The Impact of Killing in War on Mental Health Symptoms and Related Functioning

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This study examined the mental health and functional consequences associated with killing combatants and noncombatants. Using the National Vietnam Veterans Readjustment Study (NVVRS) survey data, the authors reported the percentage of male Vietnam theater veterans (N = 1200) who killed an enemy combatant, civilian, and/or prisoner of war. They next examined the relationship between killing in war and a number of mental health and functional outcomes using the clinical interview subsample of the NVVRS (n = 259). Controlling for demographic variables and exposure to general combat experiences, the authors found that killing was associated with posttraumatic stress disorder symptoms, dissociation, functional impairment, and violent behaviors. Experiences of killing in war are important to address in the evaluation and treatment of veterans.

Modern wars that include close-range combat in urban environments are associated with a high probability of military personnel taking another life. Laufer and colleagues (1984) found that about half of Vietnam combat veterans reported taking the life of an enemy combatant and just under one third reported witnessing abusive violence, which included mistreatment of civilians, killing of prisoners, use of chemicals or bombs on villages, and mutilation of bodies. These rates are comparable to Operation Iraqi Freedom (OIF). Hoge and colleagues (2004) found that 48–65% of service members returning from OIF reported being responsible for the death of an enemy combatant, and

14–28% reported being responsible for the death of a noncombatant.

There is little clinical research on the mental health consequences of taking another life in combat among veterans (Grossman, 1995). Prevailing models of posttraumatic stress have focused primarily on the experience and aftermath of severe deprivation, victimization, and personal life-threat, all of which can be experienced by soldiers in a war zone. However, arguably, the moral conflict, shame, and guilt produced by taking a life in combat can be uniquely scarring across the lifespan. Because there are relatively few scientific studies of the impact of taking a life in

war, we do not know whether this act is associated with a unique pattern of chronic maladaptive reactions.

A number of multivariate studies have detailed the elements of war-zone exposure that are necessary, but not sufficient, to create risk for chronic posttraumatic stress disorder (PTSD). Using the National Vietnam Veterans Readjustment Study (NVVRS), King, King, Foy, and; Gudanowski (1996) found that indices of traditional combat (e.g., firing a weapon, receiving fire), reports of atrocities/abusive violence (e.g., mutilation, killing civilians), subjective judgments of fear in the war zone, and events reflecting the low-magnitude but malevolent discomforts in theatre were each associated with PTSD symptom severity. In another study that examined killing more narrowly in the context of committing atrocities during war, Fontana and Rosenheck (1999) found a strong relationship between killing and PTSD. After controlling for killing, the atrocities variable no longer predicted PTSD symptoms, suggesting that killing may be the potent ingredient in predicting PTSD.

In these earlier studies, taking another life was included in the atrocities construct. In the current study, we were interested in evaluating a wider range of war-related killing circumstances and the specific psychosocial problems that may result from these acts. We propose that in addition to the impact of atrocities, killing in self-defense, offensive initiatives, counterinsurgencies, responsibility for friendly fire-related deaths or activities that result in unintentional collateral civilian deaths can be haunting and damaging to service members, especially after returning to the civilian world where they are forced to integrate these socially sanctioned, violent, war-related behaviors with their prewar self concepts.

MacNair (2002) found a relationship between taking a life in combat and PTSD, also using the NVVRS data. However, the relationship between killing and other mental health symptoms and functional impairment was not examined. In our study, we extended MacNair's findings by examining several measures of PTSD, including a PTSD scale that is less obviously related to the widely known symptoms of PTSD and as a result may be less subject to biases in reporting (Keane, Malloy, & Fairbank, 1984; Lyons & Keane, 1992). We also examined dissociation, given that it is an associated symptom of PTSD. Although PTSD and its associated symptoms may be an important consequence of taking another life in war, we proposed that the mental health impact is likely to be far more complex and needs to be more carefully studied. We employed a measure of functional impairment that taps various indices of readjustment, and directly examined the relationship between killing and postdeployment violent behaviors. We examined the relationship between killing and functional impairment because impaired functioning is an important part of PTSD, yet is not distinctly assessed within the measures included. We also examined whether past violent behavior in the context of war is associated with future violent behavior. There are several studies that demonstrate that veterans struggle with anger and violence upon returning from their deployments (e.g., Beckham,

Moore, & Reynolds, 2000), and we wanted to examine whether killing could be a unique contributor to these findings, given that this has not been examined explicitly. Finally, we also extended MacNair's (2002) findings by employing sampling weights from the NVVRS, which maximize the external validity of our results.

In this study, we specifically examined veterans' involvement in different killing circumstances as well as the association between killing and various mental health and functioning outcomes. We hypothesized that rates of killing in Vietnam would be similar to those reported by Hoge and colleagues (2004) for OIF because both wars required close-range combat and frequent contact with civilians. We hypothesized that after accounting for other combat experiences, killing would be associated with greater risk for PTSD symptoms, dissociation, and various indices of functional impairment, including higher levels of violent behaviors in the aftermath of war.

METHOD

Data Source and Procedure

We used data from the NVVRS for these analyses (Kulka et al., 1990). Participants of this larger, nationally representative study included 1,632 veterans who served in Vietnam and surrounding areas between August 5, 1964 and May 7, 1975. Although the NVVRS included men and women, the majority of the women in this study were nurses who did not kill others in the course of combat; as a result, we limited our sample to male combat veterans ($N = 1,200$, 74% of NVVRS sample serving in Vietnam and surrounding areas). We used this group when describing circumstances and frequencies of killing, and used sampling weights to derive estimates for the entire population of 3.1 million male Vietnam veterans. The complete NVVRS household interview lasted for an average of 5 hours and included topics ranging from prewar characteristics to postwar functioning. Response rates for the male group were 82%.

Next, to perform a more in-depth analysis of the impact of killing, we utilized a subsample of these data, the NVVRS Clinical Interview Sample, which contains 260 male veterans ($n = 259$ for this study given that one veteran was missing the appropriate weighting variable). The Clinical Interview Sample contains information about clinical diagnoses and dissociation symptoms that are not found in the larger survey sample; the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) also was only administered to the Clinical Interview Sample, allowing for utilization of a less obvious and face-valid measure of PTSD (i.e., the PK scale of the MMPI-2). Given the broader range of variables, we utilized the Clinical Interview Sample for regression modeling. The Clinical Interview Sample is representative of the 1.3 million veterans (42% of the total) who were eligible for the clinical interview by virtue of living in proximity to one of the interview sites within 28 standard metropolitan regions throughout the

United States. When using sampling weights established for the Clinical Interview Sample, demographics variables are very similar to the 1,200 veterans included in the larger data set, and there is precedent for utilizing these weights for this purpose in recent articles utilizing the NVVRS (Dohrenwend et al., 2007; Dohrenwend, Turner, Turse, Lewis-Fernandez, & Yager, 2008). Further information about sampling strategies and sample characteristics have been previously reported in greater detail (Jordan et al., 1991; Kulka et al., 1990; Schlenger et al., 1992).

Measures

In the NVVRS, veterans were asked to report age, race/ethnicity, and educational status. Although we used the previously established categories for age and education, we recoded race/ethnicity into two different variables. For African American and Hispanic ethnicity, we recoded existing variables into dichotomous ones: African American versus Other and Hispanic versus Other, especially given findings about the impact of race/ethnicity on PTSD (Dohrenwend et al., 2008; Kulka et al., 1990; Penk et al., 1989).

The combat exposure measure was a 36-item scale assessing a myriad of war-related experiences and situations (e.g., how frequently respondents saw Americans being killed or injured, exposure to explosives, etc.; King, King, Gudanowski & Vreven, 1995). We removed the one item relating to killing (i.e., firing a weapon) from the scale to avoid overlap with the measure of killing experience described below. Similar to many of the NVVRS measures, a factor score was derived for each participant and was used to measure general combat exposure.

To assess killing experiences, individuals were first asked, "Did you ever kill or think you killed someone in or around Vietnam?" Next, they were asked a series of follow-up questions about the specific type of killing experiences in which they were involved. We derived a measure of killing experiences by creating four component variables (killing enemy, killing prisoners, killing civilians, direct involvement in killing/injuring women, children, and/or elderly people; for items included, see Table 2). The killing civilians category included adult men; the killing/injuring women, children, and/or elderly people category did not. For example, killing a male civilian in self-defense would be included in the former category while injuring and subsequently killing a child as part of a village raid also would be captured in the latter category. Given that we wanted to examine killing combatants and noncombatants, we constructed two killing contrasts. The first compared those who had only killed enemy combatants to those who had not killed, and the second compared those who had only killed enemy combatants to those who killed noncombatants. The majority of individuals who reported killing noncombatants also killed combatants (93%); consequently, the second contrast was in essence a comparison of those who only killed enemy combatants to those who killed both combatants and noncombatants.

The Mississippi Combat-Related PTSD Scale (MCS) is a 35-item measure that assesses PTSD-related symptoms of intrusion, avoidance, emotional numbing, hyperarousal, and related functional impairment (Keane, Caddell, & Taylor, 1988). Items are rated on a 5-point Likert scale, with responses ranging from *not at all true* to *extremely true,* with higher sum scores indicating greater PTSD symptomatology. The mean score for the MCS for this sample is 71.97 ($SD = 21.72$, range $= 36$–169). When including the entire sample, norms are lower than those for PTSD patients ($M = 130$, $SD = 18$) and psychiatric patients ($M = 86$, $SD = 26$; Keane et al., 1988). The MCS has been found to have excellent internal consistency (.94) and high test-retest reliability (.97; Keane et al., 1988).

The Minnesota Multiphasic Personality Inventory-2 PTSD Keane Scale (MMPI-PK) consists of 46 items that best distinguish between those with a PTSD diagnosis and those without a PTSD diagnosis (Keane et al., 1984; Lyons & Keane, 1992). The scale was originally developed by utilizing an item-by-item analysis with veterans with and without PTSD. Currently there is strongest support for a raw cutoff score of 28 (Lyons & Keane, 1992), which correctly identifies 76% of the validation sample (Munley, Bains, Bloem. & Busby, 1995).

The Peritraumatic Dissociative Experiences Questionnaire (PDEQ) is a 10-item measure of dissociative symptoms (e.g., altered time perception or depersonalization) experienced during or immediately following a traumatic event (Marmar, Metzler, & Otte, 2004; Marmar, Weiss, & Metzler, 1997). Each item is rated on a 5-point scale from *not at all true* to *extremely true.* Several studies have found the PDEQ to have high internal consistency and support its reliability and convergent and divergent validity (Marmar et al., 2004). In this study, we employed the mean PDEQ item score.

The Structured Clinical Interview for DSM-III-R (SCID; Spitzer, Williams, & Gibbon, 1987) was used to assess lifetime depression diagnosis. Individuals were asked a series of questions related to depression symptoms that are found in the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition-Revised*; American Psychiatric Association, 1987) and are assessed for the purposes of establishing a depression diagnosis. The SCID is a well-established clinical tool and is administered by a mental health professional qualified in making clinical diagnoses.

The readjustment index is a 12-item measure that assesses multiple domains of functioning. This index was rationally derived for use in the NVVRS. Domains include employment, finances, alcohol and drugs, mental/emotional, physical health, legal, education, discrimination due to military affiliation, and family problems with spouse or children. Each veteran was asked to classify whether functional impairment in each area exists, whether the impairment is minor or serious, and whether the impairment is currently a serious problem. The number of current serious readjustment problems was tallied and coded on a 4-point scale ranging from *none* to *four or more.*

A nine-item measure was used to index violent behaviors in the last year; this measure was based on Straus' family violence index alternative measure (Straus, 1979) and was modified to inquire about violent behavior towards any other individuals. The measure inquires about behaviors ranging from threatening to hitting or throwing something at another person to using a knife or a gun to hurt another person. Veterans were asked to indicate the frequency of each violent behavior on a 7-point Likert scale ranging from *never* to *more than 20 times*.

Data Analysis

All analyses were conducted with STATA 10, which has the capability of adjusting for survey sampling weights and strata. For the first series of analyses conducted to document exposure to different types of killing incidents, we used the entire male combat veteran sample ($N = 1,200$), employing the appropriate sampling weights for these data. For the second set of analyses, association with killing item by outcome and regression analyses were utilized with the Clinical Interview Sample ($n = 259$) and for these analyses, sampling weights and strata variables appropriate for the Clinical Interview Sample were used. Thus, all Clinical Interview Sample analyses are probability-weighted to represent the population of 1.3 million male Vietnam theater veterans residing within the 28 standard metropolitan regions from which the veterans were surveyed. For demographics and utilized variables of Clinical Interview Sample weighted to the population, see Table 1.

For the first set of analyses, we report percentages of individuals who reported exposure to different types of killing experiences. In some instances, questions are multitiered; for example the first tier is a general question about participating in a certain type of activity, the second tier asks about type of participation (e.g., directly involved), and the third tier asks about personal responsibility for the death of another in this situation. Once the person responds to whether he was directly involved, the next level asks for a specification concerning personal responsibility. This third level may distinguish between a soldier who was ordered to kill and was directly involved, but does not feel personally responsible and an officer who was personally involved in the killing and also felt personally responsible because he delivered the orders to kill. As a result of these tiered questions, when calculating percentages, we had to incorporate several levels of data with several graded sample sizes. For the final analyses, we used the entire sample and report graded percentages accordingly (see Table 2).

In the next set of analyses, we compare mental health outcomes by killing circumstances, utilizing a series of t tests for continuous outcomes and chi-square analysis for dichotomous outcomes (i.e., depression).

For the regression analyses, we first controlled for a number of demographic variables that were found to impact PTSD and other functional impairment in prior studies using the NVVRS data set, including age, African American race, Hispanic ethnicity,

Table 1. Descriptives for Demographics and Utilized Variables of Clinical Interview Sample

Variable	%	*M*	*SD*	Range
Age		41.26	5.58	32–62
Race/Ethnicity				0–1
Black	13			
Hispanic	7			
White and Other	80			
Education				1–5
Less than high school	8			
High school	26			
Some college	44			
College graduate	11			
Graduate/professional school	11			
MCS		71.97	21.72	36–169
MMPI-PK		6.64	8.11	0–40
Depression	4			1–2
PDEQ		1.53	.52	1–3
FI		2.41	1.21	1–4
Violence		2.19	1.38	1–5

Note. Percentages are reported for categorical variables. Means and standard deviations are reported for continuous variables. Table based on $n = 259$ weighted to population ($N = 1,323,433$). MCS = Mississippi Combat-Related PTSD Scale; MMPI-PK = Minnesota Multiphasic Personality Inventory-2 PTSD Keane Scale; Functional Impairment PDEQ = Peritraumatic Dissociative Experiences Questionnaire.

and educational attainment. Next, we entered the general combat variable to ensure that the results were not due to merely participating in combat, but were specific to killing experiences. The killing contrasts were entered in the third and final block.

RESULTS

Killing Experiences and Mental Health

About half of veterans (47%) killed or think they killed someone during the war. Table 2 describes the specific types of killing circumstances in which veterans were engaged. For example, 13% of Vietnam veterans reported being directly involved in a situation where women, children, and/or elderly people were injured or killed.

To gain more information about whether certain types of killing behaviors were associated with worse outcomes, we examined each of the mental health outcomes by killing circumstances (see Table 3). Those who reported killing enemy combatants scored higher than those who did not on all symptom and functional impairment measures. Those who reported killing civilians, as compared to those who did not, reported higher symptoms on some of the outcome measures (e.g., MCS), but not on others (e.g.,

Table 2. Percentages of Killing Circumstances Endorsed by Veterans

Item	Responses	%	95% CI
Frequency of being in a combat situation where you were sure that you personally had killed enemy personnel	Very often	2	1–3
	Often	5	3–6
	Sometimes	11	8–13
	Rarely	17	14–21
	Never	12	9–15
	Didn't kill	53	49–58
Personally responsible for death of Vietnamese civilian	Yes, personally responsible	3	2–4
	Directly Involved	4	2–5
	No	94	92–95
Directly involved in situation where women, children or old people were injured or killed	Yes, directly involved	13	10–16
	No	88	84–90
Personally responsible for death of prisoner	Yes, personally responsible	2	1–3
	Directly Involved	3	1–4
	No	96	94–97

Note. $N = 1,106$ due to missing data; totals may vary slightly due to rounding to whole numbers; population size on which analysis is based $= 2,910,390$. For the first question, "didn't kill" denotes individuals who were certain that they did not kill, while the *never* response denotes individuals who believed that they killed but were *never sure* that they had killed (e.g., never received confirmation).

MMPI-PK); there were no significant differences in functional impairment measures. Those who reported injuring or killing women, children, and/or elderly people as compared to those who did not, scored higher on all mental health and functional impairment measures. Those who reported killing prisoners, as compared to those who did not, scored higher on most mental health outcomes and functional impairment outcomes, with the exception of violent behaviors. Given that each of the killing items was related to higher scores on at least some of the outcomes, we decided to retain all outcomes in the regression analyses.

Regression Analyses

Before conducting the regression analyses, we examined correlations among all of the predictor variables and outcomes in the

Table 3. Outcome Means and Standard Deviations by Killing Items

Item	MCS		MMPI-PK		PDEQ		Depression %	FI		Violent	
	M	*SD*	*M*	*SD*	*M*	*SD*		*M*	*SD*	*M*	*SD*
Kill enemy											
Yes	83.64***	25.74	8.99**	10.24	1.74**	.53	13.27%*	1.82*	1.19	2.53*	1.54
No	65.63	15.73	5.39	6.29	1.41	.46	3.85%	1.37	.73	2.00	1.27
Kill civilian											
Yes	103.74*	38.48	14.77	14.16	1.99***	.36	26.67%*	2.19	1.33	3.10	1.59
No	70.54	19.95	6.41	7.75	1.51	.51	6.87%	1.52	.94	2.14	1.37
Kill/injure women, children, old											
Yes	93.09***	29.78	13.42***	11.87	1.95***	.42	18.46%**	1.94*	1.27	2.87**	1.62
No	68.24	17.54	5.53	6.64	1.46	.49	4.26%	1.47	.88	2.06	1.31
Kill prisoners											
Yes	112.05***	15.87	20.86**	12.14	1.96*	.48	33.33%	2.81*	1.51	3.42	1.97
No	71.23	21.05	6.48	7.84	1.53	.51	6.64%	1.51	.94	2.18	1.37

Note. $n = 259$, although some items may vary due to missing data; population size on which analysis is based $= 1,323,433$. MCS = Mississippi Combat-Related PTSD Scale; MMPI-PK = Minnesota Multiphasic Personality Inventory-2 PTSD Keane Scale; PDEQ = Peritraumatic Dissociative Experiences Questionnaire; FI = Functional Impairment.
$^* p < .05.$ $^{**} p < .01.$ $^{***} p < .001.$

Table 4. Correlations among Variables in Regression Models

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	–												
2. Black	−.07	–											
3. Latino	−.10**	.10**	–										
4. Education	.01	.05	−.02	–									
5. Combat	−.05	−.19	.02	.08	–								
6. Kill enemy	.14	−.04	−.06	−.04	.50**	–							
7. Kill others	−.10	−.07	.07	.06	.09	−.60**	–						
8. Depression	−.09**	−.09	.00	−.02	.27*	.02	.19*	–					
9. MCS	−.01	−.10	.10*	−.16*	.42**	.22**	.23**	.45**	–				
10. MMPI-PK	−.01	−.10	.16**	−.14*	.26**	−.01	.34**	.39**	.69**	–			
11. PDEQ	−.12	−.07	−.02	.04	.33**	.19	.19*	.20*	.48**	.35**	–		
12. FI	−.10	−.15*	.06	−.10	.23*	.03	.21*	.43**	.59**	.48**	.31**	–	
13. Violence	−.08	−.06	.10	.05	.18*	.13	.10	.21*	.31**	.29**	.12	.23**	–

Note. Table based on $n = 259$ weighted to population. MCS = Mississippi Combat-Related PTSD Scale; MMPI-PK = Minnesota Multiphasic Personality Inventory-2 PTSD Keane Scale; PDEQ = Peritraumatic Dissociative Experiences Questionnaire; FI = Functional Impairment.
* $p < .05$, two-tailed. ** $p < .01$, two-tailed.

regression analyses (see Table 4). For each of the regression analyses, we controlled for the demographic variables at the first step. At the second step, we controlled for general combat experiences; at the third step, we entered the killing variables. Hierarchical multiple regressions were employed for modeling predictors of each of the outcome variables, with the exception of depression, for which we utilized a hierarchical logistic regression. We conducted regression analyses for each of the six outcome variables shown in Table 3, including two PTSD measures, one dissociation measure, one depression measure, a general functional impairment measure, and a violent behaviors measure.

In the hierarchical regression predicting PTSD symptoms using the MCS (see Table 5), even after controlling for general combat experiences in the third step, killing combatants alone and killing which included noncombatants both emerged as highly significant. The final model accounted for 32% of the variance (with the killing variables accounting for an additional 10% of the variance above and beyond the general combat exposure variable), with Hispanic ethnicity, education, and killing significantly predicting PTSD symptoms.

In the hierarchical regression predicting PTSD symptoms using the MMPI-PK scale (see Table 5), even after controlling for general combat experiences in the third step, killing which included noncombatants emerged as highly significant. The final model accounted for 23% of the variance (with the killing variables accounting for an additional 11% of the variance beyond the general combat variable), with Hispanic ethnicity, education, and killing which included noncombatants significantly predicting PTSD symptoms.

In the hierarchical regression predicting peritraumatic dissociation, even after controlling for general combat experiences (see Table 6), killing combatants alone and killing which included noncombatants both emerged as highly significant. The final model accounted for 21% of the variance (with the killing variables accounting for an additional 9% of the variance beyond the combat variable), with the killing variables being the only significant predictors of peritraumatic dissociation.

In the hierarchical logistic regression predicting depression, none of the specified variables predicted depression diagnosis in the final model, and as a result, we do not report the model characteristics.

In the hierarchical regression predicting functional impairment (see Table 6), even after controlling for general combat experiences, killing which included noncombatants was the only significant predictor of various indices of functional impairment, and the final model accounted for 13% of the variance.

In the hierarchical regression predicting violent behaviors (see Table 6), even after controlling for general combat experiences, killing combatants alone and killing which included noncombatants both emerged as highly significant. The final model accounted for 10% of the variance, with the killing variables being the only significant predictors of violent behaviors.

DISCUSSION

Vietnam veterans endorsed a wide array of killing circumstances, reporting similar frequencies of taking a life of enemy combatants and civilians as those who were deployed to the current conflicts in Iraq and Afghanistan (Hoge et al., 2004; Tanielilan et al., 2008). After accounting for demographics and general combat exposure, killing was associated with PTSD symptoms, dissociation experiences, functional impairment, and violent behaviors.

Table 5. Models for Hierarchical Multiple Regressions of Posttraumatic Stress Disorder (PTSD) Symptoms

Predictors	MCS				MMPI-PK			
	B	$SE\ B$	β	R^2	B	$SE\ B$	β	R^2
Step 1:				.05**				.06**
Age	−0.04	0.24	−.01		−0.00	0.10	−.00	
Black	−7.11	3.50	−.11		−2.89	1.48	−.12	
Hispanic	9.33	3.67	.11*		5.43	1.23	.17**	
Education	−3.20	1.47	−.16*		−1.01	0.47	−.13*	
Step 2:				.22**				.12**
Age	0.07	0.26	.02		0.02	0.10	.02	
Black	−1.64	3.59	−.03		−1.67	1.49	−.07	
Hispanic	7.91	2.82	.09**		5.11	1.15	.16**	
Education	−4.00	1.39	−.20**		−1.19	0.45	−.16**	
Combat	15.59	2.70	.43**		3.49	1.20	.26**	
Step 3:				.32**				.23**
Age	−0.00	0.27	−.00		0.04	0.10	.03	
Black	−1.25	3.36	−.02		−1.21	1.34	−.05	
Hispanic	7.43	2.72	.09**		4.53	1.18	.14**	
Education	−3.74	1.45	−.18*		−1.24	0.42	−.16**	
Combat	6.81	3.49	.19		1.85	1.29	.14	
Kill Enemy	19.21	5.66	.40**		3.14	1.96	.18	
Kill Others	27.77	7.18	.47**		9.60	2.58	.43**	

Note. $F(7,231) = 11.15$, $p < .01$ for MCS; $F(7,231) = 10.30$, $p < .01$ for MMPI-PK. Numbers vary due to missing data. MCS = Mississippi Combat-Related PTSD Scale; MMPI-PK = Minnesota Multiphasic Personality Inventory-2 PTSD Keane Scale.
$^*p < .05.$ $^{**}p < .01.$

Furthermore, though general combat experiences were initially an important predictor and should be considered as part of any comprehensive model, these experiences were no longer statistically significant once the killing variables were added to the equation.

These findings highlight the profound impact that taking another life in the context of combat may have on veterans. Killing in and of itself may be a causal ingredient in the development of combat-related PTSD, beyond general combat experiences. These findings highlight the importance of killing as a separate component of theoretical models of PTSD (as well as other mental health outcomes following deployment), echoing prior studies that have found killing to be a potent ingredient in the development of PTSD (e.g., Fontana & Rosenheck, 1999).

These findings also highlight the possible differential impact of varying trauma types. Although there have been some studies comparing trauma type between individuals, there are no known studies that look at this question within individuals with successive traumatic events occurring within a relatively short deployment. If diverse trauma types are associated with PTSD symptoms differentially, this may have important implications for the assessment and treatment of PTSD. For example, current outcome studies of evidence-based treatments of PTSD do not look at dropout

and success rates based on trauma type and it may be important to do so, given the current findings.

Shifting from a traditional focus on personal life threat and loss to a broader focus that includes specifically assessing for killing experiences as part of any comprehensive mental health and readjustment plan following deployment is critical. By omitting questions about killing and its subsequent impact as an explicit part of both evaluation and treatment, we may be doing veterans a disservice and sending the message that these traumas are too shameful or uncomfortable to discuss.

The impact on each individual veteran is important to assess in a sensitive and understanding fashion. Due to recent media portrayals of OIF veterans participating in atrocities, service members may be weary of disclosing these incidents; however, discussion of these experiences may be crucial for optimal healing. Clinicians who work with veterans should balance asking about killing with creating a sound therapeutic environment where veterans feel they will not be judged for disclosing these incidents.

We found that different types of killing were associated with peritraumatic dissociation. Killing another human being may increase the likelihood of peritraumatic dissociation in part because of the profound sense of unreality associated with the commission of these acts. Peritraumatic dissociation may also serve to

Table 6. Models for Hierarchical Multiple Regressions of Dissociation and Functioning Outcomes

Predictors	PDEQ				FI				Violent Behaviors			
	B	*SE B*	β	R^2	*B*	*SE B*	β	R^2	*B*	*SE B*	β	R^2
Step 1:				.02				.05*				.03
Age	−0.01	0.01	−.12		−0.02	0.01	−.11		−0.02	0.02	−.08	
Black	−0.12	0.11	−.08		−0.44	0.16	−.15**		−0.43	0.25	−.10	
Hispanic	−0.04	0.11	−.02		0.26	0.14	.07		0.56	0.28	.10	
Education	0.02	0.04	.05		−0.08	0.06	−.10		0.06	0.11	.05	
Step 2:				.12**				.09**				.05*
Age	−0.01	0.01	−.10		−0.02	0.01	−.09		−0.02	0.02	−.07	
Black	−0.02	0.10	−.01		−0.32	0.16	−.11**		−0.30	0.26	−.07	
Hispanic	−0.07	0.09	−.03		0.23	0.15	.06		0.53	0.30	.09	
Education	0.01	0.03	.02		−0.10	0.05	−.11		0.04	0.11	.03	
Combat	0.28	0.07	.32**		0.33	0.15	.21**		0.37	0.20	.16	
Step 3:				.21**				.13**				.10**
Age	−0.01	0.01	−.13		−0.02	0.01	−.09		−0.03	0.02	−.10	
Black	−0.03	0.10	−.02		−0.29	0.16	−.10		−0.31	0.26	−.07	
Hispanic	−0.07	0.09	−.03		0.19	0.15	.05		0.55	0.31	.10	
Education	0.02	0.04	.03		−0.10	0.06	−.11		0.07	0.11	.05	
Combat	0.05	0.09	.05		0.19	0.19	.12		−0.12	0.28	−.05	
Kill Enemy	0.51	0.14	.45**		0.28	0.27	.13		1.10	0.46	.36*	
Kill Others	0.63	0.12	.44**		0.70	0.32	.27*		1.13	0.49	.30*	

Note. $F(7,226) = 8.53$, $p < .01$ for PDEQ; $F(7,231) = 4.11$, $p < .01$ for FI; $F(7,230) = 3.06$, $p < .01$ for Violent Behaviors. Numbers vary due to missing data. PDEQ = Peritraumatic Dissociative Experiences Questionnaire; FI = Functional Impairment.
* $p < .05$. ** $p < .01$.

shut down or minimize feelings associated with the act of killing. This may set the stage for dissociation as a coping strategy, which interferes with trauma processing and paves the way for the development of PTSD. Alternatively, killing may be associated with terror and horror, factors that are associated with greater peritraumatic dissociation (Marmar et al., 2004).

Although prior studies have found that PTSD is associated with greater occurrence of violent behavior in veterans and that greater combat exposure is associated with greater interpersonal violence (Beckham, Feldman, Kirby, Hertzberg & Moore, 1997; Begić & Jokić-Begić, 2001), the finding that killing, in particular, is strongly associated with violence, even after controlling for exposure to personal life threat and other elements of general combat, adds important information in better understanding this equation. If there is more awareness of the need to assess for killing behaviors, clinicians can more easily ask about subsequent violent behaviors and implement programs, including cognitive–behavioral anger management (e.g., Reilly, Clark, Shopshire, Lewis, & Sorensen, 1994). One limitation of this finding is that we do not know whether those that are more violent prior to entering the military are more likely to report killing behaviors in the war zone.

Depression diagnosis was associated neither with killing behaviors nor with general combat. One possibility is that it is important to examine a continuous measure of depression symptoms rather than using a categorical measure of depression diagnosis. Another possibility is that many of the individuals who were clinically depressed had a history of depression prior to entering the military and as a result, there was no association between military variables and depression. Depression may need to be considered in conjunction with other symptoms to best understand a pattern of mental health symptoms that emerge in response to killing.

Several additional limitations should be noted. First, the NVVRS is a cross-sectional study and as a result temporal relationships should not be assumed when interpreting these data. The NVVRS was conducted many years after veterans served in Vietnam and as a result, recall biases should be taken into account, including the possibility that recall is influenced by current symptoms. It should also be noted that certain measures were only collected for the clinical sample, which was oversampled for ethnic minorities and those involved in combat; however, we were able to use sampling weights to provide estimates for the population of Vietnam veterans in major metropolitan areas, a strength of these findings. This investigation was conducted with American Vietnam veterans and should not be generalized to veterans from other countries or veterans from other eras. We were only able to report these relationships for men. It will be important to look at these relationships in women following the current conflicts in Iraq and Afghanistan. Although we know that killing which

included noncombatants was strongly associated with mental health outcomes, veterans who reported killing noncombatants often reported killing individuals in several categories (e.g., all of those who killed prisoners of war also killed others in at least one other category), and as a result conclusions about which type of killing results in the worst outcome should be made with caution. Finally, personal responsibility for the death of another may be a subjective interpretation rather than an objective indicator of killing.

Overall, we found that killing was widely reported in a nationally representative sample of Vietnam veterans. The majority of veterans who took another life in war reported killing an enemy soldier with some reporting killing civilians, and fewer reporting killing prisoners of war. Those who reported killing in Vietnam endorsed higher symptoms on most mental health and functional impairment measures. Killing was associated with PTSD symptoms, peritraumatic dissociation, functional impairment, and violent behaviors, after controlling for exposure to general combat. These findings have important implications for evaluation and treatment of veterans who have killed in war, and can serve as a template to investigate these questions further as we welcome home a new generation of service members and prepare to meet their mental health needs.

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