

Examination of Predictors of Severe Violence in Combat-Exposed Vietnam Veterans

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This study examined several proposed predictors of severe wartime violence in a randomly selected, nationally representative sample of 1,125 Vietnam veterans. Participation in severe acts of violence during wartime was reported by 7.6% of the sample. Disruptive behavior before the age of 15 and increased combat exposure were both significant predictors of severe wartime violence. Childhood contextual factors were indirectly related to severe wartime violence via prewar disruptive behavior. The classification rate of perpetrators of severe violence was comparable to rates from studies of less severe forms of violence. The implications of these results and suggestions for future research in this area are discussed.

KEY WORDS: prediction; severe violence; combat exposure; veterans.

Many Vietnam veterans reported witnessing and participating in excessive, severe acts of violence during the war. The nature of the behaviors that reportedly occurred included wounding, torturing, killing, or mutilating civilians, prisoners of war, or enemy soldiers. The context of war undoubtedly produces behaviors that are unique to combat situations; however, severe acts of interpersonal violence occur outside the context of war, and an examination of the predictors of such behaviors provides a unique opportunity to improve our understanding of these behaviors more generally.

Several recent investigations have examined the postwar psychological effects of witnessing acts of severe wartime violence (SWV; e.g., Yehuda, Southwick, & Giller, 1992); however, little is known about the frequency of such acts or about

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what factors may be useful in their prediction. Few studies have investigated predictors of SWV, and existing studies are characterized by two key limitations. First, most studies have used small, treatment-seeking samples of Vietnam veterans, and are thus quite limited in the generality of their results. Second, previous studies have typically examined direct associations between prewar factors and SWV, and have not investigated relationships *among* these potential predictors or the temporal pathways leading to SWV. These limitations have resulted in gaps in our understanding of the perpetration of severe acts of violence, which is highlighted by our limited ability to predict such behaviors.

In this study, we examined the relationships among childhood contextual factors, disruptive behavior during childhood and adolescence, wartime combat exposure, and SWV in a large, community sample of Vietnam Theater veterans. In addition to the unique focus on relationships among predictors of severe violence, this study represents, to the best of our knowledge, the first attempt to simultaneously examine various predictors of SWV in a large, nontreatment-seeking sample. Thus, it is likely that results from this study will have greater generality to other populations.

We hypothesized that childhood contextual factors would be indirectly related to SWV (rather than directly related as suggested in previous studies) via disruptive behavior before the age of 15. Although the degree of combat exposure experienced by veterans has been investigated in relation to postwar psychiatric illness and violent behavior (e.g., Beckham, Feldman, & Kirby, 1998), surprisingly little work has examined the effect of increased combat exposure on the perpetration of SWV. Accordingly, we also hypothesized that wartime contextual factors would have a significant influence on the perpetration of SWV.

Method

Participants

Participants were interviewed as part of the National Vietnam Veterans Readjustment Study, which surveyed a randomly selected, nationally representative sample of nontreatment-seeking veterans from the military records of all those who served during the Vietnam era (August 5, 1964–May 7, 1975). After complete description of the study to the participants, written informed consent was obtained. Data were obtained from the 1,125 male Veterans during household, 3–5 hr, structured interviews (see Kulka et al., 1990, for details of study methodology).

Measures

Severe acts of wartime violence. All participants were asked three questions regarding the extent to which they were involved in (1) terrorizing, wounding,

or killing civilians; (2) torturing, wounding, or killing hostages or prisoners of war; or (3) mutilating bodies of the enemy or civilians during wartime. For each of these questions, participants indicated whether they did not participate (0), participated (1), or were responsible for/initiated each type of severe violence (2). The values for the items were added for each participant to form a continuous measure of the presence and severity of severe wartime violence (range = 0–6, $\alpha = .73$).

Exposure to combat. Participants' exposure to combat situations was assessed using the Revised Combat Scale (RCS; Laufer, Yager, Frey-Wouters, & Donnellan, 1981), which consists of 10 items (range of scores = 0–12). Items inquired about situations such as firing at the enemy and receiving enemy fire. This scale has been used in several previous studies and has adequate reliability ($\alpha = .84$; Laufer, Brett, & Gallops, 1985).

Conduct symptoms in childhood. All participants were administered 10 items from the Conduct Disorder section of the Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, & Ratcliff, 1981; $\alpha = .70$). In addition to knowing whether conduct symptoms in general were associated with SWV, we wanted to examine whether a particular subtype of conduct disorder influenced subsequent behavior. A Principal Components analysis with an oblique rotation resulted in the formation of three subscales used in all analyses. The three subscales were Overt/Aggressive Behaviors (e.g., starting fist fights; range = 0–3, $\alpha = .48$); Covert/Delinquent Behaviors (e.g., stealing; range = 0–4, $\alpha = .54$); and Authority Conflict (e.g., trouble with authorities; range = 0–3, $\alpha = .49$).

Family instability. Family instability was measured using selected items of the Family Stability Scale (Kadushin, Boulanger, & Martin, 1981). We used 5 of the original 11 dichotomous items of the scale (items overlapping with other study measures were excluded), which inquired about experiences such as parental separation, divorce, or death; multiple changes of homes; and living in a foster home (range = 0–5, $\alpha = .56$).

Family history of psychopathology and criminality. Participants answered questions about the presence of psychiatric illness and about a history of arrest in any members of their immediate family. This variable was coded dichotomously, indicating the presence or absence of any of these conditions in one's family history.

Childhood physical abuse. The presence and frequency of childhood physical abuse was assessed by self-report of whether as a child the participant had been "spanked or hit hard enough that [he] had marks or bruises, had to stay in bed, or see a doctor," and "overall, about how often did that occur" on a scale from 0 (*never*) to 4 (*very often*).

Socioeconomic status. Participants were divided into three categories of socioeconomic status (1–*highest* to 3–*lowest*) based on their responses to questions about their family's socioeconomic status during childhood.

Statistical Analyses

We used Pearson correlation coefficients and causal modeling (using SAS System’s CALIS procedure) to simultaneously examine the relationships among all study variables and their respective contributions to the prediction of the continuous measure of SWV. We also used logistic regression and receiver operating characteristic analyses to examine the practical utility of these prewar and wartime variables via their ability to correctly classify each case as either a perpetrator or nonperpetrator of SWV (coded dichotomously according to whether an individual reported participating in some way in at least one incident of SWV), and to facilitate comparison of our results with other studies of the prediction of violence.

Results

The ethnicity of the 1,125 participants was as follows: European American (48.7%), African American (26.6%), Hispanic American (23.1%), or other ethnicities (1.4%). At the time of interview, participants averaged 41.5 years of age (*SD* = 5.3). Overall, 86 (7.6%) of the 1,125 participants reported that they directly participated in SWV.

Based on our hypothesized model of SWV, as well as on the pattern of relationships in the correlation matrix (presented with means and standard deviations in Table 1), we hypothesized a model in which all of the childhood contextual factors would predict disruptive behavior, which would in turn be predictive of SWV, along with combat exposure. All paths of the hypothesized causal model were estimated, and the resulting weights from the paths of this model are presented in Fig. 1. The chi-square value for our model was statistically significant, but was relatively low in value, $\chi^2(17, N = 1,125) = 38.21, p < .01$, indicating that our hypothesized model was a good fit with the data. In addition, the RMSEA

Table 1. Means, Standard Deviations, and Intercorrelations of Measured Variables

Measure	<i>M</i>	<i>SD</i>	2	3	4	5	6	7	8	9
1. Family history of psychopathology	0.32	0.47	.18***	.10***	.17***	.16***	.14***	.12***	.09*	.04
2. Family instability	1.15	1.22	—	.24***	.07*	.13***	.22***	.19***	.03	.01
3. Socioeconomic status	2.34	0.56		—	.06*	.10***	.10***	.11***	.04	.00
4. Child physical abuse	0.63	1.31			—	.16***	.13***	.10***	.07*	.03
5. Overt/aggressive	0.43	0.73				—	.39***	.39***	.10***	.15***
6. Covert/delinquent	0.94	1.05					—	.40***	.08*	.10***
7. Authority conflict	0.55	0.84						—	.07*	.05
8. Combat exposure	7.63	4.37							—	.18***
9. Severe wartime violence	0.16	0.68								—

* *p* < .05 (two-tailed tests). *** *p* < .001 (*p* < .05 after Bonferroni correction).

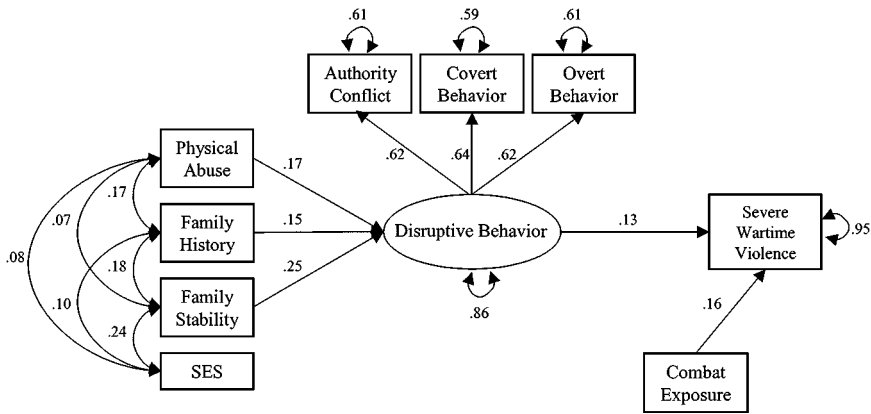


Fig. 1. Standardized solution (β s) for best-fit causal model of severe wartime violence. All paths displayed are statistically significant at $p < .05$.

estimate was .03 (90% CI = .02–.04), and the goodness-of-fit index was .99, both indicating an excellent fit with the data.

The model indicated that childhood physical abuse, family history of psychopathology/criminality, and family instability were all significant statistical predictors of disruptive behavior before the age of 15 years. Socioeconomic status did not have a direct effect on disruptive behavior ($\beta = .06, ns$), and this path was excluded from the model. In turn, disruptive behavior before the age of 15, along with combat exposure, was a unique, significant predictor of the perpetration of SWV.

The logistic regression analysis revealed that only overt disruptive behavior and combat exposure were statistical predictors of participation in SWV. Therefore, we entered only these two variables in a second logistic regression to examine their ability to predict SWV. With the probability of SWV defined as 7.6%, these two variables correctly classified 62.4% of nonperpetrators and 76.7% of perpetrators of SWV, with a total correct classification rate of 63.5%. This classification rate represents prediction that is significantly better than that expected by chance alone (i.e., .50), as represented by calculation of the area under the receiver operating characteristic curve (AUC; see Hsiao, Bartko, & Potter, 1989) of .76 ($SE = .02$).

Discussion

Overall, 7.6% of all participants reported engaging in SWV. Disruptive behavior before age 15 (particularly overt, aggressive behavior) and wartime combat exposure emerged as statistical predictors of SWV. These results are consistent with literatures on less severe forms of violence suggesting that the performance

of violent behavior is relatively stable over time within individuals (e.g., Olweus, 1979), and that exposure to violence is associated with the subsequent performance of violent behavior (e.g., Widom, 1989).

Although the childhood contextual factors investigated were not directly correlated with SWV, they were related via their significant association with disruptive behavior before the age of 15. Previous research has rarely examined the relationships among different predictors of violence, and has failed to make consistent distinctions between short- and long-term predictors. The explication of these relationships in this study is instructive in that it helps explain discrepancies among previous studies about the role of childhood factors in the prediction of severe violence, and provides an explanation of how different predictors might interact in the pathway leading to violent behavior.

Using only the measures of overt disruptive behavior before age 15 and combat exposure we were able to correctly classify 63.5% of the cases, and obtained an AUC of $.76 \pm .02$, which is comparable to the average AUC of $.78 \pm .01$ obtained by Mossman (1994) in his review of 58 data sets from 44 published studies of the prediction of violence. Two main conclusions follow from these results. First, the performance of past, and exposure to present, violent behaviors appear to be the best predictors of subsequent severe violence. Second, using these predictors our ability to identify perpetrators of severe violence appears to be comparable to our ability to identify cases of less severe forms of violence.

Several limitations of this study deserve comment. First, the generality of these results are limited in that all participants were male, Vietnam Theater veterans, and the severe acts of violence examined occurred during wartime. Nevertheless, we believe this study provides a useful framework for understanding severe violence regardless of context. Second, data were obtained through retrospective self-report, and are thus subject to selective, inaccurate, or biased recall, or to a tendency to respond in a socially desirable manner. Indeed, the behaviors inquired about were by definition abusive and excessive, thus it is possible that there was an underreporting of such incidents. In addition, although psychometrically sound measures were used to assess most of the key constructs (e.g., DIS, RCS), several of the variables used were represented by only a few items and had only modest reliability. Third, the model tested was underspecified, as the range of potential predictors examined in this model was limited.

Several directions for future research follow directly from this study. First, studies are needed to further elaborate the relationships between various predictors of violence in order to improve our understanding of the mechanisms by which they might lead to violent outcomes, thus improving our ability to predict such behaviors. Second, the range of variables used to predict violence in any given model must be expanded to account for influences from multiple domains (e.g., biological, contextual, etc.). Third, the use of multiple methods for risk-assessment will undoubtedly lead to increased reliability and accuracy in our ability to predict

violence, and to improvements in our understanding and ultimate prevention of these aggressive and destructive behaviors.

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