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Male-Perpetrated Violence Among Vietnam Veteran Couples: Relationships With Veteran's Early Life Characteristics, Trauma History, and PTSD Symptomatology

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Using structural equation modeling, we examined the impact of early-life stressors, war-zone stressors, and PTSD symptom severity on partner's reports of recent male-perpetrated intimate partner violence (IPV) among 376 Vietnam veteran couples. Results indicated that several variables demonstrated direct relationships with IPV, including relationship quality with mother, war-zone stressor variables, and PTSD symptom severity. Importantly, retrospective reports of a stressful early family life, childhood antisocial behavior, and war-zone stressors were indirectly associated with IPV via PTSD. One of our 2 war-zone stressor variables, perceived threat, had both direct and indirect (through PTSD) relationships with IPV. Experiencing PTSD symptoms as a result of previous trauma appears to increase an individual's risk for perpetrating IPV. Implications for research and treatment are discussed.

KEY WORDS: PTSD; Vietnam veterans; intimate partner violence; structural equation modeling.

Introduction

Intimate partner violence is a significant social problem. According to the National Family Violence Surveys conducted in 1975, 1985, and 1992, nearly one in eight couples in the United States had experienced at least one episode of intimate partner violence in the prior year (Straus & Gelles, 1990; Straus & Kantor, 1994, as cited in Schafer, Caetano, & Clark, 1998). Importantly, male-to-female partner violence carries a much greater risk of injury or death than female-to-male partner violence (Browne, 1993). Given the widespread nature of intimate partner violence as well as the multitude of associated negative outcomes, it is essential that the etiology of this behavior be understood to guide efforts toward preventing domestic violence and its consequences.

As with most complex behaviors, intimate partner violence occurs as a result of multiple factors that are likely both stable and transient, as well as intrapersonal and interpersonal (see, e.g., Riggs & O'Leary, 1996, for a discussion of the influence of both background and situational factors). In this regard, this study examined a number of variables hypothesized to be related to the development of intimate partner violence in families of Vietnam veterans, with special emphasis on the veteran perpetrator's history of exposure to stressful life events. Conceptually, these variables may be considered in a chronological fashion, beginning with characteristics of the veteran's family of origin and childhood antisocial behavior, followed by trauma experienced in the war zone, and then posttraumatic stress disorder (PTSD) symptomatology.

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Family of Origin and Childhood Antisocial Behavior

A dysfunctional family environment in one's childhood may very well increase the propensity for violence against one's partner in later years. Indeed, considerable attention has been directed to what is referred to as the intergenerational transmission of violence, that children who experience physical abuse or witness intimate partner violence are themselves at greater risk of perpetrating intimate partner violence (Sugarman & Hotaling, 1989; Widom, 1989). The mechanisms through which the intergenerational transmission of violence may occur are not well established. One often-cited theory is that it occurs through a process of modeling or social learning theory: Children learn that violence is an acceptable way to express feelings, and/or that it is sometimes necessary to hit those that you love (see Simons & Johnson, 1998, for a review). Consistent with a social learning framework, it has been postulated that the quality of one's relationship with parental figures plays a role in the likelihood of being violent in intimate adult relationships. Magdol, Moffitt, Caspi, and Silva (1998), for example, found that individuals who experienced warmth, trust, and open communication in their early parental relationships were less likely to use abusive strategies in their later intimate relationships. Accordingly, relationship with mother and relationship with father are two additional family of origin characteristics deserving of attention.

One might also argue that other forms of early trauma exposure (e.g., being a victim of natural disasters, accidents, or assaults) as well as other highly stressful conditions in the family of origin, (e.g., parental legal problems, mental illnesses among close family members, substance abuse in the household) may all contribute to a family environment that fosters early behavior problems (e.g., Dembo, Williams, Wothke, Schmeidler, & Brown, 1992) and subsequent aggressive tendencies (Garmezy, 1974; Rutter, 1979). Indeed, Magdol et al. (1998) noted that problem behaviors, such as truancy, delinquency, and fighting, were positively correlated with risk of perpetrating intimate partner violence. Thus, violence may be a visible symptom of an underlying antisocial personality disorder behavior pattern, and we might expect the early expression of antisocial behaviors to be related to later intimate partner violence.

War-Zone Trauma Exposure

The veteran participants in this study were exposed to varying levels of trauma while serving in Vietnam (Kulka et al., 1990). In this study, trauma exposure in the war zone is hypothesized to impact perpetration of intimate partner violence indirectly through PTSD symptoms. It is possible, however, that trauma exposure may also have a direct effect on perpetration of violence. Specifically, trauma exposure in the war zone may impact risk of perpetrating intimate partner violence directly by exposing individuals to violence in such a manner that they come to view violence as an acceptable means of acting. Indeed, Gimbel and Booth (1994) noted that although aggressive behaviors that are highly endorsed in the war zone are inappropriate in intimate relationships, these learned behaviors may be carried over and used for conflict resolution within intimate relationships.

PTSD Symptomatology

A number of studies (e.g., Byrne & Riggs, 1996; Dutton, Starzomski, & Ryan, 1996; Jordan et al., 1992) have demonstrated increased intimate partner violence among men with PTSD symptoms. The specific mechanism through which PTSD results in increased intimate partner violence may be related to the anger and irritability that is seen frequently among individuals with this condition (Novac & Chemtob, 2002).

In this study, therefore, we examined a collection of factors purportedly associated with male-perpetrated domestic violence in a national sample of Vietnam veterans and their spouses/partners, encompassing the veteran's early life characteristics and experiences within his family of origin, childhood and war-zone trauma history, and current PTSD. First, we hypothesized that dysfunction in the family of origin and poor relationships with parents would be directly related to intimate partner violence as well as indirectly related to violence via childhood antisocial behavior. Second, childhood antisocial behavior was hypothesized to be directly associated with violence and indirectly associated with violence through increased exposure to war-zone stressors in Vietnam. Our third hypothesis was that war-zone stressors would relate to violence both directly and indirectly by way of PTSD symptom severity.

Method

Data Source

This study used data from participants in the National Vietnam Veterans Readjustment Study (NVVRS; Kulka et al., 1990), a Congressionally mandated multicomponent investigation of the Vietnam generation. Of the 1,200 male

participants who served in the Vietnam theater of war operations, 376 male veterans and their partners participated in a family interview substudy. This family sample included spouses or cohabitating partners of all veterans who had a high probability of PTSD as operationalized by scores at or above 89 on the Mississippi Scale for combat-related PTSD (Keane, Caddell, & Taylor, 1988). A family could also be selected if the veteran reported a high degree of nonspecific distress or had a high level of prior combat exposure. To increase score variability in the full family sample, some families were included that did not meet any of the above criteria.

The racial or ethnic identity for the male veterans in this subset was 24% African American, 29% Latino, and 47% White/Other, with a very similar distribution for their female partners. Extensive details about the sampling procedure and the sample are available in many other sources (e.g., Jordan et al., 1992; Kulka et al., 1990). Data from veterans were collected in extensive, 5-h, face-to-face household interviews that inquired about the veteran's premilitary, military, and postmilitary life. Interviews with partners lasted approximately 1 h and included the partner's assessment of the veteran's violence toward her.

Measures

Family Dysfunction

Four measures of family dysfunction were used in this study. First, family turmoil was assessed by determining the occurrence of nine circumstances that may have created a disruptive home environment (e.g., substance use, serious medical illness, mental illness, and arrest and/or incarceration of family members). The nine items were scored such that 1 indicated that the circumstance did not occur in the family of origin, 2 indicated that the circumstance occurred and involved a family member other than a parent, 3 indicated that the circumstance occurred and involved one parent, and 4 indicated that the circumstance occurred and involved both parents. An average item score was computed, and the internal consistency of the full scale was .65.

The second index of family dysfunction was a measure of severe punishment, computed as the average of standard scores on two items. The first item inquired as to whether anyone in the family or household had ever hit the veteran hard enough to cause marks or bruises, to cause him to stay in bed, or to require a physician's attention. Responses were scored using the same 1–4 scale described above for family turmoil. The second item asked how often such severe punishment occurred. Responses were scored 0–4, where 0 indicated that this never occurred, 1 indicated that it occurred rarely, 2 indicated that it occurred sometimes, 3 indicated it occurred often, and 4 indicated that it occurred very often. The internal consistency of this two-item index was .92.

Next, a single dichotomously scored (1 = *no* , 2 = *yes*) question, "Did you ever see your parents [parent substitutes] hit one another?" served as a measure of witnessing interparental violence in the family of origin.

Finally, a measure of early trauma exposure prior to entrance into the military was created on the basis of an inventory of traumatic events with five categories of highly stressful experiences: (a) automobile or other vehicular accidents; (b) fires or explosions; (c) natural disasters; (d) farm or industrial accidents; and (e) physical assault, torture, rape, abuse, mugging, or similar assault. Each event within a category was scored on a 0–2 scale with 0 indicating that the respondent did not report being a victim of such an event, 1 indicating that the respondent experienced the event but was not injured, and 2 indicating that the respondent experienced the event and was "severely or permanently ill, injured, or mutilated as a result." A total score summed across all events in the five categories was created for each veteran.

Relationship With Mother

The quality of the veteran's relationship with his mother was measured by a six-item scale. Items assessed feelings of closeness to the parent, ability to confide in the parent, amount of time spent with the parent, degree to which the parent provided consolation at times of distress, amount of parental affection displayed (all using a 5-point response format), and an assessment of the overall relationship quality (using a 9-point response format). Item responses were converted to standard scores that were averaged to compute a composite average item score. Higher values indicated poorer relationship quality. The internal consistency estimate was .91.

Relationship With Father

The quality of the veteran's relationship with his father was assessed in a manner parallel to the measure of relationship with mother. Estimated internal consistency was .92.

Veteran's Childhood Antisocial Behavior

Seventeen items drawn from the Diagnostic Interview Schedule (Robins, Helzer, Croughan, & Ratcliff, 1981) assessed whether or not the respondent had engaged

in specific problem behaviors before the age of 15: fighting, vandalism, truancy, arson, and the like. Respondents who endorsed participating in the behavior prior to the age of 15 received a score of 1 on that item whereas those who did not endorse the behavior received a score of 0. The internal consistency for the 17 items was .74.

Combat Exposure

This first war-zone stressor variable was assessed by 36 items referencing the extent to which the veteran reported exposure to events and circumstances that would be considered observable, common warfare experiences such as receiving enemy fire, going on patrol, and seeing dead or injured Americans. Standard scores for items were summed to create a total score. The internal consistency was .94.

Perceived Threat

This second, more subjective, war-zone stressor variable was indexed by nine items assessing the veteran's appraisal of whether war-zone events or circumstances were harmful to personal safety, such as judgments of fear and the degree of danger. The internal consistency was .84.

PTSD Symptom Severity

We used the Mississippi Scale for combat-related PTSD (Keane et al., 1988), a 35-item self-report instrument, to assess the veteran's PTSD symptom severity. The measure employs a 5-point Likert response scale. The three symptom clusters of PTSD, reexperiencing, avoidance and numbing, and hyperarousal, as well as the associated features of depression, substance abuse, and suicidality, are assessed. The Mississippi Scale is well established as a reliable and valid PTSD assessment device (see the psychometric studies by King, King, Fairbank, Schlenger, & Surface, 1993; Kulka et al., 1990; McFall, Smith, Mackay, & Tarver, 1990). The internal consistency was .94.

Intimate Partner Violence

Violence perpetrated by the veteran against his spouse/partner was assessed by the Conflict Tactics Scale (CTS; Straus, 1979). The CTS has been used in numerous empirical studies (e.g., Byrne & Riggs, 1996; Dutton, 1995) and has been demonstrated to be a reliable and valid self-report measure of intimate partner conflict and violence (e.g., Arias & Beach, 1987; Straus, 1979). We employed eight CTS items that assessed the veteran's physical battering of his spouse/partner in the past year, as reported by the partner. Sample items are "threw something at [you]," "pushed, grabbed, or shoved [you]," and "used a knife or gun." The CTS uses a 7-point Likert response format with 0 indicating *never* and 6 indicating *more than 20 times*. A sum was calculated for the eight items; the internal consistency estimate was .90.

Analytic Procedures

Initial analyses (e.g., calculations of item and scale psychometric characteristics and descriptive statistics) were conducted using SPSS. The primary analytic approach was structural equation modeling (SEM), a methodology especially appropriate and powerful for examining complex associations among constructs or latent variables. The goal of the analyses was to determine the most parsimonious model that best fit the data. A measurement model, incorporating the latent variables and their observed variables or manifest indicators, was initially specified and evaluated. Proceeding from the most saturated to the most parsimonious model (Anderson & Gerbing, 1988), a series of hierarchically nested structural models was used to systematically evaluate the several hypotheses concerning indirect and direct effects relating veteran's early life characteristics and experiences, childhood and war-zone trauma history, and current PTSD to intimate partner violence. Decisions regarding model simplification and respecification were made within a context of careful attention to meaningful, substantive considerations, as strongly emphasized by Joreskog and Sorbom (1993a), Cudeck and Browne (1983), and Bollen (1989), among others. When variables representing psychopathology are measured within a community sample, assumptions of multivariate normality are frequently violated. In light of this, we used the Satorra–Bentler (Chou, Bentler, & Satorra, 1991) correction for chi-squares and standard errors of the parameter estimates. EQS (Bentler, 1989) was used to specify and evaluate the models. Further details on the analytic procedures are available from the first author.

Results

Descriptive Statistics

Descriptive statistics for the measures in the study are presented in Table 1. As noted previously, some measures (specifically, severe punishment, relationship with mother,

Table 1. Descriptive Data for Variables Included in the Structural Equation Model

Measure	Number of items	*M*	*SD*
Family turmoil	9	1.18	0.27
Severe punishment	1	0.00	0.97
Witnessing interparental violence	1	1.23	0.42
Early trauma exposure	5	0.38	0.77
Relationship with mother	6	0.00	0.85
Relationship with father	6	0.00	0.81
Childhood antisocial behavior	17	0.00	0.45
Combat exposure	36	0.00	0.61
Perceived threat	9	0.00	0.67
PTSD symptom severity (Mississippi Scale)	35	77.52	23.65
Intimate partner violence (Conflict Tactics Scale)	8	1.40	4.64

Note. Descriptive statistics for some measures were calculated using *z* scores.

relationship with father, childhood antisocial behavior, combat exposure, and perceived threat) have items with varying numbers of response options, which necessitated transformation of the original item scores into a common metric. Thus, descriptive statistics for these measures are calculated on sums or averages of *z* scores, with the mean across all participants approximating 0, as shown in the table. Scores on the CTS were quite positively skewed, further reinforcing our decision to employ a robust estimator in the SEM analyses.

Structural Equation Modeling

Measurement Model

The measurement model contained eight constructs or latent variables. Three latent variables were specified to reflect the key family of origin characteristics. First, a family (of origin) dysfunction latent variable was composed of four observed variables or manifest indicators: scores on the measures of family turmoil, severe punishment, witnessing interparental violence, and early trauma exposure. The other latent variables characterizing the family of origin were relationship with mother and relationship with father. Each had scores on two randomly formed item triplets serving as manifest indicators. The childhood antisocial behavior latent variable had five manifest indicators. These were formed by randomly grouping the 17 items for that measure into three clusters of three items and two clusters of four items.

Two latent variables represented war-zone stressors. The first latent variable, combat exposure, was composed of a single causal indicator (e.g., Bollen & Lennox, 1991), the total score across all 36 items on that scale. The second latent variable, perceived threat, had three manifest indicators, constructed by randomly grouping the nine-scale items into three triplets. The PTSD symptom severity latent variable had four manifest indicators based on prior factor analyses of the Mississippi Scale (King & King, 1994). These indicators were average scores on item clusters designated as reexperiencing and situational avoidance (11 items), withdrawal and numbing (11 items), arousal and lack of control (8 items), and guilt and suicidality (5 items). Finally, the intimate partner violence latent variable was composed of a causal indicator representing the sum of scores on the eight CTS physical violence items.

This measurement model provided good fit to the data: S-B$\chi^2(183, N = 367) = 320.46$, $p < .001$; the Akaike information criterion (AIC; Akaike, 1987) was 460.46; the corrected Akaike information criterion (CAIC; Bozdogan, 1987) was 803.84; the root-mean-square error of approximation (RMSEA; Steiger, 1990) was .051, with a 90% confidence interval of .043–.059; the standardized root-mean-square residual (SRMR; Hu & Bentler, 1998) was .043; the comparative fit index (CFI; Bentler, 1990) was .95; and Steiger's corrected form (Steiger, 1990) of the goodness-of-fit index (GFI; Joreskog & Sorbom, 1993a) was .96.

Structural Model

The initial, most saturated structural model was one in which many of the more antecedent or distal latent variables were associated with or had direct paths to downstream or proximal latent variables. In particular, the exogenous latent variables of family dysfunction, relationship with mother, and relationship with father were directly linked to childhood antisocial behavior, PTSD, and intimate partner violence. Among those three, family dysfunction was also proposed to increase vulnerability to war-zone stressors, as evidenced by direct paths to combat exposure and perceived threat. Childhood antisocial behavior was likewise associated with combat exposure, perceived threat, and, importantly, intimate partner violence. Finally, this initial model postulated a network of associations involving war-zone experiences and their sequelae in the form of combat exposure linked to perceived threat, and both of these stressor variables having direct paths to PTSD and intimate partner violence.

We then sequentially deleted paths least likely to be implicated in predicting intimate partner violence based on observed partial relationships and substantive considerations. Through this model trimming procedure, we arrived at the final model of best fit, depicted in Fig. 1.

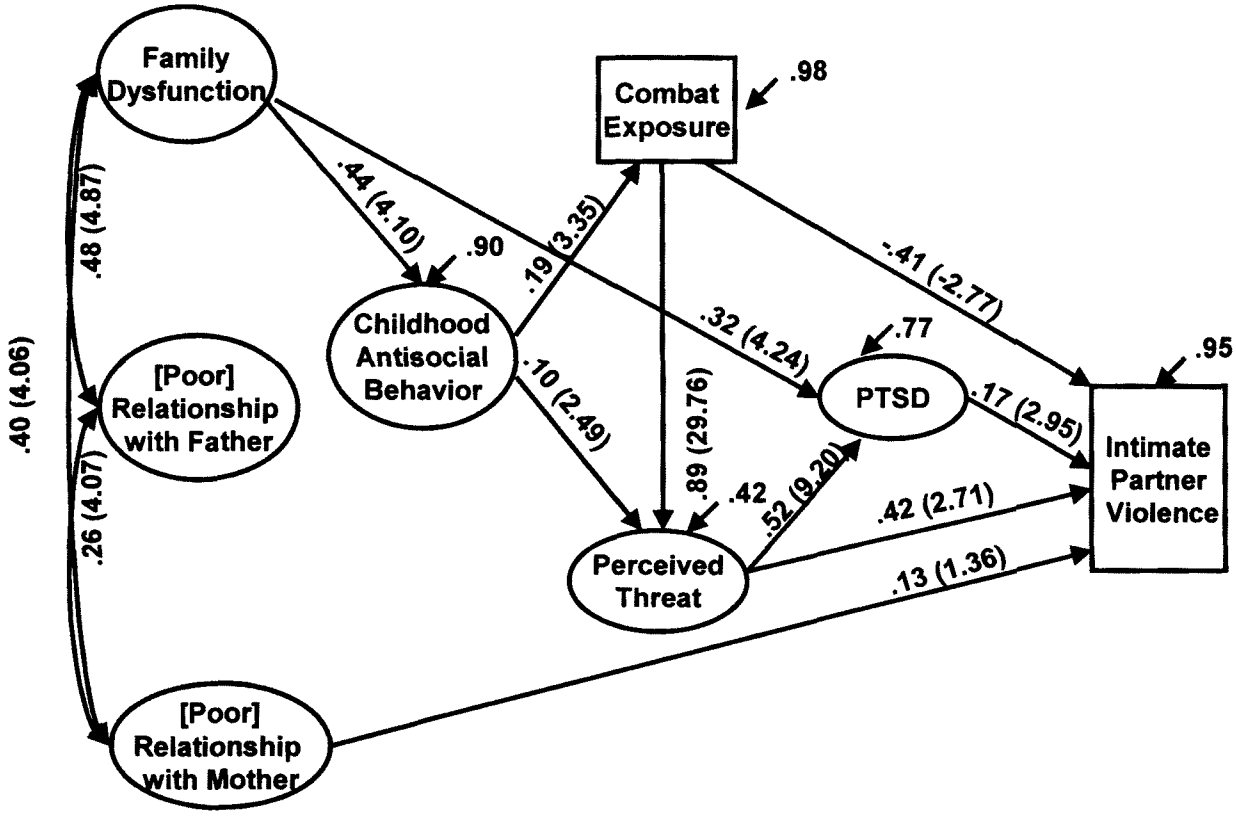

Fig. 1. Final structural model predicting intimate partner violence in male Vietnam veterans (N = 376). Path coefficients are standardized, and corresponding critical ratios are provided in parentheses.

Evidence that this most parsimonious or constrained model provides good fit to the data derives from three sources: (a) the difference between chi-square statistics for the most saturated and the most constrained models (using Satorra's, 2000, formulas) was nonsignificant, corrected-ΔS-B$\chi^2(10, N = 367) = 3.88$, *ns*; (b) the values for the AIC, CAIC, and RMSEA decreased and were at their smallest for the most constrained model; and (c) the RMSEA and SRMR for the most constrained model were both less than .05, thereby achieving a well-recognized standard of close fit (Browne & Cudeck, 1993; Hu & Bentler, 1998). For this final accepted model, S-B$\chi^2(198, N = 367) = 335.30$, $p < .001$; AIC = 445.30; CAIC = 715.09; RMSEA = .049, with a 90% confidence interval of .041–.056; SRMR = .047; CFI = .95; and GFI = .96.

As shown in Fig. 1, the final model had four direct paths to intimate partner violence: [poor] relationship with mother, combat exposure, perceived threat in the war zone, and PTSD symptom severity. The relationship with mother, perceived threat, and PTSD associations with violence were all positive, as expected, but the path from combat exposure to intimate partner violence was negative, suggesting that higher levels of combat were related to lower levels of violence. Since the bivariate relationship between the combat exposure and violence latent variables was relatively weak and positive, $r = .07$, critical ratio = 1.35, there is evidence of a suppressor effect in these data (Cohen & Cohen, 1983). Two variables reflecting the veteran's early life characteristics and experiences, family dysfunction and childhood antisocial behavior, demonstrated indirect effects on intimate partner violence via the war-zone stressors (combat exposure and perceived threat) and associated PTSD symptom severity. Finally [poor] relationship with father did not demonstrate a direct or indirect association with intimate partner violence in the present model. Tables explaining the sequence of model trimming and reporting total, direct, and indirect effects of all variables on intimate partner violence are available from the first author.

Discussion

This study used a national sample of Vietnam veteran couples to model relationships of the veteran's early

life characteristics and experiences, trauma history, and PTSD symptom severity with male-perpetrated domestic violence. Overall, the results supported the notion that the veteran's background, including his trauma history and PTSD symptomatology, increases the risk of perpetrating violence against his partner. There was at least partial support for the proposed direct and indirect effects across all three hypotheses.

Our first hypothesis was that family dysfunction and poor relationships with parents would directly predict increased risk of intimate partner violence and do so indirectly through childhood antisocial behavior. This hypothesis was partially supported: The veteran's report of a poor relationship with his mother was directly related to intimate partner violence. The veteran's report of a poor relationship with his father, however, was neither directly nor indirectly associated with intimate partner violence. How are we to understand this pattern of findings? Given the retrospective nature of the present data, we cannot rule out the possibility that men who engage in intimate partner violence are biased toward recalling their relationships with their mothers as more negative. Alternatively, men who engage in violence toward women may have been taught at an early age, consistent with a social learning model, to respond negatively toward women, resulting in a negative view of their relationship with their mothers. In addition, it may be that a positive relationship with one's mother, more so than with one's father, is a protective factor and decreases the risk of engaging in intimate partner violence. Family dysfunction (e.g., family turmoil, severe punishment, witnessing interparental violence, and early trauma exposure) was not directly related to intimate partner violence; however, family dysfunction was indirectly related to intimate partner violence via an initial pathway through childhood antisocial behavior (and its subsequent pathways) and then also through PTSD symptomatology. Thus, the higher the level of dysfunction in the family of origin, the greater the veteran's involvement in childhood antisocial behavior and the greater the veteran's report of current PTSD symptoms, with ultimate associations with intimate partner violence.

Our second hypothesis was that childhood antisocial behavior would directly predict intimate partner violence and indirectly predict violence via combat exposure. This hypothesis likewise received partial support. Childhood antisocial behavior, while not directly associated with intimate partner violence, was nonetheless indirectly related to intimate partner violence via combat exposure, perceived threat, and PTSD symptoms. Thus, individuals with a history of behavior problems prior to the age of 15 were more likely to report exposure to combat situations as well as increased perceptions of life threat while in Vietnam. It may be, as pointed out by King, King, Foy, and Gudanowski (1996), that individuals who are involved in childhood antisocial behavior are at increased risk of being placed in more traumatic situations, although the exact mechanisms for this are unclear. Anecdotal evidence supports the notion that individuals who acted out in the military may have been more likely to be sent into high combat situations. Alternatively, individuals with antisocial behavior may have requested or somehow self-selected into high combat situations.

Our third general hypothesis, specifically that combat exposure and perceived threat would be both directly related to intimate partner violence and indirectly related to intimate partner violence via PTSD symptomatology, was supported. As shown in Fig. 1, increased reports of combat exposure were related to increased perceptions of threat while in Vietnam. In turn, the greater the veteran's perceptions of threat while in Vietnam, the greater his report of PTSD symptoms. This pattern of relationships—combat exposure to perceived threat to PTSD—has been reported elsewhere for the full complement of veterans studied in the NVVRS (King, King, Foy, Keane, & Fairbank, 1999). Our postulated indirect effects from combat exposure and perceived threat via PTSD to intimate partner violence were upheld; that is, the effects of both war-zone exposure variables on intimate partner violence were partially mediated by PTSD symptom severity.

With regard to the direct effects of the war-zone stressors on intimate partner violence, just one of the two associations was in the expected direction. Perceived threat was positively related to reports of violence. This finding is particularly interesting in light of findings by Holtzworth-Munroe and colleagues (Holtzworth-Munroe & Hutchinson, 1993) that male perpetrators of intimate partner violence perceive more malevolent intent (e.g., she was trying to pick a fight) on the part of their partners than men who are not perpetrating intimate partner violence (regardless of whether or not they are maritally distressed). It may be that perceiving higher levels of threat during Vietnam may increase risk for PTSD symptoms and independently contribute to likelihood of male veterans perpetrating intimate partner violence via a tendency to attribute malevolent intent to their partners (i.e., they may feel more threatened by their partner's actions). The link between combat exposure and violence, on the other hand, was negative in valence, with high levels of combat exposure associated with less violence. Though counterintuitive, this observed suppressor effect offers an intriguing and possibly hopeful message. That is, once we take into account (or hold constant) the psychopathological consequences of war-zone exposure (i.e., PTSD), it may be that

some individuals who experienced the trauma of combat are less likely to behave violently toward intimate partners.

The results of this study reinforce the idea that male-perpetrated intimate partner violence may be partially grounded in trauma exposure and its psychological consequences, particularly PTSD. Overall, the results support the notion of a sequencing of variables depicting pathways by which adverse experiences in childhood or young adulthood are associated with subsequent perpetration of intimate partner violence. This sequencing of variables is consistent with a social learning model. In this study, the veteran's family of origin background characteristics and experiences increased the risk of early antisocial behaviors that were in turn related to subsequent exposure to higher levels of combat. Combat exposure (via perceived threat) was linked to reports of PTSD symptoms. PTSD symptoms, then, were related to increased reports by the spouse/partner of male-perpetrated intimate partner violence.

This sequencing of variables is also notable with regard to a "revictimization" interpretation. For example, one consequence of child sexual abuse appears to be an increased risk for adult sexual assault (see Messman & Long, 1996, for a review). Recent evidence suggests that this phenomenon may extend beyond the area of sexual victimization. Orcutt, Erickson, and Wolfe (2002) reported that increased reports of combat exposure during the Gulf War were associated with increased reports of traumatic life events approximately 2.5 years later. Thus, in some instances, early trauma exposure appears to confer risk for additional trauma exposure. Turning to the present associations among the perpetrator's family of origin dysfunction, childhood antisocial behavior, combat exposure, and perceived threat, it may be that trauma and stress early in life increases risk of later trauma exposure. Specifically, stress and instability in the family of origin may lead to increased likelihood of destructive, risky, and possibly illegal activities in childhood and early adolescence (see, e.g., Repetti, Taylor, & Seeman, 2002). This relationship can be contextualized via a social learning model. These risky and destructive activities, in turn, may increase risk for exposure to additional serious life stressors in later adolescence and adulthood. One such serious life stressor is exposure to trauma in a war-zone, combat, and the concomitant fear of bodily harm and death. Indeed, exposure to combat may represent a selection bias, essentially drawing vulnerable individuals into harm's way (see the review by King & King, 1991). In support of this notion, King et al. (1996) found that male Vietnam soldiers reporting exposure to combat were more likely to report a history of earlier childhood behavior problems than soldiers not reporting exposure to combat. Thus, it may be that individuals who have some sort of vulnerability or reduced emotional functioning due to stress and trauma are at increased risk of additional stress and trauma. Importantly, however, there are multiple alternative explanations for the phenomenon of early trauma exposure increasing risk for additional trauma exposure, and other factors increasing vulnerability, such as socioeconomic status, are important to consider. Clearly, additional investigation is needed to explore the sequencing and interrelationships of variables increasing risk for trauma exposure.

The relation between PTSD symptoms and the perpetration of intimate partner violence highlights opportunities for potential intervention. Perhaps treatment, such as Glynn and colleagues' behavioral family therapy in conjunction with exposure-based treatment, aimed at reducing PTSD symptom severity could decrease an individual's risk for perpetration of intimate partner violence (Glynn et al., 1999). Irritability is a common symptom of PTSD and may increase risk of partner conflict. Reduction of irritability may serve to decrease the amount of conflict in a veteran's intimate relationships. In addition, emotional numbing, difficulty experiencing feelings such as love, may interfere with communication and expression of positive affect and regard in an intimate relationship, leading to increased conflict. Thus, through several possible avenues, a reduction in the symptoms of PTSD may decrease conflict and aggression in intimate relationships. Of course, depending on the chronicity of PTSD, treatment to reduce symptoms may need to be augmented with strategies to assist veterans to change behaviors developed as a result of symptoms.

An additional approach to the prevention of intimate partner violence involves reducing risk of trauma exposure among vulnerable individuals. Individuals in stressful and traumatic childhood environments may benefit from an intervention designed to reduce risk-taking and increase personal safety, including avoiding potentially dangerous environments, reducing sensation seeking, and generating nonviolent responses to threatening circumstances. In addition, Orcutt et al. (2002) found that PTSD symptoms partially mediated risk of exposure to additional traumatic events in a sample of Gulf War veterans, suggesting that assessment and treatment of PTSD symptoms in vulnerable individuals may serve to reduce risk to additional trauma exposure that could include involvement in violence such as intimate partner violence.

As with much of the research on stress and trauma, the present findings must be interpreted carefully given the retrospective self-report nature of the data and the cross-sectional design of the NVVRS. A primary concern is ambiguity of the direction of relationships among variables. This ambiguity may result from a variety of

sources including poor recall, especially for events occurring in a stressful environment (Burke, Heuer, & Reisberg, 1992; Christianson, 1992), the impact of one's current psychological state on the reconstruction of events (Metts, Sprecher, & Cupach, 1991; Nisbett & Wilson, 1977), and the potential for social desirability in presentation or recognition seeking (King & King, 1991). In addition, it is important to note that the SEM approach does not confirm the model in question. As emphasized by Breckler (1990), among others, it simply asserts that there are no available data to disconfirm the model. The best approach when using SEM is to ensure that the proposed model was informed by theory and substantive issues, as was the model in this study. We also acknowledge that we have not incorporated all factors potentially associated with the outcome of interest in this study. Finally, it is important to note that the responsibility for perpetrating violence lies ultimately with the individual. This study, while examining factors such as PTSD that may contribute to the likelihood that an individual may perpetrate violence against his partner, is not intended in any way to reduce the responsibility that the individual bears for perpetrating violence.

In sum, this study suggests that trauma exposure and subsequent PTSD symptom severity may be important to the perpetration of intimate partner violence. Future research might productively examine the relation between trauma exposure, PTSD, and intimate partner violence in a prospective manner. In addition, given findings that the impact of experiencing physical abuse may differ from the impact of witnessing interparental violence on children's aggressive behavior (Dodge, Lochman, Harnish, Bates, & Pettit, 1997), it would be important to examine the separate impact of these family of origin experiences on perpetration of intimate partner violence. This seems particularly important in light of the negative relationship between combat exposure and intimate partner violence in this sample. Future studies should include more extensive measurement of these constructs (witnessing versus experiencing of family violence) to address the limited measurement in this study. Given the focus on male veterans in this study, future research is needed to test the applicability of the present model for both males and females who perpetrate intimate partner violence. It is ultimately an empirical question as to whether family of origin experiences, trauma history, and PTSD symptomatology are similarly predictive for both men and women. Finally, it would be useful to examine whether reducing PTSD symptoms serves to reduce intimate partner violence. In this regard, batterer treatment programs may benefit from including a focus on trauma history and PTSD (see, e.g., Dutton, 1999).

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