Published in final edited form as:

Psychol Women Q. 2012 March 1; 37(1): 51–60. doi:10.1177/0361684312461138.

Relative Importance of Emotional Dysregulation, Hostility, and Impulsiveness in Predicting Intimate Partner Violence Perpetrated by Men in Alcohol Treatment

Andra Teten Tharp,

National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, Atlanta, Georgia

Julie A. Schumacher,

Department of Psychiatry and Human Behavior, University of Mississippi Medical Center, Jackson, Mississippi

Alison C. McLeish,

Department of Psychology, University of Cincinnati

Rita E. Samper, and

Department of Psychiatry and Human Behavior, University of Mississippi Medical Center, Jackson, Mississippi

Scott F. Coffey

Department of Psychiatry and Human Behavior, University of Mississippi Medical Center, Jackson, Mississippi

Abstract

The current study employs dominance analysis to assess the relative importance of three constructs—hostility, impulsiveness, and emotional dysregulation (difficulties managing one's emotions when experiencing negative emotion or distress)—in explaining psychological, physical, and sexual intimate partner violence (IPV) perpetration by men seeking alcohol treatment. A sample of 121 predominantly White, heterosexual men (average age 33.28, range = 18 - 62) enrolled in residential substance abuse treatment completed measures of emotional dysregulation, hostility, and impulsiveness, which are three highly related constructs identified as risk factors for both substance use disorders and IPV. The constructs collectively accounted for 20-25% of the variance in each form of IPV. Because impulsiveness, hostility, and emotional dysregulation are highly correlated, dominance analysis was used to examine which factor most strongly predicted each form of IPV. Dominance analysis findings favored hostility as a predictor of physical IPV perpetration, and impulsiveness as a predictor of sexual and psychological IPV perpetration. Differential associations between the constructs and each form of IPV may be used to inform assessment and treatment planning of men who abuse alcohol. Better understanding, preventing, and treating male-to-female IPV will protect women from the far-reaching consequences of this violence.

Keywords

intimate partner violence; hostility; impulsiveness; emotional regulation; alcohol abuse

Despite increased awareness of intimate partner violence (IPV) and services for survivors of IPV, psychological, physical, and sexual violence occurring in intimate relationships continues to threaten women's health and well-being. In the United States, nearly 3 in 10 women report experiencing physical violence, rape, or stalking from an intimate partner (Black et al., 2011). The consequences of IPV are far-reaching and are associated with injuries immediately following the assault, as well as with long-term mental and physical health problems such as depression, health risk behaviors, joint disease, cardiovascular disease, and asthma (Black & Breiding, 2008). Therefore one approach to protecting the health of women is to prevent men's perpetration of IPV.

One well-documented risk factor for perpetration of all forms of partner violence is substance use and abuse, particularly alcohol (Lipsey, Wilson, Cohen, & Derzon, 1997). Elevated rates of physical IPV perpetration (54-66%) are consistently found among individuals receiving treatment for alcohol and other substance use disorders (Klostermann, Kelley, Mignone, Pusateri, & Fals-Stewart, 2010). Although alcohol intoxication impairs perception and thought resulting in an increased risk for the expression of hostility and violence (Steele & Josephs, 1990), alcohol use alone is not sufficient to explain the high rate of IPV perpetration among individuals receiving treatment for alcohol use disorders. Evidence suggests that individual differences in risk factors for perpetration may moderate the association between alcohol abuse and violence (Leonard, 1993). Given that treating alcohol and other substance use disorders often has the secondary benefit of reducing IPV (e.g. Murphy & Ting, 2010; Schumacher et al., 2011), a better understanding of the risk factors that underlie perpetration of different forms of partner violence in substance abuse treatment samples may lead to interventions that enhance that effect. Furthermore, given that the targets of heterosexual men's IPV perpetration are largely their female partners, successfully treating male perpetrators is necessarily important for women's health and well-being.

Important clues about the characteristics that may place men in alcohol treatment samples at increased risk for male-to-female IPV perpetration can be gleaned from an evaluation of the common risk factors for these two problems. Psychological dysregulation—described as a multi-faceted construct that includes executive cognitive dysfunction, behavioral impulsiveness, and emotional lability—has been identified as a risk factor for development of alcohol and substance use disorders in adolescence (Tarter et al., 1999, 2003; Wills, Walker, Mendoza, & Ainette, 2006). These constructs composing psychological dysregulation have been identified as consistent correlates of both substance use disorders (Coffey, Gudleski, Saladin, & Brady, 2003; Fals-Stewart & Bates, 2003; McCormick & Smith, 1995) and IPV perpetration in adults (Gratz & Roemer, 2004; Norlander & Eckhardt, 2005; Stuart & Holtzworth-Munroe, 2005). The potential role of dysregulation in explaining the link between alcohol and IPV perpetration is further supported by laboratory research utilizing aggression tasks and alcohol administration paradigms with social drinkers to test a conceptual framework for dysregulation as both a mediator and moderator of intoxicated aggression (Giancola, 2000, 2004; Giancola, Godlaski, & Roth, 2012).

Prevention and treatment approaches to men's perpetration of IPV primarily have originated from feminist or social learning/cognitive behavioral theories (Babcock, Green, & Robie, 2004; Whitaker et al., 2006). An expansion of these traditional theoretical bases for understanding and addressing IPV is needed given the limited effectiveness of current prevention and treatment approaches (Whitaker et al., 2006). Consistent with a conceptual framework proposed by Giancola (2000) in which individual risk factors related to dysregulation both mediate and moderate the association between alcohol and aggression, Riggs and O'Leary's (1989) background-situational model of IPV identifies alcohol, aggressive personality characteristics (such as hostility and impulsiveness), and emotionality

or arousability (here, emotional dysregulation) as risk factors for IPV. Once the predominant risk factors for different forms of IPV are established and men are assessed for such factors when initiating treatment, substance abuse treatment can target the factors that heighten their risk for perpetrating IPV while intoxicated. Towards this end in the current study, we examined the relative contribution of three risk factors—hostility, impulsiveness and emotional dysregulation—in predicting three forms of partner violence: psychological, physical, and sexual.

As conceptualized by Gratz and Roemer (2004), emotional dysregulation is a multidimensional construct indexing difficulties in managing one's emotions when experiencing negative emotion or distress. Emotional dysregulation specifically refers to difficulties with: (a) accepting or tolerating negative emotion, (b) engaging in appropriate or goal-directed behavior, (c) controlling impulses, (d) attending to and acknowledging emotional responses, (e) utilizing appropriate emotion regulation strategies, and (f) being clear about which emotions are being experienced. It has been theorized that emotional dysregulation makes it difficult to inhibit aggressive impulses (Finkel, 2007) and that violence can serve as an affect regulatory function (Bushman, Baumeister, & Phillips, 2001; Jakupcak, 2003; Jakupcak, Lisak, & Roemer, 2002), resulting in greater risk for IPV perpetration. Research supports this line of thinking. For example, Gratz and Roemer (2004) found that emotional dysregulation was associated with male physical and sexual IPV perpetration among undergraduates. Similarly, Tager, Good, and Brammer (2010) examined emotion regulation and masculine norms among a clinical sample of men referred for engaging in IPV and found that emotional dysregulation, which accounted for 18% of unique variance, was the strongest predictor of perpetration of physical and psychological IPV. Moreover, emotional dysregulation in the context of alcohol abuse could work synergistically to increase chances for IPV perpetration. The impairment in cognitive processes associated with alcohol use combined with emotion regulation deficits represents a potentially dangerous combination in terms of perpetration risk. However, no known research has examined emotional dysregulation and IPV perpetration among alcohol-dependent individuals.

Two additional and related but distinct aspects of aggressive personality examined in the current study are impulsiveness and hostility. Impulsiveness have been defined “as a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to the impulsive individuals or to others” (Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001, p. 1784). Impulsiveness is associated with hostility (Barratt, 1994), substance abuse (Nagoshi, Walter, Muntaner, & Haertzen, 1992), and violence. For example, Stuart and Holtzworth-Munroe (2005) reported that men who committed psychological or physical violence against a female partner had significantly higher levels of impulsiveness than non-violent men and that substance abuse mediated the relationship between impulsiveness and psychological violence.

Hostility is defined as a cognitive/attitudinal construct involving a negative evaluation of others' motives along with a desire for vengeance (Eckhardt, Barbour, & Stuart, 1997). Hostility has been identified as a risk factor for IPV perpetration (for reviews see Eckhardt et al., 1997; Norlander & Eckhardt, 2005; Schumacher, Feldbau-Kohn, Slep, & Heyman, 2001). For example, hostility has been found to be a significant predictor of male-perpetrated psychological violence (O'Leary, Malone, & Tyree, 1994) and physical violence (Leonard & Senchak, 1996). Holtzworth-Munroe, Rehman, and Herron (2000) found that hostility was positively associated with severity of psychological and physical IPV and marital distress. Research indicates that hostility is also an important factor to consider in the alcohol-IPV link (e.g. Clements & Schumacher, 2010; Schumacher, Homish, Leonard, Quigley, & Kearns-Bodkin, 2008). For example, heavy drinking was associated with IPV

perpetration among hostile, but not among non-hostile, men (Leonard & Blane, 1992). Although past work has shown that both hostility and impulsiveness are associated with different forms of IPV and substance use, no known research to date has examined the relative importance of each factor in predicting multiple forms of IPV perpetration.

Taken together, there is evidence that emotional dysregulation, impulsiveness, and hostility are three aspects of psychological dysregulation that may be important risk factors for IPV perpetrated by men seeking treatment for alcohol use disorders. In the current study, we will address two important limitations to past research. First, to date no known studies have simultaneously examined the influence of these three risk factors to determine the relative importance of each. Second, research studies have rarely examined psychological, physical, and sexual forms of IPV in the same study. Thus, it is currently unclear whether differential patterns of associations exist between each of these variables and each of these specific types of IPV. We sought to address this gap with a sample of men seeking treatment for alcohol use disorders.

Although past work suggests that each construct is associated with IPV, only hostility and impulsiveness have been examined in the context of alcohol and IPV. Given that our sample comprised men seeking treatment for alcohol use disorders, we expected that hostility and impulsiveness were most likely to be dominant predictors of physical and psychological IPV perpetration. However, we did not have predictions about whether impulsiveness or hostility would be the most dominant predictor for these forms of IPV. Because impulsiveness has been associated with sexual violence in past work (e.g. Petty & Dawson, 1989), we hypothesized impulsiveness would be a dominant predictor of sexual violence in the current study. Given the anticipated overlap and resulting intercorrelations of hostility, impulsiveness, and emotional regulation, we utilized dominance analysis (Azen & Budescu, 2003; Budescu, 1993). Dominance analysis will allow for the predominant predictor of each form of IPV perpetration to be identified and will also take into account the degree of dominance.

Method

Participants

Initial study participants were 128 heterosexual men who were enrolled in residential substance abuse treatment and who had a score on the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) of at least 8—a score indicative of a strong likelihood of hazardous or harmful alcohol consumption. Participants also reported at least five occasions of drinking in the 60 days prior to treatment entry, and they were in a current or recent (ended within 1 month of study participation) relationship with a female partner of at least 1 year duration. Participants were recruited as part of a larger study of neuropsychological functioning, alcohol use, and intimate partner violence. Although a total of 139 participants were initially recruited into the study, four asked to discontinue their participation shortly after it was initiated and seven were deemed ineligible for the following reasons: relationships of less than 1 year duration or ending more than 1 month prior to participation ($n = 5$), active psychosis ($n = 1$), or no substance use in the preceding 60 days ($n = 1$). Additionally, a total of seven cases with missing data on one or more of the variables of interest in the primary analyses were deleted listwise from all analyses, resulting in a final analysis sample of 121 cases. Independent samples t -test comparisons of those with and without missing data revealed no significant differences between groups; although after adjusting the analysis and degrees of freedom for unequal variances, there was a trend-level difference in scores on emotional dysregulation, $t(1,10.98) = -2.02$, $p = .05$, with men with missing data scoring higher.

Among the final sample of 121 men, participants had an average age of 33.28 ($SD = 9.80$, range 18-62). The majority were White ($n = 89$, 74%), followed by African-American ($n = 24$, 20%). Over half ($n = 65$, 54%) had some education beyond high school. Nearly half were employed full time ($n = 60$, 50%), 7 (6%) were employed part-time, and 54 (45%) were unemployed. Participants' average relationship length was 7.08 years ($SD = 7.36$, range = 1 – 34 years), and 59 (48.80%) were married or cohabiting.

Procedures and Measures

Study staff conducted weekly group recruitment sessions at two residential substance abuse treatment facilities. At these sessions, the study was described to all men who had been admitted to the facility in the past week and interested men were invited to complete the screening questionnaire to determine eligibility for the study. Men who met eligibility criteria were scheduled for a 3-4 hour assessment. Assessments were conducted in a private room at the residential substance abuse treatment facility and were preceded by an IRB-approved and documented informed consent procedure. Participants were compensated \$60 for completing the assessment, which included the following paper-and-pencil measures; those who discontinued their participation received pro-rated compensation.

The Conflicts Tactics Scale—Revised—The CTS2 (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) is a 78-item scale which asks respondents to endorse the number of times in the past year that they or their partners engaged in each of 39 conflict behaviors during a disagreement using a 7-point scale: 1 (*never*), 2 (*once*), 3 (*twice*), 4 (*3-5 times*), 5 (*6-10 times*), 6 (*10-20 times*), and 7 (*20+ times*). The CTS2 was scored according to standard scoring procedures (Straus et al., 1996) to create frequency scores for subscales used in our study: Psychological Aggression (8 items such as “I called my partner fat or ugly”), Physical Assault (12 items such as “I pushed or shoved my partner”), and Sexual Coercion (7 items such as “I used force [like hitting, holding down, or using a weapon] to make my partner have oral or anal sex”). Higher summed subscale scores indicate greater frequency of use of that type of conflict tactic. As shown in Table 1, which includes the possible range, descriptive statistics, Cronbach's alphas, and correlations for all measures, scores on all subscales of the CTS2 were significantly intercorrelated.

Buss-Durkee Hostility Inventory—The BDHI (Buss & Durkee, 1957) consists of 75 items (e.g. “I am irritated a great deal more than most people are aware of”), scored 0 (*false*) or 1 (*true*), and it includes 15-items that are reverse-scored prior to scoring. The sum of the items yields a total score for hostility. Higher total hostility scores indicate greater hostility.

Difficulties in Emotion Regulation Scale—The DERS (Gratz & Roemer, 2004) is a 36-item measure (e.g. “When I'm upset, I feel guilty for feeling that way”) that assesses individuals' typical levels of emotional dysregulation across six different domains, as described above. For each item, respondents indicate on a 5-point scale how often each statement applies to them: 1 [*almost never (0-10%)*], 2 [*sometimes (11-35%)*], 3 [*about half the time (36-65%)*], 4 [*most of the time (66-90%)*], and 5 [*almost always (91-100%)*]. Eleven items indicative of greater emotional regulation are reverse scored. Higher scores on this measure are indicative of greater emotional dysregulation. We used the scale total score in the current study.

Barratt Impulsiveness Scale-11—The BIS-11 (Patton, Stanford, & Barratt, 1995) is a 30-item self-report questionnaire assessing impulsiveness (e.g. “I plan tasks carefully”). For each item, respondents indicate how often they act and think in certain ways: 1 (*rarely or never*), 2 (*occasionally*), 3 (*often*), or 4 (*almost always or always*); 11 items indicative of

greater impulse control are reverse-scored. All items were summed to create a total score, with higher scores indicative of greater impulsiveness.

Results

Analysis Plan

Descriptive analyses were conducted to describe demographic and diagnostic characteristics of the sample and to examine the distributions of variables to be included in primary analyses. Examination of the distribution of all variables revealed that the Physical Assault and Sexual Coercion subscale scores on the CTS2 were non-normally distributed. The distributions were normalized through log-transformation, and the log-transformed values for these variables were used in all subsequent analyses. Following the variable transformations, a bivariate correlation matrix was created. Dominance analyses (Azen & Budescu, 2003; Budescu, 1993) were conducted to determine which of the predictors (emotional dysregulation, hostility, or impulsiveness) was most important in explaining variance in psychological, physical, and sexual IPV perpetration.

As outlined by Budescu (1993), a typical *a priori* goal of multiple regression analysis is to determine the relative importance of predictors. Even when determining the relative importance of predictors is not an *a priori* goal of the analysis in their discussion of multiple regression findings, researchers often describe the relative importance of predictors (Azen & Budescu, 2003). However, as Azen and Budescu (2003) note when predictors are correlated, the various indices of importance allow for different interpretations. For example, correlation coefficients allow for conclusions about predictors that are most useful by themselves. In contrast, semi-partial correlations and standardized regression coefficients allow for conclusions about which predictor contributes most after accounting for the effects of all other predictors. As articulated by Budescu (1993), in many cases a broader, more intuitive conceptualization of importance is preferable. To that end, Budescu offered the following definition: a predictor can be considered more important than another predictor if it contributes more to the prediction of the dependent variable than the other predictor at all levels of analysis. The dominance analysis approach to multiple regression analysis arose from this definition of importance, and it provides a method for identifying which predictor in a regression model most strongly predicts the dependent variable by itself and within the context of any subset of other predictors. Thus, this approach can lead to more confident conclusions about whether a particular predictor should be selected over another to guide decision-making or whether a particular intervention target should be selected over another to produce the greatest impact in a limited resource environment (Azen & Budescu, 2003; Budescu, 1993).

A predictor is said to *completely dominate* another predictor if that variable exceeds the amount of variance accounted for by the other—both alone and in the presence of all other predictors in the model (Budescu, 1993). In cases in which complete dominance cannot be determined, weaker standards of dominance are examined (Azen & Budescu, 2003). A predictor is said to *conditionally dominate* another predictor if that predictor's average additional contribution to all subset models within each model size (i.e. models with one predictor, models with two predictors, etc.) is greater than the other predictor's average contributions within each model size. Finally, a predictor is said to *generally dominate* another if its average contribution across all subset models is greater than the average contribution of the other predictor across all subset models.

In the current study, we utilized the bootstrap method elaborated by Azen and Budescu (2003) to provide estimates of the stability and reproducibility of dominance relationships established through the primary dominance analyses. Specifically, the percent of 1,000

bootstrap samples in which the dominance findings are reproduced provides an indication of the level of confidence researchers should have in the results. There are no definitive conventions for interpreting the reproducibility estimates produced in bootstrap analyses. The closer estimates are to 100%, the greater the confidence in results. Descriptive analyses were conducted using SPSS Statistics 17.0. Dominance analyses were conducted in SAS 9.2, using the macro provided by Azen and Budescu (2003). The language used in describing the results is consistent with the statistical analysis and refers to factors associated with each form of IPV as predictors. However, please note that this is statistical prediction because causal prediction cannot be examined in the current cross-sectional data.

Preliminary Analyses

In the current sample, 118 (97%) men reported past year psychological IPV perpetration, 67 (55%) men reported past year physical IPV perpetration, and 55 (46%) reported past year sexual IPV perpetration. Correlations are shown in Table 1. Partial correlations were also performed, and when we partial out the BIS11 (or BDHI) the bivariate correlations between the DERS and IPV were small and non-significant. Conversely, when we partial out the DERS, the BDHI and the BIS11 remained significant correlates with IPV. Therefore, the correlations supported our findings with the dominance analysis, so we did not include this information in the text.

The majority of participants ($n = 106$, 87%) met diagnostic criteria for alcohol dependence. Men's score on the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente & Grant, 1993) was not significantly correlated with any other predictor or any of the dependent variables and all correlations were of small magnitude, so alcohol problem severity was not included as a covariate in primary analyses. These findings were likely due to the expected restricted range of AUDIT scores.

Dominance Analysis: Psychological IPV Perpetration

The multiple regression model predicting psychological IPV perpetration with all three risk factors (emotional dysregulation, hostility, and impulsiveness) entered as independent variables was significant $F(3, 117) = 12.79, p < .001$. These predictors accounted for approximately 24.7% of the variance in psychological IPV perpetration, and only impulsiveness was a significant unique predictor. As shown in Table 2, results of this dominance analysis established complete dominance for impulsiveness relative to emotional dysregulation and hostility. That is, in the pairwise comparisons to both emotional dysregulation ($k = 0, .212 > .147; k = 1, .101 > .044$; where k refers to the number of predictors in multiple regression model) and hostility ($k = 0, .212 > .143$ and $k = 1, .078 > .039$), impulsiveness had a greater contribution to the R^2 of the subset models.

Furthermore, as shown in Table 3, results of the bootstrap analysis indicated that complete dominance of impulsiveness over emotional dysregulation in the prediction of psychological IPV was reproduced in 82.1% of the bootstrap samples, and complete dominance of impulsiveness over hostility in the prediction of psychological IPV was reproduced in 78.3% of the bootstrap samples. Complete dominance and conditional dominance were undetermined for the relationship between the hostility and emotional dysregulation, but general dominance for hostility relative to emotional dysregulation was established (see Table 2). That is, a comparison of the average contribution to R^2 across all subset models was greater for hostility relative to emotional dysregulation (Overall Average: $.067 > .060$). Examination of the results of the bootstrap analysis for general dominance of hostility over emotional dysregulation was reproduced in only 54% of the bootstrap samples (see Table 3).

Dominance Analysis: Physical IPV Perpetration

The multiple regression model predicting physical IPV with all three risk factors (emotional dysregulation, hostility, and impulsiveness) entered as independent variables was again significant, $F(3, 117) = 10.50, p < .001$. These predictors accounted for approximately 21.2% of the variance in physical IPV perpetration, with both hostility and impulsiveness as significant predictors. As shown in Table 4, results of this dominance analysis established complete dominance for hostility relative to emotional dysregulation and impulsiveness. In the pairwise comparisons to both emotional dysregulation ($k = 0, .179 > .087$ and $k = 1, .081 > .007$) and impulsiveness ($k = 0, .179 > .131$ and $k = 1, .097 > .051$), hostility had a greater contribution to the R^2 of the subset models.

In addition, as shown in Table 3, results of the bootstrap analysis indicated that complete dominance of hostility over emotional dysregulation was reproduced in 94.2% of the bootstrap samples, and complete dominance of hostility over impulsiveness was reproduced in 78.0% of the bootstrap samples. Complete dominance of impulsiveness over emotional dysregulation was also established in this sample. In the two pairwise comparisons to the emotional dysregulation, impulsiveness had a greater contribution to the R^2 of the models ($k = 0, .131 > .087$ and $k = 1, .033 > .005$). Bootstrap analysis reproduced this finding in 81.7% of the bootstrap samples (Table 4).

Dominance Analysis: Sexual IPV Perpetration

The multiple regression model predicting sexual IPV perpetration with all three risk factors (emotional dysregulation, hostility, and impulsiveness) entered as independent variables was significant, $F(3, 117) = 9.67, p < .001$. These predictors accounted for approximately 19.9% of the variance in sexual IPV, and both hostility and impulsiveness were significant predictors. As shown in Table 5, results of this dominance analysis established complete dominance for impulsiveness relative to emotional dysregulation and hostility. In the pairwise comparisons to emotional dysregulation ($k = 0, .157 > .070$ and $k = 1, .065 > .006$) and hostility ($k = 0, .157 > .129$ and $k = 1, .088 > .066$), impulsiveness had a greater contribution to the R^2 of the subset models.

Additionally, as shown in Table 3, results of the bootstrap analysis indicated that complete dominance of impulsiveness over emotional dysregulation was reproduced in 97.1% of the bootstrap samples, whereas complete dominance of impulsiveness over hostility was reproduced in 70.9% of the bootstrap samples. Complete dominance of hostility over emotional dysregulation was also established in this sample. In the two pairwise comparisons to emotional dysregulation, hostility had a greater contribution to the R^2 of the models ($k = 0, .129 > .070$ and $k = 1, .037 > .000$). Bootstrap reproduced this finding in 83.2% of the bootstrap samples (see Table 3). However, examination of the bootstrap analysis for the general dominance of hostility over emotional dysregulation in the prediction of sexual IPV indicates that the general dominance result was reproduced in 92.4% of the samples.

Discussion

Although substantial work has examined the associations among different risk factors for male-to female IPV perpetration, ours is the first known study to simultaneously examine emotional dysregulation, impulsiveness, and hostility, as well as the first known to identify the relative dominance of these constructs in predicting the three forms of IPV perpetrated by heterosexual men seeking alcohol treatment. Findings of our study revealed that emotional dysregulation, hostility, and impulsiveness were significantly and moderately correlated with one another and also demonstrated significant bivariate associations with

psychological, physical, and sexual IPV perpetration. Moreover, findings of multiple regression analyses including all three predictors revealed that, as a set, these predictors accounted for approximately 20-25% of the variance in each of the three forms of IPV perpetration.

Given the significant correlations among these distinct but related constructs, we utilized dominance analysis (Azen & Budescu, 2003; Budescu, 1993) to determine which of these predictors was most important in predicting the three different forms of IPV. Dominance analysis revealed that impulsiveness completely dominated both emotional dysregulation and hostility in the prediction of both psychological IPV and sexual IPV. In both analyses, the dominance of impulsiveness over emotional dysregulation was stronger than for hostility. With regard to physical IPV perpetration, hostility demonstrated complete dominance over both emotional dysregulation and impulsiveness. The dominance of hostility over emotional dysregulation was stronger than for impulsiveness. Overall, these findings were in line with our hypotheses, which were based on past work with psychological, physical, and sexual IPV perpetration (Leonard & Senchak, 1996; Petty & Dawson, 1989; Stuart & Holtzworth-Munroe, 2005).

Our findings indicate that impulsiveness and hostility are important considerations for IPV perpetration among heterosexual men seeking treatment for alcohol use disorders. Findings of the dominance analysis favor impulsiveness in the prediction of psychological and sexual IPV. The association between impulsiveness and both sexual and psychological IPV perpetration may partially reflect that the men in our sample primarily reported use of verbal sexual coercion (vs. use of physical force), so impulsiveness may be associated with the verbal aspects of both psychological and sexual IPV. In contrast, our findings favor hostility in the prediction of physical IPV.

The consistent associations between hostility and impulsiveness and psychological, physical, and sexual IPV perpetration may suggest that aggressive personality risk factors are particularly important treatment targets among men seeking treatment for alcohol use disorders. The Alcohol Myopia Model (AMM; Steele & Josephs, 1990) provides a framework to understand why impulsiveness and hostility may be particularly important considerations for violence perpetrated by substance abusing men. According to the AMM, effortful cognitive processes are impaired during acute alcohol consumption. This impairment results in attention biases, or alcohol induced myopia, that in turn limit an individual's ability to perceive and process cues. Given limited cognitive resources, alcohol myopia simultaneously increases attention to the most salient cues in the environment, while decreasing attention to other less salient cues. Thus, aggressive responding may be potentiated during alcohol consumption by focusing attention toward the most salient perceived provocative cues that are often present in the context of hostile/aggressive situations and by reducing (or even preventing attention to and processing of) less salient, inhibitory cues. Given that hostility and impulsiveness have been shown to moderate the relationship between alcohol use and IPV perpetration (Leonard & Blane, 1992), individuals with these aggressive personality traits may already be more likely to engage in a number of cognitive distortions (e.g. hostile rumination) and attention biases which are further magnified by the effects of acute alcohol intoxication. Although our sample included only heterosexual men with alcohol use disorders, it was not clear that the IPV was perpetrated during intoxication. However, based on our findings, future studies may examine the role of hostility and impulsiveness in alcohol-related IPV involvement.

Previous research indicates that emotional dysregulation is a significant predictor of both physical and psychological IPV perpetration in a clinical sample (Tager et al., 2010), so it was somewhat unexpected that emotional dysregulation was consistently not significant in

the initial multiple regression analyses and less predictive of IPV in the dominance analyses. Emotional dysregulation has not been examined in a sample of men seeking treatment for alcohol-use disorders, so the finding may suggest that different processes are in place for IPV perpetrated by a clinical, compared to a substance abusing, sample. For example, it may suggest that when predicting violence among men with alcohol use disorders, an impulsive response to perceived provocation is more likely to result in violence whereas an emotional response may be expressed in many ways—only some of which are violent. Another potential explanation for these findings is that emotion regulation is a broad, multi-faceted construct (e.g. Gratz & Roemer, 2004) and that these men do not possess global deficits in emotion regulation but rather deficits in specific areas.

Limitations and Future Directions

Although the current findings are promising, there are a number of interpretive caveats that warrant consideration. First, self-report methods from only the treatment-seeking heterosexual men and not their partners were utilized to index the variables of interest. Thus, there is the possibility of shared method variance contributing to our study's results. It is also possible that we did not detect all violence perpetrated by the participants or that social desirability biases had different effects on measures of violence as compared to measures of hostility, impulsiveness, and/or emotional dysregulation. Future work may include multi-method, multi-reporter assessment of both IPV and these constructs, as well as incorporate other variables that may account for IPV in the context of substance abuse.

Second, our data are cross-sectional, which precludes understanding how the constructs are chronologically associated with each other. Third, the all-male sample of heterosexual substance abusers precludes generalizing these results to women who perpetrate IPV, to same-sex couples, and to non-substance abusing samples of IPV perpetrators. Finally, as a result of using dominance analysis we did not examine the interactions among hostility, impulsiveness, emotional dysregulation, and other risk factors both because we used methods that addressed the overlap between variables and because scores on the Alcohol Use Disorders Identification Test were not significantly correlated with any of the predictors of dependent variables in our sample (likely due to restriction in range on this measure among alcohol treatment-seeking men). Future work may examine not only the main effects of impulsiveness and hostility but also mediated and moderated effects. Other research has also highlighted the importance of relationship-level predictors of IPV, such as relationship problems and poor communication (Riggs & O'Leary, 1989), which may mitigate the influence of psychological dysregulation variables. Therefore, multivariable models that account for the multiple influences of IPV are needed.

The consequences of violence experienced by women from an intimate partner are far-reaching. IPV affects not only the victim but also children who may witness violence in the home (Vuong, Silva, & Marchionna, 2009). Effective prevention and treatment that focuses on the perpetration of such abuse is sorely needed to protect women's health and well-being. In particular, IPV perpetrated by men in treatment for substance abuse is a serious issue and very few effective treatments for IPV perpetration exist (Babcock et al., 2004; Whitaker et al., 2006). The translation of research into intervention is complicated by underreporting of IPV (Archer, 1999), as well as by conceptual and empirical overlap among risk factors for alcohol-related IPV such as the ones examined here. Novel theoretical and assessment approaches that clearly identify men at risk for particular forms of IPV perpetration are needed that do not rely on self-disclosure of perpetration.

Practice Implications

Further, this line of research, which aims to improve our understanding of the relevant dominance of risk and protective factors for specific types of IPV, could assist clinicians in understanding which risk factors may be most critical to assess to identify men at highest risk for particular forms of IPV perpetration. Although still not widely implemented, screening for IPV in substance abuse treatment programs has been recommended for over a decade as a cornerstone of strategies to address IPV among this population (Substance Abuse and Mental Health Services Administration, 1997). Additionally, a focus on risk factors rather than IPV per se may enhance identification of at-risk men, as well as increase men's willingness to receive additional intervention (Schumacher, Fals-Stewart, & Leonard, 2003). The high rate of IPV reported by the men in our sample underscores the need for such screening, as well as the need to address risk factors associated with specific forms of violence in treatment. By intervening effectively with men at risk for violence, we move closer to ensuring the safety of women in intimate relationships.

Conclusion

The current study examined hostility, impulsiveness, and emotional dysregulation as risk factors for male-to-female psychological, physical, and sexual IPV perpetration among men seeking alcohol treatment. Results suggest hostility was a predictor of physical IPV perpetration, and impulsiveness was a predictor of sexual and psychological IPV perpetration. Understanding the factors associated with IPV perpetration among men who abuse alcohol will facilitate the assessment, prevention, and treatment of men's violence towards women.

Acknowledgments

This work was supported by a grant from the National Institute on Alcohol Abuse and Alcoholism (R21 AA014907, PI: Schumacher). The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

References

- Archer J. Assessment of the reliability of the Conflict Tactics Scales: A meta-analytic review. *Journal of Interpersonal Violence*. 1999; 14:1263–1289.
- Azen R, Budescu DV. The dominance analysis approach for comparing predictors in multiple regression. *Psychological Methods*. 2003; 8:129–148. [PubMed: 12924811]
- Babcock JC, Green CE, Robie C. Does batterers' treatment work? A meta-analytic review of domestic violence treatment. *Clinical Psychology Review*. 2004; 23:1023–1053. [PubMed: 14729422]
- Barratt, ES. Impulsiveness and aggression. In: Monahan, J.; Steadman, HJ., editors. *Violence and mental disorder: Developments in risk assessment*. University of Chicago Press; Chicago, IL: 1994. p. 61-79.
- Black, MC.; Basile, KC.; Breiding, MJ.; Smith, SG.; Walters, ML.; Merrick, MT.; Stevens, MR. The National Intimate Partner and Sexual Violence Survey (NISVS): 2010 summary report. National Center of Injury Prevention and Control, Centers for Disease Control and Prevention; Atlanta, GA: 2011.
- Black MC, Breiding MJ. Adverse health conditions and health risk behaviors associated with intimate partner violence—United States, 2005. *JAMA*. 2008; 300:646–647.
- Budescu DV. Dominance analysis: A new approach to the problem of relative importance of predictors in multiple regression. *Psychological Bulletin*. 1993; 114:542–551.
- Bushman BJ, Baumeister RF, Phillips CM. Do people aggress to improve their mood? Catharsis beliefs, affect regulation opportunity, and aggressive responding. *Journal of Personality and Social Psychology*. 2001; 81:17–32. [PubMed: 11474722]

- Buss AH, Durkee A. An inventory for assessing different kinds of hostility. *Journal of Consulting Psychology*. 1957; 21:343–349. [PubMed: 13463189]
- Clements K, Schumacher JA. Perceptual biases in social cognition as potential moderators of the relationship between alcohol and intimate partner violence: A review. *Aggression and Violent Behavior*. 2010; 15:357–368.
- Coffey SF, Gudleski GD, Saladin ME, Brady KT. Impulsivity and rapid discounting of delayed hypothetical rewards in cocaine-dependent individuals. *Experimental & Clinical Psychopharmacology*. 2003; 11:18–25. [PubMed: 12622340]
- Eckhardt CI, Barbour KA, Stuart GL. Anger and hostility in maritally violent men: Conceptual distinctions, measurement issues, and literature review. *Clinical Psychology Review*. 1997; 17:333–358. [PubMed: 9199856]
- Fals-Stewart W, Bates ME. The neuropsychological test performance of drug-abusing patients: An examination of latent cognitive abilities and associated risk factors. *Experimental & Clinical Psychopharmacology*. 2003; 11:34–45. [PubMed: 12622342]
- Finkel EJ. Impelling and inhibiting forces in the perpetration of intimate partner violence. *Review of General Psychology*. 2007; 11:193–207.
- Giancola PR. Executive functioning: A conceptual framework for alcohol-related aggression. *Experimental and Clinical Psychopharmacology*. 2000; 8:576–597. [PubMed: 11127429]
- Giancola PR. Executive functioning and alcohol related aggression. *Journal of Abnormal Psychology*. 2004; 113:541–555. [PubMed: 15535787]
- Giancola PR, Godlaski AJ, Roth RM. Identifying component-processes of executive functioning that serve as risk factors for the alcohol-aggression relation. *Psychology of Addictive Behaviors*. 2012; 26:201–211. [PubMed: 21875167]
- Gratz KL, Roemer L. Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*. 2004; 26:41–54.
- Holtzworth-Munroe A, Rehman U, Herron K. General and spouse specific anger and hostility in subtypes of maritally violent men and nonviolent men. *Behavior Therapy*. 2000; 31:603–630.
- Jakupcak M. Masculine gender role stress and men's fear of emotions as predictors of self-reported aggression and violence. *Violence and Victims*. 2003; 18:533–541. [PubMed: 14695019]
- Jakupcak M, Lisak D, Roemer L. The role of masculine ideology and masculine gender role stress in men's perpetration of relationship violence. *Psychology of Men and Masculinity*. 2002; 3:97–106.
- Klostermann K, Kelley ML, Mignone T, Pusateri L, Fals-Stewart W. Partner violence and substance abuse: Treatment interventions. *Aggression and Violent Behavior*. 2010; 15:162–166.
- Leonard, KE. U.S. Department of Health and Human Services research monograph, 24: Alcohol and interpersonal violence: Fostering multidisciplinary perspectives. National Institutes of Health; Washington, DC: 1993. Drinking patterns and intoxication in marital violence: Review, critique, and future directions for research; p. 253-280. NIH Publication No. 93-3496
- Leonard KE, Blane HT. Alcohol and marital aggression in a national sample of young men. *Journal of Interpersonal Violence*. 1992; 7:19–30.
- Leonard KE, Senchack M. Alcohol and premarital aggression among newlywed couples. *Journal of Abnormal Psychology*. 1996; 105:369–380. [PubMed: 8772007]
- Lipsey, MW.; Wilson, DB.; Cohen, MA.; Derzon, JH. Is there a causal relationship between alcohol use and violence? A synthesis of evidence. In: Lipsey, MW.; Wilson, DB.; Cohen, MA.; Derzon, JH.; Galanter, M., editors. Recent developments in alcoholism. Alcohol and violence: Epidemiology, neurobiology, psychology, family issues. Vol. 13. Plenum Press; New York, NY: 1997. p. 245-282.
- McCormick RA, Smith M. Aggression and hostility in substance abusers: The relationship to abuse patterns, coping style, and relapse triggers. *Addictive Behaviors*. 1995; 20:555–562. [PubMed: 8712053]
- Moeller GF, Barratt ES, Dougherty DM, Schmitz JM, Swann AC. Psychiatric aspects of impulsivity. *The American Journal of Psychiatry*. 2001; 158:1783–1793. [PubMed: 11691682]
- Murphy CM, Ting L. The effects of treatment for substance use problems on intimate partner violence: A review of empirical data. *Aggression and Violent Behavior*. 2010; 15:325–333.

- Nagoshi CT, Walter D, Muntaner C, Haertzen CA. Validation of the tridimensional personality questionnaire in a sample of male drug users. *Personality and Individual Differences*. 1992; 13:401–409.
- Norlander B, Eckhardt CI. Anger, hostility, and male perpetrators of intimate partner violence: A meta-analytic review. *Clinical Psychology Review*. 2005; 25:119–152. [PubMed: 15642644]
- O’Leary KD, Malone J, Tyree A. Physical aggression in early marriage: Prerelationship and relationship effects. *Journal of Consulting and Clinical Psychology*. 1994; 62:594–602. [PubMed: 8063986]
- Patton JH, Stanford MS, Barratt ES. Factor structure of the Barratt Impulsiveness Scale. *Journal of Clinical Psychology*. 1995; 51:768–774. [PubMed: 8778124]
- Petty G, Dawson B. Sexual aggression in normal men: Incidence, beliefs, and personality characteristics. *Personality and Individual Differences*. 1989; 10:355–362.
- Riggs, DS.; O’Leary, KD. A theoretical model of courtship aggression. In: Pirog-Good, MA.; Stets, JE., editors. *Violence in dating relationships: Emerging social issues*. Praeger; New York: 1989. p. 53-71.
- Saunders JB, Aasland OG, Babor TF, de la Fuente JR, Grant M. Development of the 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]
- Schumacher JA, Coffey SF, Stasiewicz PR, Murphy CM, Leonard KE, Fals-Stewart W. Development of a brief motivational enhancement intervention for intimate partner violence in alcohol treatment settings. *Journal of Aggression, Maltreatment, and Trauma*. 2011; 20:103–127.
- 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]
- Schumacher JA, Feldbau-Kohn S, Slep AMS, Heyman RE. Risk factors for male-to-female partner physical abuse. *Aggression and Violent Behavior*. 2001; 6:281–352.
- 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; 22:894–904. [PubMed: 19102610]
- Steele CM, Josephs RA. Alcohol myopia: Its prized and dangerous effects. *American Psychologist*. 1990; 45:921–933. [PubMed: 2221564]
- Straus MA, Hamby SL, Boney-McCoy S, Sugarman DB. The Revised Conflict Tactics Scale (CTS2). *Journal of Family Issues*. 1996; 17:283–316.
- Stuart GL, Holtzworth-Munroe A. Testing a theoretical model of the relationship between impulsivity, mediating variables, and marital violence. *Journal of Family Violence*. 2005; 20:291–303.
- Substance Abuse and Mental Health Services Administration. Substance abuse treatment and domestic violence. 1997. Retrieved from http://www.quantumunitsed.com/materials/2807_substanceabuseanddomesticviolence.pdf
- Tager DG, Good GE, Brammer S. “Walking over ’em”: An exploration of relations between emotion dysregulation, masculine norms, and intimate partner abuse in a clinical sample of men. *Psychology of Men and Masculinity*. 2010; 11:233–239.
- Tarter R, Vanyukov M, Giancola P, Dawes M, Blackson T, Mezzich A, Clark DB. Etiology of early age onset substance use disorder: A maturational perspective. *Development and Psychopathology*. 1999; 11:657–683. [PubMed: 10624720]
- Tarter RE, Kirisci L, Mezzich A, Cornelius JR, Pajer K, Vanyukov M, Clark D. Neurobehavioral disinhibition in childhood predicts early age at onset of substance use disorder. *American Journal of Psychiatry*. 2003; 160:1078–1085. [PubMed: 12777265]
- Vuong, L.; Silva, F.; Marchionna, S. Children exposed to violence. Focus: Views from the National Council on Crime and Delinquency. 2009. Retrieved from <http://www.nccd-crc.org/nccd/dnld/Home/focus0809.pdf>
- Whitaker DJ, Morrison S, Lindquist C, Hawkins SR, O’Neil JA, Nesius AM. A critical review of interventions for the primary prevention of perpetration of dating violence. *Aggression and Violent Behavior*. 2006; 11:151–166.

Wills TA, Walker C, Mendoza D, Ainette MG. Behavioral and emotional self-control: Relations to substance use in samples of middle and high school students. *Psychology of Addictive Behaviors*. 2006; 20:265–278. [PubMed: 16938064]

Table 1
Descriptive Statistics, Alphas, and Correlations among Predictors and Dependent Variables

Scale	Possible Range	M (SD)	2	3	4	5	6	7
1. Alcohol Use Disorders Identification Test	0-40	27.43 (8.72)	.07	-.04	-.04	.06	.09	.10
2. CTS2 Psychological Aggression	0-200	45.17 (38.28)	(.81)	.53***	.28**	.38***	.38***	.46***
3. CTS2 Physical Assault ^a	0-300	6.37 (15.37)		(.79)	.33***	.42***	.30**	.36***
4. CTS2 Sexual Coercion ^a	0-175	7.54 (15.09)			(.51)	.36***	.26**	.40***
5. Buss-Durkee Hostility Inventory	0-75	38.55 (11.07)				(.90)	.56***	.48***
6. Difficulties in Emotion Regulation	36-180	94.57 (24.53)					(.94)	.64***
7. Barratt Impulsiveness Scale-11	30-120	74.76 (11.27)						(.82)

Note. CTS2 = Conflict Tactics Scales-Revised. Coefficient alphas are presented in parentheses along the diagonal of the correlation matrix.

^aValues were log-transformed prior to analysis.

**
 $p < .01$.

 $p < .001$.

Table 2
Dominance Analysis of Predictors of Psychological IPV Perpetration

Subset Model	R^2	Additional Contribution of		
		DERS	BDHI	BIS11
Null and $k = 0$ Average	.000	.147	.143	.212
DERS	.147		.039	.078
BDHI	.143	.044		.101
BIS11	.212	.014	.032	
$k = 1$ Average		.029	.036	.090
DERS, BDHI	.187			.061
DERS, BIS11	.226		.021	
BDHI, BIS11	.244	.003		
$k = 2$ Average		.003	.021	.061
Overall Average		.060	.067	.121

Note. DERS = Difficulties in Emotion Regulation Scale; BDHI = Buss Durkee Hostility Inventory; BIS11 = Barratt Impulsiveness Scale; k = number of predictors in multiple regression model.

Table 3
Reproducibility over 1000 Bootstrap Samples of Complete and General Dominance Relationships

Dominance Level & Relationship	Reproducibility Values		
	Psychological IPV	Physical IPV	Sexual IPV
Complete			
BIS11 > DERS	.821	.817	.971
BIS11 > BDHI	.783	--	.709
BDHI > DERS	.282	.942	.832
BDHI > BIS11	--	.780	--
General			
BIS11 > DERS	.841	.875	.985
BIS11 > BDHI	.826	--	.727
BDHI > DERS	.540	.957	.924
BDHI > BIS11	--	.791	--

Note. DERS = Difficulties in Emotion Regulation Scale; BDHI = Buss Durkee Hostility Inventory; BIS11 = Barratt Impulsiveness Scale. Reproducibility values indicate the proportion of bootstrap samples in which a specified dominance relationship was replicated.

Table 4
Dominance Analysis of Predictors of Physical IPV Perpetration

Subset Model	R^2	Additional Contribution of		
		DERS	BDHI	BIS11
Null and $k = 0$ Average	.000	.087	.179	.131
DERS	.087		.097	.051
BDHI	.179	.005		.033
BIS11	.131	.007	.081	
$k = 1$ Average		.006	.089	.042
DERS, BDHI	.184			.028
DERS, BIS11	.138		.075	
BDHI, BIS11	.212	.001		
$k = 2$ Average		.001	.075	.028
Overall Average		.031	.114	.067

Note. DERS = Difficulties in Emotion Regulation Scale; BDHI = Buss Durkee Hostility Inventory; BIS11 = Barratt Impulsiveness Scale; k = number of predictors in multiple regression model. The dependent variable, physical IPV, was log-transformed prior to the analysis. k = number of predictors in multiple regression model.

Table 5
Dominance Analysis of Predictors of Sexual IPV Perpetration

Subset Model	R^2	Additional Contribution of		
		DERS	BDHI	BIS11
Null and $k = 0$ Average	.000	.070	.129	.157
DERS	.070		.066	.088
BDHI	.129	.006		.065
BIS11	.157	.000	.037	
$k = 1$ Average		.003	.051	.077
DERS, BDHI	.135			.064
DERS, BIS11	.158		.041	
BDHI, BIS11	.195	.004		
$k = 2$ Average		.004	.041	.064
Overall Average		.026	.074	.099

Note. DERS = Difficulties in Emotion Regulation Scale; BDHI = Buss Durkee Hostility Inventory; BIS11 = Barratt Impulsiveness Scale; k = number of predictors in multiple regression model. The dependent variable, sexual IPV was log-transformed prior to the analysis. k = number of predictors in multiple regression model.