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Physical Health Conditions and Intimate Partner Violence Perpetration among Offenders with Alcohol Use Diagnoses

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Abstract

Intimate partner violence (IPV) is prevalent among samples with diagnosed alcohol use disorders but few studies have evaluated the factors that account for this increased risk and none have systematically evaluated the risk posed by comorbid physical health conditions. The current study evaluated the likelihood of perpetrating IPV among alcohol diagnosed offenders with medical health problems relative to healthy counterparts. Physical health and partner violence data provided by 655 criminal offenders with alcohol use disorders diagnosed during a court-ordered substance abuse evaluation were examined. One third of participants (35.3%) endorsed a physical health condition and 46.4% reported perpetrating physical IPV. The odds of perpetrating IPV among participants with a physical health condition were 2.29 times larger than among healthy participants. Specific conditions emerged as risk factors for IPV, including brain injury, cardiac issues, chronic pain, liver issues, gastrointestinal symptoms, hepatitis, and recent injury. Findings highlight the importance of identifying and managing physical health conditions that may complicate IPV treatment efforts. Integrated behavioral and medical health treatment approaches may increase treatment compliance and reduce the risk of future partner violence among offenders with co-occurring issues, such as mental illness, addiction, and physical health conditions.

Keywords

Partner Violence; Physical Health; Alcohol Use Disorder; Offenders

The acute and long term effects of heavy alcohol consumption are well established risk factors for intimate partner violence (IPV) perpetration (Leonard, 2005). This association has been highlighted by substance abuse treatment research in which disproportionately high rates of IPV are reported by or otherwise detected among individuals with alcohol use disorders (AUDs). Robust estimates suggest that approximately 50% of clients seeking

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treatment for alcohol problems evidence a recent history of IPV (e.g., Stuart, Moore, Kahler, & Ramsey, 2003). Although considerable research has evaluated the individual and cultural risk factors for partner violence perpetration (for a review, see Stith, Smith, Penn, Ward, & Tritt, 2004), less is known about the factors that contribute to a greater risk of IPV perpetration among AUD clients. Further, the effects of physical health conditions on IPV have not been evaluated, which is surprising given the psychological effects of physical illness as well as the prevalence of medically significant conditions among relevant AUD samples (Room, Babor, & Rehm, 2005). In the current study, we evaluated general physical health and specific conditions as risk factors for IPV among a large sample of offenders diagnosed with an AUD.

Although the impact of a significant medical history on IPV has yet to be comprehensively evaluated, the physical and psychological burden experienced by caregivers of individuals with health conditions has been well documented (e.g., Graneheim, Hörnsten, & Isaksson, 2012). Etiological models suggest that the presence of a physical health problem among offenders with an AUD may be indicative of greater partner violence perpetration through compatible direct and indirect mechanisms (e.g., Farrer, Frost, & Hedges, 2012). The recent metatheoretical I³ model acts as a broad, integrative framework from which to understand individual etiological models and posits that partner violence arises from an interaction of three factors with *instigating* and *impelling* forces contributing to one's overall experience of aggressive urges while *inhibiting* forces working to suppress the urge to aggress (For a review, see Finkel & Eckhardt, 2013).

Physical health conditions may exert a direct, impelling influence over IPV as many medical conditions are associated with frequent, acute episodes of pain (e.g., chronic pain, gastrointestinal distress, hepatitis, physical injury) that, consistent with the cognitive-neoassociationistic model of aggression, increase susceptibility to experience anger and aggressive urges when provoked (Berkowitz, 1990). Indeed, research has demonstrated that anger is directly associated with pain. A recent study, for example, collected daily diary data from 105 couples and found that pain was positively associated with concurrent behavioral anger experience and expression (Burns et al., in press). Further, laboratory analogue studies have demonstrated that anger experience is proximally associated to IPV perpetration (e.g., Eckhardt, 2007).

In addition to pain, physical health conditions contribute to reports of greater chronic daily life stress, an impelling factor that has been independently linked to an increased likelihood of aggressive behavior (Sprague, Verona, Kalkhoff, & Kilmer, 2011). Traditional models of IPV perpetration may offer insight into the poorly understood mechanisms by which stress and aggression are associated. The transactional model states that the experience of stress following a medical diagnosis is associated with one's degree of perceived control over the health condition (Lazarus, 1991), a relationship that has been empirically supported with studies that find greater stress reported by individuals who believe that they will be unable to control the progression of a serious diagnosis (e.g., Edo, Torrents-Rodas, Rovira, & Fernandez-Castro, 2012). The feminist and neofeminist conceptualization of IPV posit that partner violent behavior is inappropriately used by males to exert dominance or otherwise control a female partner (e.g., Pence & Paymar, 1993). Thus, IPV may be more likely to

occur among individuals seeking to regain a sense of control following a perceived general loss of control over themselves, their medical condition, and their environment. Alternatively, the strength model of self-control suggests that routine stress, such as the heightened daily baseline of stress experienced by those with a severe or chronic illness, contributes to the depletion of a finite resource that enables the inhibition of natural, aggressive impulses (Baumeister, Vohs, & Tice, 2007). Experimental depletion of self-control causes increased IPV (e.g., Finkel et al., 2009)

Regarding the role of alcohol use among offenders, self-medication models hold that negative affect (e.g., pain, stress, anger) precipitate substance use, the acute psychopharmacological effects of which result in impaired executive functioning and are associated with the disinhibition of aggressive responding (Leonard & Quigley, 1999). Even among AUD clients, heavy episodic drinking (e.g. in response to pain) has been associated with more severe aggression (see Foran & O'Leary, 2008; Leonard, 2005). Similarly, and in a rare example of research describing the relationship between a physical health condition and IPV, insult to the brain has been directly linked to increased rates of partner violence through the impairment of executive functioning (Farrer, Frost, & Hedges, 2012). Under the I³ model, substance related and biological impairment of executive functioning represent disinhibiting factors that contribute to IPV.

Physical health conditions may also indirectly indicate an increased risk for IPV. Substance use sufficient to warrant an alcohol use diagnosis among those knowingly diagnosed with a serious medical condition that contraindicates alcohol consumption (e.g., congenital heart defects, cirrhosis of the liver), may suggest greater problem severity as indicated by heavier use and greater difficulty with quitting (e.g., Anand et al., 2006). Further, the decision to consume alcohol despite a serious medical condition may reflect underlying relationship problems as use may trigger greater conflict between the ailing alcohol user, relative to the healthy alcohol user, and a concerned partner. Verbal disagreements represent instigation under the I³ model and are associated with greater relationship discord and lower relationship satisfaction, all of which are risk factors for IPV perpetration (for a review, see Stith, Green, Smith, & Ward, 2008). Finally, physical health conditions may be indicative of confounding factors that increase the risk for both violent behavior and medical issues. For example, greater dispositional or trait anger has been associated with cardiac problems as well as IPV perpetration (Gallo & Matthews, 2003; Norlander & Eckhardt, 2005). Similarly, a proclivity toward impulsive behavior has been associated with physical injury and traumatic brain injury, risky sexual behavior that results in sexually transmitted infection, as well IPV perpetration (Cherpitel, 1993; Dévieux et al., 2002; Schafer, Caetano, & Cunradi, 2004).

The current investigation represents an initial evaluation of the association between specific physical health conditions and the perpetration of IPV among AUD offenders. We hypothesized that 1) offenders with a physical health condition would be more likely to report IPV perpetration than healthy offenders. Further, we evaluated the effects of specific physical health conditions on the rates of IPV perpetration among the identified AUD sample. Specifically, we hypothesized that, compared to those without the physical health condition, greater partner violence would be detected among offenders with 2a) asthma, 2b)

a brain injury, 2c) cardiac problems, 2d) chronic pain, 2e) liver complications, 2f) diabetes, 2g) gastrointestinal issues, 2h) hepatitis, 2i) HIV or AIDs, and 2j) a recent physical injury.

Method

Participants

The current study utilized data from the offender substance abuse evaluation database in Southwestern Connecticut. Data were initially collected to evaluate the assessment process and outcomes associated with a legal statute which prompted criminal defendants with suspected substance use involvement to complete a voluntary substance use evaluation during the trial's presentencing phase. Evaluations were conducted to ascertain any potential mitigating factors (for additional details, see Crane, Oberlietner, & Easton, 2014). A total of 1,926 defendants had been found guilty of various violent, non-violent, and drug-related offenses and opted to complete the comprehensive psychosocial interview between the years of 1999 and 2008. The current sample consisted of data provided by all offenders who received an alcohol use diagnosis ($N = 655$) as a result of the evaluation. These data were analyzed in 2013.

Procedure

Participants were scheduled for and voluntarily completed a 2-hour semi-structured interview that consisted of demographic, interpersonal, substance use, and medical questions. Interviews were conducted by licensed clinical social workers (LCSWs) with specialty training in substance abuse evaluation and treatment who were employed by the state of Connecticut. Participants were informed of the limits of confidentiality at the time of initial telephone contact and again at the onset of the interview. LCSWs utilized supplemental sources of data, including court and treatment documents as well as interviews with collateral sources, to confirm self-report information used in reaching substance abuse diagnoses and recommendations for the court. The current data consisted of brief, de-identified demographic and diagnostic summaries provided by the LCSW interviewers for the purposes of program evaluation. The Yale University School of Medicine Human Investigation Committee (HIC) granted a waiver to use the current data.

Measures

Alcohol use—An adapted version of the widely administered and validated substance abuse section from the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID) was used in conjunction with a clinical interview and treatment records to reach an alcohol use diagnosis (First, Spitzer, Gibbon, & Williams, 1997). The adapted SCID form is described elsewhere in greater detail (Scott, Edwards, Lussier, Devine, & Easton, 2011).

Intimate partner violence—Participants were asked about partner violence perpetration over the previous year and then verbally responded to a subset of items from the revised conflict tactics scale (CTS-2), the most widely used and well-validated measure for detecting partner violent behavior, that were designed to assess physical assault (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). Participants were dichotomously categorized as

violent (i.e., any physical IPV) or non-violent (i.e., no physical violence) based upon their responses.

Physical health conditions—Medical conditions were identified through participant self-report during the clinical interview and confirmed with a review of relevant medical, psychiatric, and criminal records when available. Participants were asked about recent and long-term medical problems, doctor/hospital visits, and medications. Physical health conditions were categorized based upon evidence of *asthma*, *brain injury* (e.g., traumatic brain injury (TBI) or other significant head trauma resulting in a loss of consciousness or concussion), *cardiac issues* (e.g., cardiovascular or heart disease, angina, hypercholesterolemia, hypertension), *chronic pain* (e.g., arthritis, fibromyalgia, chronic neck or back pain), *liver issues* (e.g., cirrhosis, elevated enzymes, inflammation), diabetes (i.e., type I or II diabetes mellitus), *gastrointestinal issues* (e.g., ulcers, acid reflux, gastroesophageal reflux disease), *hepatitis virus* (i.e., B or C), *sexually transmitted infection* (i.e., HIV or AIDs), and *minor injuries* (e.g., broken bone, fractured jaw, hernia).

Analytical Method

A series of binary logistic regression analyses were conducted in which IPV perpetration was regressed first onto overall physical health status and subsequently onto each specific physical health condition independently to generate odds ratio (OR) effect sizes and the associated 95% confidence intervals (CIs). We conducted an additional set of analyses adjusting for ethnicity, gender, and employment status. Although both unadjusted and adjusted estimates are provided in the Table, we only discuss the adjusted estimates as bivariate relationships were robust across both sets of analyses.

Results

Past year prevalence of IPV perpetration was 46.4%. Most of the current participants were diagnosed with alcohol dependence (82.4%) while fewer were diagnosed with alcohol abuse (17.6%). The majority of participants denied physical health conditions (64.7%). Among the 35.3% of participants who reported significant physical health conditions, 162 (70.1%) reported a single diagnosis, 55 (23.8%) reported two diagnoses, and 14 (6.1%) reported three or more diagnoses. Participants were, on average, 33.4 (SD = 10.9) years old. Most participants were Caucasian (57.8%) or African American (32.1%), male (83.2%), and unemployed (64.6%). Participants, on average, had been most recently charged with 4.2 (SD = 3.9) offenses and had been previously arrested 8.3 (SD = 8.2) times.

Overall Physical Health

Results supported our first hypothesis that participants with a physical health condition would be more likely to perpetrate IPV than healthy participants. Inclusive of all medical conditions represented in the current study, analyses revealed that AUD participants who reported at least one physical ailment, relative to healthy AUD participants, were 2.29 (95% CI = 1.64–3.20) times more likely to have perpetrated IPV in the past year (see Table). Similarly, the odds of partner violent participants to report a physical health condition were two times greater than the odds of non-violent participants (OR = 2.01, 95% CI = 1.66–

3.20). Partner violence perpetrators ($M = 0.65$, $SD = 0.87$) also reported a greater average number of medical conditions relative to nonviolent participants ($M = 0.34$, $SD = 0.65$), $t(653) = 5.19$, $p < .001$, indicating that IPV participants were more likely to be ill and were more ill than nonviolent participants.

Specific Physical Health Conditions

Analyses revealed that rates of violence among AUD participants differed across most of the included specific physical health conditions. IPV was significantly associated with brain injuries, cardiac issues, chronic pain, gastrointestinal issues, and minor injuries. Analyses also revealed marginally significant associations between IPV status and the physical health conditions related to liver issues and hepatitis. In each case, positive reports of a physical health condition increased the risk of reporting partner violence perpetration over the previous year. The only conditions that appeared not to increase the risk of IPV perpetration were asthma, diabetes, and sexually transmitted infections (see Table).

In an exploratory logistic regression analysis, IPV status was regressed onto all 10 medical conditions at step 2 while controlling for sex, ethnicity, and employment status entered into the first step of the analysis. We found that the most significant predictors of IPV status in this omnibus model were gastrointestinal issues ($OR = 3.33$, $95\% CI = 1.35\text{--}8.22$), brain injury ($OR = 3.06$, $95\% CI = 1.13\text{--}8.30$), and chronic pain ($OR = 1.84$, $95\% CI = 1.12\text{--}3.04$).

Discussion

The current study represents the first comprehensive evaluation of the association between physical health conditions and intimate partner violence perpetration. This initial examination of the prevalence of various physical health conditions among AUD offenders aids in identifying the conditions that may be associated with an increased risk of IPV perpetration. Analyses detected a medium sized effect for overall physical health and generally small-to-medium significant effects for specific physical health conditions (i.e., brain injury, cardiac issues, chronic pain, gastrointestinal issues, and minor injury) on IPV perpetration, suggesting that co-occurring medical issues were associated with an increased risk of violence toward a partner. Despite a lack of empirical research, the observed relationships are consistent with existing theories suggesting that physical health conditions may be indicative of aggression among alcohol abusing individuals through both direct and indirect processes. While liver issues and hepatitis were marginally associated with an increased risk of IPV perpetration, diagnoses of asthma, diabetes, and sexually transmitted infections trended in the expected direction but surprisingly shared no significant association with violence.

Previous research has found that IPV victimization is associated with an increased risk of developing a serious medical condition, including chronic pain, sexually transmitted infections, and stomach ulcers (Coker, Smith, Bethea, King, & McKeown, 2000). The current results offer initial support for the possibility that physical health problems may be associated not only with IPV victimization but also with perpetration. The observed associations between various physical health conditions and IPV perpetration further support

efforts to provide partner violent offenders with individually informed and integrated mental and physical health treatment to prevent future violence. Thus, results suggest that we may require a more holistic, integrated approach to conceptualizing and intervening in cases of IPV perpetration that includes facilitating access to and communication between behavioral as well as medical health providers. Future research is needed to determine if addressing physical health needs through treatment or symptom management attenuates the association between medical diagnoses and IPV beyond standard behavioral violence interventions.

Integrated behavioral and medical health treatment programs that target trauma history as well as significant mental and physical health conditions will address comorbid conditions that contribute to violence and may prove superior to standard treatments in reducing the risk of subsequent IPV perpetration. Indeed, treatment compliance among IPV offenders is low and referral to multiple treatment agencies increases non-compliance and attrition (Schumacher et al., 2003). Treatment programs that have integrated substance abuse and IPV care evidence greater compliance and prosocial behavior change than conventional, disparate treatment methods (e.g., Easton, Mandel, Hunkele, Nich, Rounsaville, & Carroll, 2007). Future research is needed to determine the effects of integrated physical and behavioral health care on comprehensive treatment gains, including reducing violent behavior, controlling substance use, and managing medical conditions. Specific transdiagnostic techniques, such as motivational interviewing, that have been evaluated and validated as methods of enhancing treatment engagement and improving outcomes across IPV, substance abuse, as well as medical treatment evaluation studies may be particularly well suited for use within integrated programs designed to address comorbid conditions and warrant further study (Crane & Eckhardt, 2013; Miller & Rollnick, 2002).

We acknowledge limitations to the current research. The current methodology does not lend itself to determining causality. Although plausible that physical health conditions may precede and contribute to IPV perpetration, longitudinal research would be required to draw such conclusions. Further, the use of self-report and chart data to establish physical health conditions may have resulted in a degree of misspecification commensurate with similar procedures across legal and medical domains. As many physical health conditions are directly associated with substance use, future investigations should collect appropriate data to control for chronicity and severity of use. Wide confidence intervals resulted from low base rates of specific physical health conditions (e.g., liver issues, diabetes, and HIV or AIDs). The low frequency of occurrence may have also contributed to our inability to detect significant associations between these specific conditions and IPV. Finally, the current sample consisted primarily of males and was comprised entirely of offenders diagnosed with an AUD. Further research is required to determine if results vary across gender or adequately generalize to other substance abusing populations with identified physical health conditions.

In conclusion, the current study suggests that AUD diagnosed individuals with compromised physical health, like those with certain mental health conditions, may be at greater risk for perpetrating IPV than their healthy counterparts. Efforts should be undertaken in substance use and violence treatment settings to accommodate the special needs of patients with medical health complications. Further research is required to determine if managing physical

health conditions as part of an individualized treatment approach at integrated behavioral and medical health programs may aid in the prevention of future violence and boost the quality of life reported by patients as well as their partners.

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Biographies

Dr. Crane received his Ph.D. in clinical psychology from Purdue University in 2012, where his research focused on the relationship between problematic alcohol use and intimate partner violence. Dr. Crane applied his research to the development and evaluation of brief adjunctive as well as integrated treatments for partner violent males, including assessing the effects of motivational enhancement therapy on treatment compliance and recidivism among partner violent offenders who engage in heavy episodic drinking. He then completed a 1-year clinical internship at Yale University's Forensic Drug Diversion Clinic, an integrated substance abuse and partner violence treatment and research facility. Dr. Crane continued to study offender populations using existing addiction and forensic datasets as well as meta-analytic statistical techniques. As an NIAAA postdoctoral fellow at the Research Institute on Addictions with the University at Buffalo, SUNY, Dr. Crane now examines the influence of both individual and dyadic substance use on the occurrence of partner violence at the event level. He uses multi-level data analytic techniques to evaluate laboratory and prospective data collected from both members of intimate couples to help inform a more individualized perspective on violence treatment and prevention that takes into account both relational processes and underlying offender psychopathology.

Dr. Caroline Easton is a Professor of Forensic Psychology in the new College of Health Science and Technology at RIT. Moreover, she is adjunct clinical faculty at Yale School of Medicine, Department of Psychiatry. Dr. Easton is nationally and internationally known for her expertise on 'best practice procedures' for the treatment of clients with co-occurring addiction and IPV. She presents at international/national conferences, publishes in peer-reviewed journals and has been the clinical director of large outpatient drug diversion/family violence treatment clinics across New Haven County, CT. She has also received funding as PI and Co-I from NIH regarding the implementation of randomized controlled trials and development of treatment products. Dr. Easton has been collaborating with Investigators from Brazil and England regarding the treatment of IPV among substance abusers. More recently, Dr. Easton and her colleagues from the U.K. have been developing a seminar series on the etiologies and interventions associated with IPV among substance abusers. This seminar series is to be distributed with collaborators, students and clinical staff at an international level. Dr. Easton has also obtained support across many addiction programs as well as key stake holders to implement and conduct a co-occurring model of care for SADV (substance abuse & domestic violence) clients and their families.

References

- Anand BS, Currie S, Dieperink E, Bini EJ, Shen H, Ho SB, Wright T. Alcohol use and treatment of hepatitis C virus: results of a national multicenter study. *Gastroenterology*. 2006; 130:1607–1616. [PubMed: 16697724]
- Baumeister RF, Vohs KD, Tice DM. The strength model of self-control. *Current Directions in Psychological Science*. 2007; 16:351–355.
- Berkowitz L. On the formation and regulation of anger and aggression: A cognitive-neoassociationistic analysis. *American Psychologist*. 1990; 45:494–503. [PubMed: 2186678]
- Burns JW, Gerhart JJ, Bruehl S, Peterson KM, Smith DA, Porter LS, Keefe FJ. Anger arousal and behavioral anger regulation in everyday life among patients with chronic low back pain: Relationships to patient pain and function. *Health Psychology*. (in press).
- Cherpitel CJ. Alcohol, injury, and risk taking behavior: Data from a national sample. *Alcoholism: Clinical and Experimental Research*. 1993; 17:762–766.
- Coker AL, Smith PH, Bethea L, King MR, McKeown RE. Physical health consequences of physical and psychological intimate partner violence. *Archives of Family Medicine*. 2000; 9:451–457. [PubMed: 10810951]
- Crane CA, Eckhardt CI. Evaluation of a single-session brief motivational enhancement intervention for partner abusive men. *Journal of Counseling Psychology*. 2013; 60:180–187. [PubMed: 23506510]
- Crane C, Oberlietner L, Easton C. Substance use disorders and intimate partner violence perpetration among male and female offenders. *Psychology of Violence*. 2014; 4:322–333. [PubMed: 27011885]
- Déviex J, Malow R, Stein JA, Jennings TE, Lucenko BA, Averhart C, Kalichman S. Impulsivity and HIV risk among adjudicated alcohol-and other drug-abusing adolescent offenders. *AIDS Education and Prevention*. 2002; 14:24–35. [PubMed: 12413190]
- Easton CJ, Mandel D, Hunkele K, Nich C, Rounsaville B, Carroll K. A cognitive behavioral therapy for alcohol-dependent domestic violence offenders: An integrated Substance Abuse-Domestic Violence treatment approach (SADV). *American Journal on Addictions*. 2007; 16:124–31. [PubMed: 17453614]
- Edo S, Torrents-Rodas D, Rovira T, Fernandez-Castro J. Impact when receiving a diagnosis: Additive and multiplicative effects between illness severity and perception of control. *Journal of Health Psychology*. 2012; 17:1152–1160. [PubMed: 22313666]
- Farrer TJ, Frost RB, Hedges DW. Prevalence of traumatic brain injury in intimate partner violence offenders compared to the general population: A meta-analysis. *Trauma, Violence, & Abuse*. 2012; 13:77–82.
- Finkel EJ, DeWall CN, Slotter EB, Oaten M, Foshee VA. Self-regulatory failure and intimate partner violence perpetration. *Journal of Personality and Social Psychology*. 2009; 97:483–499. [PubMed: 19686003]
- Finkel E, Eckhardt CI. Intimate partner violence. In: Simpson JA, Campbell L, editors *The Oxford Handbook of Close Relationships*. New York: Oxford; 2013.
- First MB, Spitzer RL, Gibbon M, Williams JBW. Structured Clinical Interview for DSM- IV Axis I Disorders, Clinical Version. Washington DC: American Psychiatric Press; 1997.
- Foran HM, O’Leary KD. Alcohol and intimate partner violence: A meta-analytic review. *Clinical psychology review*. 2008; 28(7):1222–1234. [PubMed: 18550239]
- Gallo LC, Matthews KA. Understanding the association between socioeconomic status and physical health: Do negative emotions play a role? *Psychological Bulletin*. 2003; 129:10–51. [PubMed: 12555793]
- Graneheim UH, Hörnsten Å, Isaksson U. Female caregivers’ perceptions of reasons for violent behaviour among nursing home residents. *Journal of Psychiatric and Mental Health Nursing*. 2012; 19:154–161. [PubMed: 22070673]
- Lazarus RS. *Emotion and Adaptation*. New York: Oxford University Press; 1991.
- 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]

- Leonard KE, Quigley BM. Drinking and marital aggression in newlyweds: An event-based analysis of drinking and the occurrence of husband marital aggression. *Journal of Studies on Alcohol and Drugs*. 1999; 60:537–45.
- Miller W, Rollnick S. *Motivational interviewing: Preparing people to change addictive behavior*. 2. New York: Guilford; 2002.
- Norlander B, Eckhardt CI. Anger, hostility, and male perpetrators of intimate partner violence: A meta-analytic review. *Clinical Psychology Review*. 2005; 25:119–52. [PubMed: 15642644]
- Pence E, Paymar M. *Education groups for men who batter: The Duluth model*. Springer Publishing Company; 1993.
- Room R, Babor T, Rehm J. Alcohol and public health. *Lancet*. 2005; 365:19–30.
- 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; 19:127–142. [PubMed: 15005998]
- Schumacher JA, Fals-Stewart W, Leonard KE. Domestic violence treatment referrals for men seeking alcohol treatment. *Journal of Substance Abuse Treatment*. 2003; 24:279–283. [PubMed: 12810149]
- Scott MC, Edwards L, Lussier LR, Devine S, Easton CJ. Differences in legal characteristics between Caucasian and African-American women diverted into substance abuse treatment. *Journal of the American Academy of Psychiatry and the Law*. 2011; 39:65–71. [PubMed: 21389168]
- Sprague J, Verona E, Kalkhoff W, Kilmer A. Moderators and mediators of the stress-aggression relationship: Executive function and state anger. *Emotion*. 2011; 11:61–73. [PubMed: 21401226]
- Stith SM, Green NM, Smith DB, Ward DB. Marital satisfaction and marital discord as risk markers for intimate partner violence: A meta-analytic review. *Journal of Family Violence*. 2008; 23:149–60.
- Stith SM, Smith DB, Penn C, Ward D, Tritt D. Intimate partner physical abuse perpetration and victimization risk factors: A meta-analytic review. *Aggression and Violent Behavior*. 2004; 10:65–98.
- Straus MA, Hamby SL, Boney-McCoy S, Sugarman DB. The Revised Conflict Tactics Scales (CTS-2). *Journal of Family Issues*. 1996; 17:283–316.
- Stuart GL, Moore TM, Kahler CW, Ramsey SE. Substance abuse and relationship violence among men court-referred to batterers' intervention programs. *Substance Abuse*. 2003; 24:107–122. [PubMed: 12766378]

Frequencies, Odds Ratios, and Confidence Intervals for the Relationship between Physical Health Conditions and Intimate Partner Violence Perpetration

Table

Medical Condition	Non-Violent (n = 351)		Partner Violent (n = 304)		Unadjusted Estimates		Adjusted Estimates	
	Negative	Positive	Negative	Positive	OR	95% CI	OR	95% CI
Any Condition	258	93	166	138	2.31	1.66–3.20	2.29	1.64–3.20
Asthma	328	23	282	22	1.11	0.61–2.04	1.02	0.55–1.88
Brain Injury	345	6	289	15	2.98	1.14–7.79	3.05	1.15–8.10
Cardiac	334	17	276	28	1.99	1.07–3.72	1.93	1.02–3.66
Chronic Pain	319	32	254	50	1.96	1.22–3.15	2.02	1.24–3.28
Liver	348	3	296	8	3.14	0.82–11.92	2.84	0.73–11.05
Diabetes	345	6	296	8	1.55	0.53–4.53	1.49	0.50–4.43
Gastrointestinal	344	7	282	22	3.83	1.61–9.11	4.09	1.70–9.82
Hepatitis	341	10	286	18	2.15	0.98–4.72	2.02	0.91–4.52
STI	347	4	299	5	1.45	0.39–5.45	1.30	0.34–4.99
Injury	338	13	281	23	2.13	1.06–4.28	2.06	1.02–4.18

Note: CI = confidence interval; STI = sexually transmitted infection; Adjusted estimates control for ethnicity (dichotomized as ethnic majority or minority), gender (dichotomized as male or female), and employment status (dichotomized as unemployed or employed)