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Examining the Correlates of Aggression Among Male and Female Vietnam Veterans

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This study examined the correlates of general aggression among a nationally representative sample of male and female Vietnam veterans (N = 1,632). Findings indicated that the rates of aggression for men and women were 41% and 32%, respectively, and men appeared to perpetrate relatively more acts of severe aggression. Correlates of aggression for men included lower socioeconomic status and age, minority status, unemployment, degree of exposure to the malevolent war-zone environment and perceived threat in the war zone, posttraumatic stress disorder, antisocial personality disorder, major depressive episode, alcohol abuse/dependence, and drug abuse/dependence. For women, only lower age and unemployment were associated with aggression. Findings highlight the importance of developing models for aggression among those experiencing military deployments.

Keywords: aggression; veterans; war zone; trauma; posttraumatic stress disorder

Several studies have examined the prevalence of intimate partner violence (IPV) and its correlates among military populations (Marshall, Panuzio, & Taft, 2005). Unfortunately, there has been little investigation of general interpersonal aggression towards both partners and others. This is despite a large body of research documenting the significant legal, medical, occupational, and human costs of such aggression in the general population (Waters, Hyder, Rajkotia, Basu, & Butchart, 2005). Because of the unique stressors (e.g., combat, exposure to atrocities) and training (e.g., exercises designed to eliminate the inhibition of aggression and killing) experienced by those in the military (Tietz, 2006), it should not be assumed that the patterns and correlates of aggressive behavior are invariant across civilian and veteran populations (Taft, Murphy, King, Dedeyn, & Musser,

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2005). Thus, the current study investigated correlates of general aggression among male and female Vietnam veterans participating in the National Vietnam Veterans Readjustment Study (NVVRS; Kulka et al., 1990a, 1990b).

Previous work on general aggression among Vietnam veterans has largely focused on comparing male combat veterans with posttraumatic stress disorder (PTSD) to those without the disorder (Beckham, Feldman, Kirby, Hertzberg, & Moore, 1997; McFall, Fontana, Raskind, & Rosenheck, 1999). While these studies do not report on overall rates of aggression for the entire sample and use clinical samples that may be overrepresented by PTSD-positive veterans, findings suggest high levels of such behavior among this cohort of veterans. In their sample of help-seeking male Vietnam veterans, Beckham et al. (1997) found that three-fourths of those with PTSD had engaged in physical aggression over the previous year, as measured by the Conflict Tactics Scale (Straus, 1979), and these men reported an average of 22 aggressive acts over that time. In contrast, an aggression rate of 17% was found for non-PTSD veterans, with an average of .2 aggressive acts. In a study of Vietnam veteran psychiatric inpatients, McFall et al. (1999) found that those with PTSD (79%) were more likely than those without PTSD (33%) to engage in physical aggression in the 4 months prior to hospitalization. Aggression referred to the destruction of property, use of threats of violence with and without a weapon, and physical fighting.

A small number of studies have examined correlates other than PTSD diagnostic status with regard to general aggression (Beckham, Feldman, & Kirby, 1998; Beckham et al., 1997; Hiley-Young, Blake, Abueg, Rozynko, & Gusman, 1995; McFall et al., 1999). Hiley-Young et al. (1995) did not find associations between premilitary variables reflecting trauma family psychopathology and antisocial behavior with postmilitary violence. Of all the predictors examined, only participation in war-zone killing was found to be associated with aggression after the military. Beckham et al. (1997) reported that lower socioeconomic status (SES) and higher PTSD severity were related to interpersonal violence. In their sample of PTSD-positive Vietnam veterans, Beckham et al. (1998) found war-zone atrocities exposure, combat exposure, PTSD symptoms, and cognitive and emotional aspects of guilt to be associated with higher violence. McFall et al. (1999) reported that PTSD severity, exposure to atrocities in the war zone, substance use, and depression were related to higher levels of violence.

The salience of a number of other potential correlates of general aggression is indicated in studies of relationship aggression perpetration. Depression, antisocial characteristics, and substance use and abuse have been shown to be important correlates of IPV among samples of male veterans (Orcutt, King, & King, 2003; Savarese, Suvak, King, & King, 2001; Taft et al., 2005). Some investigations of military samples have shown that demographic factors (e.g., age, ethnicity) are also associated with IPV perpetration (McCarroll et al., 2003; Newby et al., 2000; Rosen, Parmley, Knudson, & Fancher, 2002a), though this research base is small, with findings inconsistent across studies. Childhood trauma (child abuse and exposure to interparental violence) has been linked with partner violence among active military samples (e.g., Rosen, Parmley, Knudson, & Fancher, 2002b), but this association has not always been found among veterans (e.g., Taft et al., 2005).

Notably, no previous investigation using a veteran sample has reported on the correlates of women's general aggression perpetration. Research in this area is warranted given that the number of women in the military is rapidly increasing and that these women are increasingly being exposed to trauma (Women's Research and Education Institute, 2003a, 2003b). Since women's aggression may also have significant negative mental and physical

health consequences (Hines & Malley-Morrison, 2001), it is important to examine patterns and correlates of aggression among these individuals.

Kulka et al. (1990) reported general physical aggression rates of 47% and 35% for male and female Vietnam theater veterans, respectively, in their report of findings for the NVVRS. The current study likewise utilized NVVRS data, attempting to build on prior work in this area by examining a more comprehensive set of correlates of physical aggression than previous studies and by examining aggression perpetrated by both men and women. Risk factors were organized according to the typology developed by Kraemer et al. (1997) that distinguishes fixed markers from variable risk factors (see also King, Vogt, & King, 2004; Vogt, King, & King, 2007). Fixed marker variables do not vary over time among individuals, are often distal to the observed effect, and assist in identifying populations at risk. Fixed markers included demographic factors, childhood abuse exposure, and war-zone factors. Specifically, we expected the fixed markers of lower SES and age, minority status, lower education and unemployment, more child abuse and interparental violence exposure, and higher war-zone exposure to combat, a malevolent environment, perceived threat, and atrocities to be associated with general aggression. Variable risk factors change over time (either naturally or through manipulation), are often proximal to the observed effect, and may represent potential causal etiological mechanisms and targets for clinical intervention. We predicted that the psychiatric problem variable risk factors of PTSD, antisocial personality disorder, major depression, alcohol abuse/dependence, and drug abuse/dependence would be associated with aggression in this study. No hypotheses were offered for gender differences because of the lack of existing research on female veterans' aggression.

Data Source and Sample

The NVVRS (Kulka et al., 1990) was a nationally representative study of 3,016 Vietnam theater and era veterans that was mandated by Congress to document the postwar adjustment difficulties of those who served in Vietnam. For the current investigation, analyses focused specifically on the National Survey of the Vietnam Generation (NSVG), the main NVVRS component, which involved individual face-to-face interviews with 1,632 male and female theater veterans who served one or more tours of duty in and around Vietnam or Southeast Asia at any point between August 5, 1964, and May 7, 1975. Data collection for the NSVG occurred between November 1986 and February 1988. The sample consisted of 1,200 (74%) men and 432 (26%) women. Most of the women were registered nurses. Interviews were conducted with each veteran, whose prewar functioning, background, military experiences, and postwar circumstances and mental health status were assessed using a variety of instruments. Interviews took place in the homes of the participants over the course of 5 hours, on average. Women, African American and Hispanic men, and veterans with service-connected disabilities were oversampled.

Measures

SES was assessed using the predicted occupational prestige codes developed by Stevens and Cho (1985) for the occupations and industries included in the 1980 census. The original codes, which ranged from 10 (lowest SES) to 89 (highest SES), were represented using an 8-point scale with responses ranging from 1 (occupational prestige scores of 10–19) to 8 (occupational prestige scores 80–89).

Education was measured using a current educational attainment scale on which responses ranged from 1 (less than high school graduate) to 5 (graduate/professional work).

Childhood abuse was indicated by the endorsement of a single item that asked whether the veteran had ever been spanked or hit hard enough to cause marks or bruises, to require him or her to stay in bed, or to require medical attention.

Interparental violence was indicated by the endorsement of a single item that asked whether the veteran had ever seen his or her parents or guardians hit one another.

Combat exposure was measured using 36 items selected from the NVVRS and assessed typical warfare circumstances or events such as "receiving enemy fire," "going on special missions," and "firing weapons." An overall score was derived by standardizing and summing individual item scores. This measure has been validated by King, King, Gudanowski, and Vreven (1995).

Malevolent environment was measured using an 18-item scale validated by King et al. (1995) assessing the extent to which common unpleasant war-zone living conditions (poor climate, insufficient food, insects, disease, unsanitary conditions) were especially bothersome, annoying, or uncomfortable for the veteran. Items for this scale reflect "daily hassles," irritations, and pressures within a war zone.

Perceived threat was measured using a scale of nine items selected from the NVVRS and validated by King et al. (1995). This scale assesses participants' reports as to whether their personal safety was jeopardized by their war-zone experiences, emphasizing their interpretations of and feelings about these experiences.

Atrocities exposure was measured with 9 items selected from the NVVRS and validated by King et al. (1995). This scale assesses observable circumstances or events considered atypical or deviant from routine war-zone experiences. Items include experiences that might be considered particularly grotesque or raise questions of morality; a sample item is, "To what extent were you involved in terrorizing, wounding, or killing civilians?"

PTSD was measured with the Mississippi Scale for Combat-Related Posttraumatic Stress Disorder (Keane, Caddell, & Taylor, 1988). This self-report instrument is composed of 35 items and uses a 5-point Likert-type response format (1 = never, 5 = very frequently) to assess the reexperiencing, avoidance and numbing, and hyperarousal criteria for PTSD as well as related features such as substance abuse, depression, and suicidality. A current PTSD diagnosis was indicated by a score of 89 or higher. This measure has been shown to exhibit high internal consistency and test–retest reliability, as well as good construct validity (Keane et al., 1988).

Other psychiatric problems were assessed using the Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, & Ratcliff, 1981). The DIS was developed to assess for the presence of a range of psychological disorders in large epidemiological studies and is intended for use by lay interviewers. The reliability of DIS diagnoses has compared favorably with other diagnostic measures, and lay interviewer diagnoses with the DIS have shown high concordance with psychiatric diagnoses (Robins et al., 1981). We focused on antisocial personality disorder, major depression, alcohol abuse/dependence, and drug abuse/dependence, given prior evidence of the relations between these problems and aggressive behavior. It is important to note that antisocial personality disorder and drug abuse/dependence were not included in analyses for female veterans since none of these participants met diagnostic criteria for these disorders.

Physical aggression was measured using the eight-item Physical Aggression subscale of the Conflict Tactics Scale (CTS; Straus, 1979). The CTS was originally designed to

assess partner violence, though the measure has also commonly been modified for the assessment of general aggression (e.g., Beckham et al., 1997). The CTS includes items assessing "minor" ("threaten to hit or throw something at another person"; "actually throw something at someone"; "push, grab or shove someone") and "severe" ("slap another person"; "kick, bite, or hit someone with a fist"; "beat up someone"; "threaten anyone with a knife or gun"; "actually use a knife or gun on another person") forms of physical aggression. In the current study, one item that was used in the original Kulka et al. (1990) report ("Threaten to hit or throw something at another person") was not included in the calculation of physical aggression scores because this item is typically considered verbal (nonphysical) aggression. Veterans were asked to indicate their frequency of each aggressive behavior toward anyone during the past year, rated on a scale of 0 (never) to 6 (more than 20 times). A sum of the number of aggressive behaviors positively endorsed was derived for this study, consistent with recommendations for increasing reliability in the measurement of aggression (Moffitt et al., 1997). This measurement approach reduces skewness, gives equal weight to different behaviors, and takes memory limitations into account. These scores were log transformed to further reduce skewness and kurtosis.

Analyses

Descriptive statistics first were derived for all study variables for men and women separately. In obtaining descriptive information for the CTS item-level and overall endorsements, weighted proportions, standard errors, and 95% confidence intervals were computed. Next, zero-order correlations were computed to examine the bivariate associations between the collection of predictor variables and the aggression outcome. A series of multiple-regression analyses then examined associations between the predictor variables of interest and the aggression outcome. Separate regressions were conducted for the four categories of correlates (demographic variables, childhood exposure variables, war-zone variables, and psychiatric problem variables) in the prediction of physical aggression. Finally, multiple-regression analyses examined the relative predictive ability of all the significant predictors of aggression. Effect sizes were interpreted in terms of guidelines proposed by Cohen (1988). For all analyses, the sample design weights from the NVVRS were used to adjust for oversampling by the NVVRS researchers and to allow for the projection of study results to the larger population of male and female Vietnam theater veterans. Use of the sample design weights permitted the estimation of unbiased parameters and correct standard errors.

RESULTS

Table 1 presents descriptive information for all study variables. Table 2 presents the CTS item-level and overall endorsements and 95% confidence intervals for male and female veterans. As Table 2 indicates, an overall aggression rate of 41% was found for men, and a rate of 32% was found for women. For both male and female veterans, "push, grab, or shove someone" was the most highly endorsed item, with approximately one-third of men and one-fourth of women endorsing this item. The overall pattern of item-level responses across genders suggests that men and women evidenced particularly large disparities for "severe" physically aggressive behaviors. For example, men were more than four times more likely than women to kick, bite, or hit someone with a fist; almost seven times more

likely to "beat up" someone; more than four times more likely to threaten someone with a knife or gun; and more than five times more likely to use a knife or gun on someone. A follow-up comparison of men and women indicates that men were relatively higher than women on both "minor" and "severe" CTS aggression composite scores ($t = –3.20$, $p < .01$, $r = –.08$, and $t = –5.09$, $p < .001$, and $r = –.13$, respectively).

TABLE 1. Descriptive Statistics for Study Variables

	Quantitative Variables					
	Male Veterans			Female Veterans		
	M	*SE*	95% CI	*M*	*SE*	95% CI
Socioeconomic status	3.4	7.4	3.2–3.5	4.4	6.4	4.3–4.6
Age	41.5	24.2	41.0–42.0	45.3	35.3	44.7–46.0
Education	2.8	3.9	2.7–2.9	3.7	5.9	3.6–3.8
Combat exposure[a]	1.6	52.9	0.6–2.7	–0.1	1.9	–0.1 to –0.0
Malevolent environment[a]	–.77	14.2	–1.0 to –0.5	–0.2	16.4	–.5–0.1
Perceived threat[a]	–.45	7.5	–0.6 to –0.3	–0.1	9.4	–0.3–0.1
Atrocities exposure[a]	1.9	54.6	0.8–3.0	–0.1	0.0	–0.1–0.0
Aggression	.97	5.7	0.9–1.1	0.6	0.1	0.5–0.7
	Categorical Variables					
	Male Veterans			Female Veterans		
	%	*SE*	95% CI	%	*SE*	95% CI
Minority status	18.6	1.1	16.4–20.9	6.6	1.2	4.2–9.1
Employed	90.5	1.2	88.2–92.8	72.5	2.1	68.3–76.7
Child abuse	66.8	21.1	1.3–2.1	74.2	35.7	1.0–2.4
Interparental violence	18.0	1.4	15.2–20.8	16.0	1.8	12.4–19.5
PTSD	20.9	1.6	1.2–1.2	8.9	1.4	6.1–11.7
Antisocial personality disorder	2.0	0.5	1.1–3.0	—	—	—
Major depressive episode	2.8	0.6	1.7–3.9	4.3	1.0	2.3-6.1
Alcohol abuse/ dependence	11.2	1.2	8.8–13.5	2.4	0.7	0.9-3.8
Drug abuse/ dependence	1.8	0.5	0.7–2.8	—	—	—

Note. CI = confidence interval; PTSD = posttraumatic stress disorder.
[a]Items making up score composite were transformed to standard scores because of variations in response format. Thus, overall means approximated zero.

TABLE 2. Endorsement of Aggression Items

	Male Veterans			Female Veterans		
Variable	*%*	*SE*	95% CI	*%*	*SE*	95% CI
1. Actually throw something at someone	11.1	1.2	8.7–13.4	7.4	1.3	4.8–10.0
2. Push, grab, or shove someone	36.1	1.9	32.4–39.8	25.2	2.2	20.9–29.5
3. Slap another person	16.3	1.4	13.5–19.1	14.7	1.8	11.2–18.2
4. Kick, bite, or hit someone with a fist	11.9	1.3	9.4–14.4	2.7	0.8	1.1–4.3
5. Hit or try to hit anyone with something (an object)	10.0	1.1	7.7–12.2	8.3	1.4	5.6–11.0
6. Beat up someone	6.6	0.9	4.8–8.5	1.0	0.5	0.0–2.0
7. Threaten anyone with a knife or gun	3.8	0.7	2.5–5.1	0.9	0.4	0.0–1.7
8. Actually use a knife or gun on another person	1.1	0.4	0.4–1.8	0.2	0.2	–0.2–0.7
Any aggression	41.3	1.9	37.5–45.1	31.5	2.3	26.9–36.1

Note. CI = confidence interval.

Table 3 displays the bivariate (zero-order) associations between the demographic factors and aggression and results from multiple-regression analyses examining the relative associations of the demographic variables and aggression for men and women. For men, taken together, the demographic predictors accounted for approximately 5% of the variance in aggression scores. Both younger age and minority group status were significantly associated with higher aggression at the bivariate level and in multiple-regression analyses. Employment was also associated with less aggression in multiple-regression analyses, and higher SES was associated with less aggression at the bivariate level. All significant associations for men fell within in the small range of magnitude. For women, the demographic variables collectively accounted for approximately 9% of the variance in aggression. Younger age evidenced the strongest bivariate and unique relationship with aggression, with these associations in the medium range. Unemployed status was also significantly associated with aggression in multiple-regression analyses, with a small effect size obtained.

Relationships between the childhood abuse exposure variables and aggression are reported in Table 4. These predictors were not associated with aggression in bivariate or multiple-regression analyses for male or female veterans. For men, within rounding, the childhood abuse exposure variables did not account for any variance in aggression. For women, these predictors accounted for 1% of the variance in the outcome.

Table 5 presents results of the bivariate and multiple-regression analyses involving the war-zone exposure predictor variables. Considered together, these predictors accounted for 4% of the variance in aggression for men. Higher malevolent environment exposure

TABLE 3. Associations Between Demographic Variables and Aggression

	Male Veterans			
Variables	Zero-Order *r*	β	*t*	Partial *r*
Socioeconomic status	–.08*	–.00	–0.73	–.02
Age	–.14***	–.01	–4.33	–.13***
Minority status	.12***	.07	3.32	.10**
Education	–.05	.00	0.15	.00
Employed	–.09	–.09	–2.09	–.06*
	R^2 = .05, F(5, 1,136) = 6.61, p = .00			
	Female Veterans			
Variables	Zero-Order *r*	β	*t*	Partial *r*
Socioeconomic status	–.05	–.00	–0.43	–.02
Age	–.27***	–.01	–7.56	–.36***
Minority status	.02	.03	0.70	.04
Education	–.07	–.01	–1.28	–.06
Employed	.04	–.06	–2.06	–.10*
	R^2 = .09, F(5, 393) = 14.49, p = .00			

*p < .05. **p < .01. ***p < .001.

TABLE 4. Associations Between Childhood Abuse Exposure Variables and Aggression

	Male Veterans			
Variables	Zero-Order *r*	β	*t*	Partial *r*
Child abuse	–.01	–.00	–0.39	–.01
Interparental violence	.04	.03	1.14	.03
	R^2 = .00, F(2, 1,195) = 0.75, p = .47			
	Female Veterans			
Variables	Zero-Order *r*	β	*t*	Partial *r*
Child abuse	–.00	.00	0.03	.00
Interparental violence	.08	.05	1.47	.07
	R^2 = .01, F(2, 429) = 1.08, p = .34			

TABLE 5. Associations Between War-Zone Variables and Aggression

	Male Veterans			
Variables	Zero-Order *r*	β	*t*	Partial *r*
Combat exposure	–.01	.00	0.42	.01
Malevolent environment	.20*	.01	3.50	.10*
Perceived threat	.16*	.00	0.43	.01
Atrocities exposure	–.02	–.00	–1.27	–.04
	$R^2 = .04$, $F(4, 1{,}184) = 8.10$, $p = .00$			
	Female Veterans			
Variables	Zero-Order *r*	β	*t*	Partial *r*
Combat exposure	–.05	–.01	–0.28	–.01
Malevolent environment	–.01	.00	0.91	.04
Perceived threat	–.08	–.01	–1.58	–.08
Atrocities exposure	–.00	.01	0.49	.02
	$R^2 = .01$, $F(4, 427) = 1.32$, $p = .26$			

*$p < .001$.

was associated with more aggression in bivariate and multiple-regression analyses. Higher perceived threat was associated with more aggression at the bivariate level but not when considered together with the other war-zone exposure predictors. Contrary to expectations, neither combat nor atrocities exposure was associated with aggression. Significant associations were generally in the small range in magnitude. The war-zone exposure variables were not significantly associated with aggression among female veteran participants, accounting for only 1% of the variance in the outcome.

Associations between the psychiatric problem variables and aggression are reported on Table 6. All of the psychiatric problem variables evidenced significant associations with aggression in bivariate analyses for male veterans. In multiple-regression analyses, these predictors together accounted for approximately 11% of the variance in aggression among male participants, and PTSD, antisocial personality disorder, and alcohol abuse/dependence diagnoses were all associated with higher aggression. Effect sizes for men generally fell within the small range in magnitude. These predictor variables (antisocial personality disorder and drug abuse/dependence not included) were not significantly associated with aggression among female veterans, accounting for only 1% of the variance in this outcome.

A final multiple-regression analysis was conducted that examined the relative predictive ability of all the significant bivariate correlates of aggression for men (see Table 7). Taken together, these predictors accounted for 15% of the variance in aggression. Significant partial associations were found for a number of the predictor variables, including age, minority status, PTSD, antisocial personality disorder, and alcohol abuse/dependence, with all these associations within the small range in magnitude.

TABLE 6. Associations Between Psychiatric Problem Variables and Aggression

	Male Veterans			
Variables	Zero-Order *r*	β	*t*	Partial *r*
PTSD	.22***	.11	4.09	.12***
Antisocial personality disorder	.17***	.21	2.38	.07*
Major depressive episode	.13**	.08	1.00	.03
Alcohol abuse/dependence	.20***	.13	3.59	.11***
Drug abuse/dependence	.11*	.11	1.03	.03
	R^2 = .11, F(5, 1,153) = 11.19, p = .00			
	Female Veterans			
Variables	Zero-Order *r*	β	*t*	Partial *r*
PTSD	–.00	–.02	–0.69	–.03
Antisocial personality disorder	—	—	—	—
Major depressive episode	.09	.10	1.60	.08
Alcohol abuse/dependence	.02	.01	0.15	.01
Drug abuse/dependence	—	—	—	—
	R^2 = .01, F(3, 420) = 0.99, p = .40			

Note. PTSD = posttraumatic stress disorder.
*p < .05. **p < .01. ***p < .001.

TABLE 7. Multiple-Regression Analyses Examining Associations Between Significant Bivariate Predictors and Aggression for Men

Variables	β	*t*	Partial *r*
Socioeconomic status	–.00	–1.20	–.04
Age	–.00	–2.74	–.08**
Minority status	.04	2.16	.07*
Malevolent environment	.00	0.09	.00
Perceived threat	–.00	–0.19	–.01
PTSD	.07	2.87	.09**
Antisocial personality disorder	.17	2.49	.08*
Major depressive episode	.08	1.45	.04
Alcohol abuse/dependence	.07	2.18	.07*
Drug abuse/dependence	.08	1.20	.04
	R^2 = .15, F(10, 1,088) = 7.51, p = .00		

Note. PTSD = posttraumatic stress disorder.
*p < .05. **p < .01.

DISCUSSION

This study revealed relatively high levels of general aggression among both male and female Vietnam veterans, with overall aggression rates of 41% for men and 32% for women. These rates are slightly lower than but comparable to the rates reported by Kulka et al. (1990) in their original report. This previous report included one additional CTS item in their measure of aggression reflecting threats to hit or throw something at another person, which is typically classified as a form of nonphysical aggression. Although men were significantly higher than women on both minor and severe forms of physical aggression in this study, the pattern of item endorsements was such that men and women appeared to be particularly disparate with regard to perpetrating severe aggressive behaviors. Male veterans reported substantially higher endorsements of severely aggressive behaviors.

For men, a number of demographic variables (lower SES, lower age, minority status, higher unemployment), war-zone exposure variables (malevolent environment, perceived threat), and psychiatric problem variables (PTSD, antisocial personality disorder, major depressive episode, alcohol abuse/dependence, drug abuse/dependence) were associated with higher aggression, consistent with some prior research examining various forms of aggression among veterans and active military (Beckham et al., 1997, 1998; McCarroll et al., 2003; McFall et al., 1999; Newby et al., 2000; Orcutt et al., 2003; Rosen et al., 2002a; Savarese et al., 2001; Taft et al., 2005). For women, the only correlates associated with aggression were younger age and unemployment. Women's less severe aggression, coupled with gender differences on several of the predictor variables, may partially help explain the lack of correlates found for women's aggression relative to men. As this sample indicates, female Vietnam veterans, most of whom were nurses, were largely White, were not as highly exposed to war-zone stressors as male veterans, and exhibited less psychopathology post-Vietnam. In fact, none of the women in this sample met criteria for antisocial personality or drug abuse/dependence. Thus, relative to men, women evidenced a restriction in the range of scores for the predictor variables and outcome, leading to an inability to examine some associations of interest and a likely deflation of other associations.

Consistent with some prior research of general aggression (Hiley-Young et al., 1995) and partner violence (Taft et al., 2005), war-zone exposure variables and not childhood trauma variables were associated with higher aggression for male veterans. Interestingly, however, traditional combat and atrocities exposure were not associated with aggressive behavior, while exposure to a malevolent environment in the war zone was the only significant predictor of the outcome in multiple-regression analyses. Previous work examining data from the NVVRS has demonstrated that malevolent environment exposure represents the strongest predictor of PTSD symptoms in light of the other war-zone stressor variables (King et al., 1995). Collectively, these findings suggest that the war-zone stressor variables may not operate on aggression primarily through the modeling and reinforcement of aggressive behavior (Gimbel & Booth, 1994). Rather, it seems more likely that war-zone stressors operate through their influence on emotional distress and psychopathology and thereby place veterans at particularly heightened risk for future aggressive behavior.

Buttressing the suspected role of psychopathology and distress in aggression, psychiatric problems represented the category of predictors with the strongest collective association with aggression for male veterans. These findings are consistent with a number of investigations among veterans indicating that psychiatric problems are associated with

aggressive behavior (see Marshall et al., 2005). These results have important clinical implications since psychiatric problems represent the only variable risk factors in this study, according to the risk factor typology of Kraemer et al. (1997). Variable risk factors represent potential causal etiological mechanisms and are amenable to change, thus representing important points of intervention. Results from multiple-regression analyses involving this category of predictors as well as all significant predictors of men's aggression suggest that targeting PTSD, antisociality, and alcohol abuse/dependence in particular may be important in reducing aggression among this population. However, it is important to note that interventions targeting risk factors for aggression may not be efficacious if the aggression itself is not made a focus of clinical intervention.

A notable strength of this study was the use of sample design weights that provide enhanced ability to generalize study findings to the larger population of Vietnam veterans. However, these results cannot necessarily be generalized to those in contemporary deployments. Contemporary military deployments differ from previous ones in a number of ways, such as the current use of an all-volunteer force that consists of a substantial proportion of women exposed to combat, distinct military-related stressors in current deployments (e.g., fear of chemical exposure), and differences in weaponry and tactics, training of military personnel, and the physical and psychological treatment of soldiers and veterans. Therefore, future research should attempt to replicate current study findings among those in more recent deployments and to elucidate unique correlates of aggressive behavior.

Our reliance on retrospective data for some of the predictor variables, particularly the childhood abuse exposure and war-zone stressor variables, represents an additional study limitation. The difficulties inherent in the recall of events in the distant past and in encoding memories for events during times of stress have been well documented (see King & King, 1991). It is important to note, however, that recent reanalyses of the NVVRS (Kulka et al., 1990) data have indicated little evidence of symptom exaggeration or false reporting (Dohrenwend et al., 2006). In addition to the use of longitudinal designs, future investigations should examine aggressive behavior shortly after the soldier's return home rather than several years after homecoming. No published study of a military population that we are aware of has examined aggression immediately following the soldier's return. There has also been a lack of investigation into forms of aggression other than physical aggression among military populations, such as psychological and sexual aggression. There is some evidence that psychological aggression has a more harmful psychological and physical health impact than physical aggression (Taft et al., 2006), and some similar findings have been reported for sexual aggression (Bennice, Resick, Mechanic, & Astin, 2003). Finally, in addition to the examination of factors that increase the likelihood for aggressive behavior in men and women, researchers should strive to uncover protective or preventive factors that may serve to decrease aggression in samples of veterans.

This study documented the correlates of general aggression among male and female Vietnam veterans. Findings suggested that men perpetrated more severe aggression and evidenced higher rates of aggression. Several demographic factors, war-zone exposure variables, and psychiatric problems were associated with men's aggressive behavior. Only lower age and unemployment were associated with women's aggression. Considering the high reported rates of aggression in this study, the harmful effects of such aggression, and increasing military deployments, it is critical that future investigations attempt to more fully explicate the etiology of aggression in order to assist intervention and prevention efforts.

REFERENCES

Beckham, J. C., Feldman, M. E., & Kirby, A. C. (1998). Atrocities exposure in Vietnam combat veterans with chronic posttraumatic stress disorder: Relationship to combat exposure, symptom severity, guilt, and interpersonal violence. *Journal of Traumatic Stress, 11,* 777–785.

Beckham, J. C., Feldman, M. E., Kirby, A. C., Hertzberg, M. A., & Moore, S. D. (1997). Interpersonal violence and its correlates in Vietnam veterans with chronic posttraumatic stress disorder. *Journal of Clinical Psychology, 53,* 859–869.

Bennice, J. A., Resick, P. A., Mechanic, M., & Astin, M. (2003). The relative effects of intimate partner physical and sexual violence on post-traumatic stress disorder symptomatology. *Violence and Victims, 18,* 87–94

Cohen, J. (1988). *Statistical power analyses for the behavioral sciences* (2nd ed.). New York: Academic Press.

Dohrenwend, B. P., Turner, J. B., Turse, N. A., Adams, B. G., Koenen, K. C., & Marshall, R. (2006). The psychological risks of Vietnam for U.S. veterans: A revisit with new data and methods. *Science, 313,* 979–982.

Gimbel, C., & Booth, A. (1994). Why does the military combat experience adversely affect marital relations? *Journal of Marriage and the Family, 56,* 691–703.

Hiley-Young, B., Blake, D. D., Abueg, F. R., Rozynko, V., & Gusman, F. D. (1995). Warzone violence in Vietnam: An examination of premilitary, military, and postmilitary factors in PTSD in-patients. *Journal of Traumatic Stress, 8,* 125–141.

Hines, D. A., & Malley-Morrison, K. (2001). Psychological effects of partner abuse against men: A neglected research area. *Psychology of Men and Masculinity, 2,* 75–85.

Keane, T. M., Caddell, J. M., & Taylor, K. L. (1988). Mississippi Scale for Combat-Related Posttraumatic Stress Disorder: Three studies in reliability and validity. *Journal of Consulting and Clinical Psychology, 56,* 85–90.

King, D. W., & King, L. A. (1991). Validity issues in research on Vietnam veteran adjustment. *Psychological Bulletin, 109,* 107–124.

King, D. W., King, L. A., Gudanowski, D. M., & Vreven, D. L. (1995). Alternative representations of war zone stressors: Relationships to posttraumatic stress disorder in male and female Vietnam veterans. *Journal of Abnormal Psychology, 104,* 184–196

King, D. W., Vogt, D. S., & King, L. A. (2004). Risk and resilience factors in the etiology of chronic PTSD. In B. T. Litz (Ed.), *Early interventions for trauma and traumatic loss in children and adults: Evidence-based directions* (pp. 34–64). New York: Guilford Press.

Kraemer, H. C., Kazdin, A. E., Offord, D. R., Kessler, R. C., Jensen, P. S., & Kupfer, D. J. (1997). Coming to terms with the terms of risk. *Archives of General Psychiatry, 54,* 337–343.

Kulka, R. A., Schlenger, W. E., Fairbank, J. A., Hough, R. L., Jordan, B. K., Marmar, C. R., et al. (1990a). *The National Vietnam Veterans Readjustment Study: Tables of findings and technical appendices*. New York: Brunner/Mazel.

Kulka, R. A., Schlenger, W. E., Fairbank, J. A., Hough, R. L., Jordan, B. K., Marmar, C. R., et al. (1990b). *Trauma and the Vietnam War generation: Report of findings from the National Vietnam Veterans Readjustment Study*. New York: Brunner/Mazel.

Marshall, A. D., Panuzio, J., & Taft, C. T. (2005). Intimate partner violence among military veterans and active duty servicemen. *Clinical Psychology Review, 25,* 862–876.

McCarroll, J. E., Ursano, R. J., Newby, J. H., Liu, X., Fullerton, C. S., Norwood, A. E., et al. (2003). Domestic violence and deployment in US Army soldiers. *Journal of Nervous and Mental Disease, 191,* 3–9.

McFall, M., Fontana, A., Raskind, M., & Rosenheck, R. (1999). Analysis of violent behavior in Vietnam combat veteran psychiatric inpatients with posttraumatic stress disorder. *Journal of Traumatic Stress, 12,* 501–517.

Moffitt, T. E., Caspi, A., Krueger, R. F., Magdol, L., Margolin, G., Silva, P. A., et al. (1997). Do partners agree about abuse in their relationship? A psychometric evaluation of interpartner aggression. *Psychological Assessment, 9,* 47–56.

Newby, J. H., McCarroll, J. E., Thayer, L. E., Norwood, A. E., Fullerton, C. A., & Ursano, R. J. (2000). Spouse abuse by black and white offenders in the U.S. Army. *Journal of Family Violence, 15,* 199–208.

Orcutt, H. K., King, L. A., & King, D. W. (2003). Male-perpetrated violence among Vietnam veteran couples: Relationships with veterans' early life characteristics, trauma history, and PTSD symptomatology. *Journal of Traumatic Stress, 16,* 381–390.

Robins, L. N., Helzer, J. E., Croughan, J., & Ratcliff, K. S. (1981). National Institute of Mental Health Diagnostic Interview Schedule: Its history, characteristics and validity. *Archives of General Psychiatry, 38,* 381–389.

Rosen, L. N., Parmley, A. M., Knudson, K. H., & Fancher, P. (2002a). Gender differences in the experience of intimate partner violence among active duty U.S. Army soldiers. *Military Medicine, 167,* 959–963.

Rosen, L. N., Parmley, A. M., Knudson, K. H., & Fancher, P. (2002b). Intimate partner violence among married male U.S. Army soldiers: Ethnicity as a factor in self-reported perpetration and victimization. *Violence and Victims, 17,* 607–622.

Savarese, V. W., Suvak, M. K., King, L. A., & King, D. W. (2001). Relationships among alcohol use, hyperarousal, and marital abuse and violence in Vietnam veterans. *Journal of Traumatic Stress, 14,* 717–732.

Stevens, G., & Cho, J. H. (1985) Socioeconomic indices and the New 1980 Census Occupational Classification Scheme. *Social Science Research, 14,* 142–168.

Straus, M. A. (1979). Measuring intrafamily conflict and violence: The Conflict Tactics (CT) Scales. *Journal of Marriage and the Family, 41,* 75–88.

Taft, C. T., Murphy, C. M., King, L. A., Dedeyn, J. M., & Musser, P. H. (2005). Posttraumatic stress disorder symptomatology among partners of men in treatment for relationship abuse. *Journal of Abnormal Psychology, 114,* 259–268.

Taft, C. T., O'Farrell, T. J., Torres, S. E., Panuzio, J., Monson, C. M., Murphy, M., et al. (2006). Examining the correlates of psychological aggression among a community sample of couples. *Journal of Family Psychology, 20,* 581–588.

Tietz, J. (2006, April 20). The killing factory. *Rolling Stone, 998,* 54–60.

Vogt, D., King, D., & King, L. (2007). Risk pathways for PTSD: Making sense of the literature. In M. J. Friedman, T. M. Keane, & P. A. Resick (Eds.), *Handbook of PTSD: Science and practice* (pp. 99–115). New York: Guilford Press.

Waters, H. R., Hyder, A. A., Rajkotia, Y., Basu, S., & Butchart, A. (2005). The costs of interpersonal violence—An international review. *Health Policy, 73,* 303–315.

Women's Research and Education Institute. (2003a). *Active duty service personnel by branch of service, officer/enlisted status, and sex*. U.S. Department of Defense, Defense Manpower Data Center, unpublished data compiled by the Women's Research and Education Institute. Retrieved March 31, 2005, from http://www.wrei.org/projects/wiu/index.htm

Women's Research and Education Institute. (2003b). *Reserve and guard component personnel by component, officer/enlisted status, and sex*. U.S. Department of Defense, Defense Manpower Data Center, unpublished data compiled by the Women's Research and Education Institute. Retrieved March 31, 2005, from http://www.wrei.org/projects/wiu/index.htm

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