting union workers and their spouses or cohabiting partners (i.e., 1,000 couples). Results of the ethnographic component will be reported elsewhere. The study protocol for the protection of human subjects was approved by the Institutional Review Board of Pacific Institute for Research and Evaluation. Survey data collection was conducted from August 2006 through January 2007. On average, telephone interviews lasted 30 minutes, and each respondent was mailed a \$25.00 check for participating in the study. For a detailed description of the study data collection protocol and participant recruitment, see Cunradi et al. (Cunradi et al., 2009)

Study eligibility requirements for workers were: (1) membership in the construction industry union; (2) currently married or cohabiting with the same partner for at least 12 months; and (3) physically and mentally able to complete a telephone interview in English or Spanish. Fully trained professional bilingual survey interviewers completed telephone interviews with 1,088 workers (53.4% response rate). The research protocol required that initial contact be made with the union member, and that the worker's permission be obtained to contact their spouse/partner by telephone. Informed consent was obtained from each participant, and the voluntary, confidential nature of the study was emphasized.

Of 1,088 workers who completed the interview, 95.6% gave their consent for their spouse/partners to be contacted. A total of 927 spouses/partners completed the telephone survey interview. The final sample consisted of 927 married/cohabiting couples, and an additional 161 workers who lacked collateral reports from their spouse/partner. Because the current study focuses on the contribution of the male construction worker's unemployment to the occurrence of MFPV and FMPV within the dyad, 30 same-sex couples, and 49 couples composed of female construction workers and male spouses/partners, were excluded from the study. The analyses herein are limited to 848 couples comprising male construction workers and female spouses/partners.

Measures

Intimate Partner Violence—Past-12 month IPV was measured with the physical assault subscale of the revised Conflict Tactics Scales (CTS2). Straus and colleagues (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) reported the internal consistency reliability (α) for this subscale was .86. The subscale asks about the occurrence of 12 behaviors that the respondent may have perpetrated against their spouse/partner, and that their spouse/partner may have perpetrated against them: (1) threw something at my partner that could hurt; (2) twisted my partner's arm or hair; (3) pushed or shoved my partner; (4) grabbed my partner; (5) slapped my partner; (6) used a knife or gun on my partner; (7) punched or hit my partner with something that could hurt; (8) choked my partner; (9) slammed my partner against a wall; (10) beat up my partner; (11) burned or scalded my partner on purpose; and (12) kicked my partner. Separate variables were created for MFPV and FMPV. Violence was considered to have occurred if at least one partner reported a violent incident in the past year, regardless of whether the incident was corroborated by the other partner. Thus, if either partner reported occurrence of a violent incident, the partner violence variable (MFPV or FMPV, depending on the gender of the perpetrator) was coded "1;" if neither reported an incident, the variable was coded '0.' This method allows for the correction of under-reporting of violence common in one partner data (Caetano, Cunradi, Schafer, & Clark, 2000). Previous analysis among the study's couples showed that among those in which at least one partner reported any MFPV, or any FMPV, less than one third of the couples agreed about the occurrence of the event (Cunradi et al., 2009). Four mutually exclusive categories were then created: MFPV only, FMPV only, and bidirectional partner violence, which was coded positively if the couple experienced both MFPV and FMPV in the previous year; the reference group was those couples who reported no violence.

Alcohol Problems—Alcohol problems were assessed with the Alcohol Use Disorders Identification Test (AUDIT), a 10-item screener developed by the World Health Organization to identify persons whose alcohol use may have become harmful to their health (Saunders, Aaland, Babor, De La Fuente, & Grant, 1993). A score was calculated for each respondent, based on AUDIT guidelines (WHO, 2001), to represent the extent of alcohol problems reported by the respondent. Scores are continuous and may range from 0 to 40.

Sociodemographic Characteristics—These factors were each partner's age, race/ethnicity and highest level of education. Self-reported respondent race/ethnicity (Native American or Alaska Native; Filipino; Asian; Black or African American; Latino or Hispanic; Native Hawaiian or other Pacific Islander; White or Caucasian; or Other) was re-categorized as white or Caucasian, Latino or Hispanic, Black or African American, and other. Education was categorized as some high school, high school graduate, some college, and college graduate.

Psychosocial Factors—Impulsivity was measured with a set of questions that have been used in previous national alcohol surveys (Caetano et al., 2000). Respondents were asked,

“How well do the following statements describe you? Would you say that this describes you quite a lot, some, a little, or not at all? (1) I often act on the spur-of-the-moment without stopping to think; (2) You might say I act impulsively; (3) Many of my actions seem to be hasty.” Reliability (Cronbach's α) of this measure was 0.79. Childhood exposure to violence, alcoholism, and other adverse conditions was measured with a modified version of the Adverse Childhood Experiences (ACE) scale (Felitti et al., 1998). The modified ACE (Cabrera, Hoge, Bliese, Castro, & Messer, 2007) asks about 6 categories of adverse experiences the respondent may have experienced while they were growing up as a child. As noted, two categories are scored dichotomously; four categories are scored on a 5-point scale (never; once or twice; sometimes; often; very often), with responses in parentheses scored as ‘exposed’. Those responding ‘don't know’ to a category are coded as not exposed. The categories are: (1) parent/caregiver-perpetrated physical abuse (often or very often), (2) psychological abuse (often or very often) or (3) sexual abuse (ever); (4) alcoholism or problem drinking by a household member (yes/no); (5) depression or mental illness of a household member (yes/no); and (6) domestic violence toward mother or caregiver (sometimes, often, or very often). Respondents are defined as exposed to a category if they responded affirmatively to the question in that category. A scale of exposure to adverse childhood experiences, ranging from 0 – 6, was created by summing the number of positive responses to each of the six categories. Reliability (Cronbach's α) of this measure was 0.70.

Analytic Strategy

Descriptive statistics (proportions for categorical variables; means and standard deviations for continuous variables) were calculated for the sample's characteristics. Prevalence of unidirectional and bidirectional partner violence was calculated as the percentage of couples who reported only MFPV, only FMPV, both MFPV and FMPV, and no past-year partner violence. A series of multinomial regression models were developed to test associations between male and female alcohol problems by type of partner violence. The dependent (outcome) variable had 3 mutually exclusive categories: unidirectional MFPV, unidirectional FMPV, bidirectional violence (i.e., MFPV and FMPV), and the reference category, no violence. The first model contains unadjusted associations between each partner's alcohol problems and the outcomes. The second model includes these associations, and is adjusted for each partner's sociodemographic characteristics (i.e., age, race/ethnicity, education), and the third model contains the associations between each partner's alcohol problems and the outcomes, and is adjusted for both sociodemographic and psychosocial factors (i.e., impulsivity, adverse childhood experiences).

RESULTS

Sample characteristics are shown in Table 1. Most respondents had completed high school, although on average, a greater proportion of women than men had completed college. About half of all respondents reported their race/ethnicity as white; approximately one third stated that they were Hispanic or Latino(a). About 10% of respondents reported their race/ethnicity as black, multi-ethnic, Asian American, or Native American. Mean age of male respondents was 40.4 years, and 38.7 years for female respondents. Mean ACE score was 0.89 for men, and 1.12 for women. Mean impulsivity score for men was 1.79, and for women was 1.62. Men had higher AUDIT scores than women (3.72 vs. 1.55).

In terms of IPV prevalence (Table 2), most couples (70.4%) reported no past-year physical aggression, and nearly 30% reported some partner physical aggression: 52 couples reported only MFPV (6.1%), 79 couples reported only FMPV (9.3%), and 120 couples reported bidirectional violence (14.2%).

Results of the multinomial regression analysis are shown in Table 3. Model 1 results show that the male partner's alcohol problems are positively associated with unidirectional MFPV (Odds Ratio [OR] = 1.13) and bidirectional partner violence (OR = 1.12), but not with risk for unidirectional FMPV. The female's partner's alcohol problems do not appear to be related to unidirectional MFPV or FMPV, or to bidirectional partner violence. These findings on male and female alcohol problems drinking remain essentially unchanged in the Model 2 results, which also show that the male's age is inversely related to risk for unidirectional FMPV (OR = 0.94) and for bidirectional partner violence (OR = 0.95).

In Model 3, the results of the final model show that the male partner's alcohol problems remain associated with increased risk for unidirectional MFPV (OR = 1.12). Other risk factors for unidirectional MFPV were the female partner's adverse childhood experiences (OR = 1.34), and the male's level of impulsivity (OR = 1.60). For couples reporting unidirectional FMPV, the final model showed that older male age remained a protective factor (OR = 0.95), and female impulsivity level was a risk factor (OR = 1.52). Regarding bidirectional partner violence, the male's alcohol problems remained a significant risk factor (OR = 1.11). In addition, couples in which the female reported her race/ethnicity as Hispanic were at increased risk (OR = 2.08) compared to couples in which the female reported her race/ethnicity as white. Male adverse childhood experiences (OR = 1.21) and male and female impulsivity (OR_{male} = 1.85; OR_{female} = 1.79) were all positively related to risk for bidirectional partner violence.

DISCUSSION

Study results on the prevalence of unidirectional and bidirectional IPV are in accord with previous findings (e.g., Caetano et al., 2005; Straus & Douglas, 2004). Among the sample's couples who reported any past-year IPV, about half reported bidirectional violence, with smaller proportions reporting unidirectional MFPV or unidirectional FMPV. This suggests that bidirectional IPV accounts for a significant proportion of IPV events among couples in the general household population. From a research standpoint, studies of IPV should include questions about IPV perpetration and victimization. Although direct reports from both partners may not always be possible to obtain, information about perpetration and victimization can be solicited from one partner of the couple in order to estimate the prevalence of unidirectional and bidirectional IPV.

Regarding the role of each partner's alcohol problems, these findings showed that the male's alcohol problems are associated with unidirectional MFPV and bidirectional IPV, but not unidirectional FMPV. Interestingly, the female's alcohol problems do not appear to be a salient factor for any type of partner aggression among the couples in this sample. In contrast, Caetano et al. (Caetano et al., 2005) found that both the male's and the female's alcohol problems were associated with bidirectional IPV among a national sample of white, black, and Hispanic couples. Additionally, their findings showed that the female's alcohol problems (but not the male's) were associated with risk for unidirectional FMPV, and neither partner's alcohol problems were related to risk for unidirectional MFPV. While methodological differences between the current study and the Caetano et al. study (e.g., sampling frame; measurement of alcohol problems) may help explain some of the dissimilarities in findings, further research is needed to clarify the role of alcohol problems in relation to unidirectional and bidirectional IPV, especially among higher-risk populations such as younger couples and some racial/ethnic minorities. It should also be noted that the level of alcohol problems as measured by the AUDIT were relatively low in this sample. For example, the mean AUDIT score was 3.72 for men, and 1.55 for women. In contrast, among a sample of men and women arrested for domestic violence, mean AUDIT score was 7.91 for men and 8.32 for women; perpetrator reports of their partner's alcohol problems resulted

in a mean AUDIT score of 6.10 for male partners, and 9.53 for female partners (Stuart et al., 2006).

In terms of psychosocial factors, our findings indicate that each partner's level of impulsivity and childhood adverse experiences are differentially linked to risk for unidirectional IPV and bidirectional partner IPV. Specifically, the female's adverse childhood experiences and the male's impulsivity were associated with risk for unidirectional MFPV. For unidirectional FMPV, the female's impulsivity was the only significant risk factor; the male's age was inversely linked with FMPV risk. For bidirectional IPV, each partner's impulsivity level and the male partner's adverse childhood experiences and were significant, positive risk factors. These results are in accord with findings reported from the Adverse Childhood Experiences (ACE) study, an epidemiologic study among over 17,000 adult HMO members that investigated the relationship between cumulative adverse childhood experiences (e.g., abuse, witnessing domestic violence, serious household dysfunction) and a host of health, social and behavioral problems in adulthood (Anda et al., 2006). For example, compared to those who reported no adverse childhood experiences, men and women reporting at least one ACE were at significantly increased risk for difficulty controlling anger, and for perpetrating IPV. The authors present neurobiological evidence supporting the negative impact of childhood abuse on the amygdala, the part of the brain that plays a role in fear responses and possibly sexual and aggressive behaviors (Anda et al., 2006). Findings from the ACE study show significant relationships between ACE score and sexual behaviors (i.e., early intercourse, promiscuity, and sexual dissatisfaction), poor anger control, and risk for perpetrating IPV, and there appears to be a dose-response relationship with these problem outcomes (Anda et al., 2006).

Given this neurobiological evidence, along with research findings linking adverse childhood experiences with increased risk for adult alcohol abuse (Dube, Anda, Felitti, Edwards, & Croft, 2002), binge drinking (Timko, Sutkowi, Pavao, & Kimerling, 2008), and lifetime alcohol dependence (Pilowsky, Keyes, & Hasin, 2009) it is important from a prevention standpoint to consider the interrelationship of adverse childhood experiences, impulsivity, alcohol problems, and IPV. Results of a multiple-group path analysis, based on a national sample of married/cohabiting white, black, and Hispanic couples, showed that childhood physical abuse was related to impulsivity, alcohol problems, and risk for MFPV and FMPV, although the strength of the associations varied as a function of race/ethnicity (Schafer et al., 2004). This implies that preventing the occurrence of adverse childhood experiences would significantly reduce a host of health and behavioral problems, including IPV, in adulthood. Meanwhile, health care providers and treatment personnel should screen clients for adverse childhood experiences in order to more effectively address the comorbid problems and conditions that have their origins in childhood abuse and family dysfunction (Anda et al., 2006; Felitti et al., 1998)

This study has a number of strengths and limitations. Regarding limitations, the cross-sectional study design does not allow us to assess temporality, nor can causal inferences be made. It is plausible that drinking problems may give rise to increased levels of couple conflict and thereafter partner aggression. Longitudinal study designs and diary data collection methods are needed to more precisely determine how problem drinking helps to fuel negative interactions that may result in IPV. Moreover, psychological aggression which is linked to risk for physical aggression (Frye & Karney, 2006) was not measured in the current study due to time constraints, nor were other potentially mediating or moderating variables, such as hostility and avoidance coping (Schumacher et al., 2008). Additional limitations are that the study population was obtained in one geographic location, and consisted of unionized construction workers and their spouses/partners. This may limit the ability to generalize the study findings to other locales and populations.

In terms of strengths, this study obtained separate, confidential survey interviews with both members of the couple. Each partner reported on their experience with past-year partner violence victimization and perpetration. These reports were then used to calculate a dyadic upper-bound estimate of partner violence prevalence (Cunradi et al., 2009; Schafer, Caetano, & Clark, 1998). This is important for several reasons. First, since agreement about the occurrence of marital aggression is low, using an upper-bound estimate based on dyadic reports helps to minimize underestimation of IPV. Couple data is also advantageous because direct reports from each partner on critically important factors (e.g., drinking, impulsivity, childhood maltreatment) can be used to model characteristics of both partners in relation to IPV risk.

This study further refines understandings of partner violence typologies, and attendant contribution of couple risk and protective factors. Results suggest that treatment and prevention of male problem drinking and promotion of non-confrontational conflict solving techniques may help reduce partner aggression among couples in the general household population. Additional research is needed to replicate and further explore the findings in this study with the goal of reducing partner violence in all of its manifestations.

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REFERENCES

- Anda RF, Felitti VJ, Bremner JD, Walker JD, Whitfield CL, Perry BD, et al. The enduring effects of abuse and related adverse experiences in childhood: A convergence of evidence from neurobiology and epidemiology. *European Archives of Psychiatry and Clinical Neuroscience*. 2006; 256:174–186. [PubMed: 16311898]
- Cabrera OA, Hoge CW, Bliese PD, Castro CA, Messer SC. Childhood adversity and combat as predictors of depression and post-traumatic stress in deployed troops. *American Journal of Preventive Medicine*. 2007; 33(2):77–82. [PubMed: 17673093]
- Caetano R, Cunradi CB, Schafer J, Clark CL. Intimate partner violence and drinking among white, black and Hispanic couples in the U.S. *Journal of Substance Abuse*. 2000; 11(2):123–138. [PubMed: 10989773]
- Caetano R, Ramisetty-Mikler S, Field CA. Unidirectional and bidirectional intimate partner violence among white, black, and Hispanic couples in the United States. *Violence and Victims*. 2005; 20(4): 393–405. [PubMed: 16250407]
- Cunradi CB, Bersamin M, Ames G. Agreement on intimate partner violence among a sample of blue-collar couples. *Journal of Interpersonal Violence*. 2009; 24(4):551–568. [PubMed: 18430971]
- Cunradi CB, Todd M, Duke M, Ames G. Problem drinking, unemployment, and intimate partner violence among a sample of construction industry workers and their partners. *Journal of Family Violence*. 2009; 24:63–74. [PubMed: 22096270]
- Dube SR, Anda RF, Felitti VJ, Edwards VJ, Croft JB. Adverse childhood experiences and personal alcohol abuse as an adult. *Addictive Behaviors*. 2002; 27:713–725. [PubMed: 12201379]
- Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*. 1998; 14(4):245–258. [PubMed: 9635069]
- Frye NE, Karney BR. The context of aggressive behavior in marriage: A longitudinal study of newlyweds. *Journal of Family Psychology*. 2006; 20(1):12–20. [PubMed: 16569085]

- Klostermann KC, Fals-Stewart W. Intimate partner violence and alcohol use: Exploring the role of drinking in partner violence and its implications for intervention. *Aggression and Violent Behavior*. 2006; 11:587–597.
- Kwong MI, Bartholomew K, Dutton D. Gender differences in patterns of relationship violence in Alberta. *Canadian Journal of Behavioural Science*. 1999; 31:150–160.
- Leonard KE. Alcohol and intimate partner violence: When can we say that heavy drinking is a contributing cause of violence? *Addiction*. 2005; 100:422–425. [PubMed: 15784050]
- McCarroll JE, Ursano RJ, Fan Z, Newby JH. Patterns of mutual and nonmutual spouse abuse in the U.S. Army. *Violence and Victims*. 2004; 19:453–468. [PubMed: 15726938]
- Pilowsky DJ, Keyes KM, Hasin DS. Adverse childhood events and lifetime alcohol dependence. *American Journal of Public Health*. 2009; 99(2):258–263. [PubMed: 19059847]
- Saunders J, Aaland O, Babor T, De La Fuente J, Grant M. Development of Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption - II. *Addiction*. 1993; 88:791–804. [PubMed: 8329970]
- Schafer J, Caetano R, Clark CL. Rates of intimate partner violence in the United States. *Am J Public Health*. 1998; 88(11):1702–1704. [PubMed: 9807541]
- Schafer J, Caetano R, Cunradi CB. A Path Model of Risk Factors for Intimate Partner Violence Among Couples in the United States. *Journal of Interpersonal Violence*. 2004; 19(2):127–142. [PubMed: 15005998]
- Schumacher JA, Homish GG, Leonard KE, Quigley BM, Kearns-Bodkin JN. Longitudinal moderators of the relationship between excessive drinking and intimate partner violence in the early years of marriage. *Journal of Family Psychology*. 2008; 22(6):894–904. [PubMed: 19102610]
- Straus MA, Douglas EM. A short form of the Revised Conflict Tactics Scales, and typologies for severity and mutuality. *Violence and Victims*. 2004; 19(5):507–520. [PubMed: 15844722]
- Straus MA, Hamby SL, Boney-McCoy S, Sugarman DB. The revised Conflict Tactics Scale (CYS2): Development and preliminary psychometric data. *Journal of Family Issues*. 1996; 17(3):283–316.
- Stuart GL, Meehan JC, Moore TM, Morean M, Hellmuth J, Follansbee K. Examining a conceptual framework of intimate partner violence in men and women arrested for domestic violence. *Journal of Studies on Alcohol*. 2006; 67:102–112. [PubMed: 16536134]
- Timko C, Sutkowi A, Pavao J, Kimerling R. Women's childhood and adult adverse experiences, mental health, and binge drinking: The California Women's Health Survey. *Substance Abuse Treatment, Prevention, and Policy*. 2008; 3:15. (doi:10.1186/1747-597X-3-15).

Table 1

Sample Couple Characteristics of Males and Females (n=848 couples)

	Males	Females
	Number (%)	Number (%)
Education:		
Some high school	149 (17.6)	109 (12.9)
High school graduate	334 (39.4)	239 (28.2)
Some college	315 (37.2)	371 (43.8)
College graduate	49 (5.8)	129 (15.2)
Race/ethnicity:		
White	454 (53.5)	452 (53.3)
Hispanic	293 (34.6)	298 (35.1)
Other	101 (11.9)	98 (11.6)
Mean Age, Y (SD)	40.4 (11.2)	38.7 (11.3)
Mean ACE (SD)	0.90 (1.26)	1.12 (1.49)
Mean Impulsivity (SD)	1.79 (0.80)	1.62 (0.68)
Mean AUDIT (SD)	3.72 (3.83)	1.55 (2.27)

SD = Standard Deviation

ACE = Adverse Childhood Experiences

AUDIT = Alcohol Use Disorders Identification Test

Table 2

Prevalence of Intimate Partner Violence among Sample Couples (n=848 couples).

Type of Intimate Partner Violence:	Number (%)
Male-to-female partner violence (MFPV) only	52 (6.1)
Female-to-male partner violence (FMPV) only	79 (9.3)
Bidirectional partner violence (both MFPV & FMPV)	120 (14.2)
None	597 (70.4)

Table 3

Results from Multinomial Regression Models

	Model 1: unadjusted		Model 2: adjusted for sociodemographic factors			Model 3: adjusted for psychosocial and sociodemographic factors		
	MFPV only OR (95% CI)	FMPV only OR (95% CI)	MFPV only OR (95% CI)	FMPV only OR (95% CI)	Bidirectional OR (95% CI)	MFPV only OR (95% CI)	FMPV only OR (95% CI)	Bidirectional OR (95% CI)
Male alcohol problems	1.13 (***) (1.06, 1.20)	1.05 (0.98, 1.12)	1.12 (***) (1.05, 1.20)	1.04 (0.97, 1.12)	1.12 (***) (1.06, 1.17)	1.12 (***) (1.05, 1.21)	1.04 (0.97, 1.12)	1.11 (***) (1.05, 1.17)
Female alcohol problems	0.96 (0.85, 1.10)	0.99 (0.89, 1.11)	1.01 (0.89, 1.16)	0.98 (0.87, 1.10)	1.00 (0.92, 1.10)	0.95 (0.83, 1.10)	0.94 (0.84, 1.06)	0.96 (0.87, 1.06)
Male race/ethnicity (ref: white)								
Hispanic			2.02 (0.83, 5.10)	0.70 (0.32, 1.56)	0.68 (0.35, 1.31)	2.15 (0.88, 5.26)	0.74 (0.33, 1.62)	0.86 (0.44, 1.66)
Other			2.00 (0.65, 6.17)	1.66 (0.77, 3.56)	1.68 (0.85, 3.32)	2.43 (0.78, 7.57)	1.79 (0.82, 3.91)	1.83 (0.88, 3.80)
Female race/ethnicity (ref: white)								
Hispanic			1.11 (0.46, 2.69)	1.11 (0.52, 2.39)	1.78 (0.95, 3.36)	1.56 (0.64, 3.83)	1.32 (0.61, 2.85)	2.08 * (1.08, 4.02)
Other			0.54 (0.14, 2.03)	1.39 (0.65, 3.01)	1.63 (0.82, 3.27)	0.61 (0.16, 2.33)	1.50 (0.69, 3.29)	1.91 (0.92, 3.98)
Male age			0.98 (0.92, 1.03)	0.94 * (0.90, 0.99)	0.95 * (0.91, 0.99)	0.99 (0.93, 1.04)	0.95 * (0.90, 0.99)	0.96 (0.92, 1.00)
Female age			1.03 (0.98, 1.09)	1.03 (0.98, 1.07)	1.00 (0.96, 1.04)	1.02 (0.97, 1.08)	1.02 (0.98, 1.07)	0.99 (0.95, 1.04)
Male education			0.78 (0.51, 1.11)	1.23 (0.89, 1.69)	0.89 (0.68, 1.17)	0.81 (0.54, 1.19)	1.23 (0.90, 1.70)	0.90 (0.68, 1.20)
Female education			1.29 (0.90, 1.83)	1.19 (0.89, 1.69)	1.17 (0.91, 1.50)	1.26 (0.87, 1.83)	1.21 (0.90, 1.64)	1.18 (0.91, 1.53)
Male Adverse Childhood Experiences						1.18 (0.95, 1.47)	1.13 (0.94, 1.37)	1.21 * (1.04, 1.43)
Female Adverse Childhood Experiences						1.34 (***) (1.12, 1.61)	1.13 (0.96, 1.33)	1.13 (0.97, 1.30)
Male impulsivity						1.60 * (1.12, 2.29)	1.23 (0.90, 1.68)	1.85 (***) (1.43, 2.40)
Female impulsivity						1.43 (0.93, 2.21)	1.52 * (1.08, 2.14)	1.79 (***) (1.32, 2.43)

OR = Odds Ratio

CI = Confidence Interval

* p < 0.05

** p < 0.01

*** p < 0.001