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Enjoying the Violence of War: Association With Posttraumatic Symptomatology in U.S. Combat Veterans

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Objective: Engaging in war-related violence can have a devastating impact on military personnel, with research suggesting that injuring or killing others can contribute to posttraumatic stress disorder (PTSD), depression, and moral injury. However, there is also evidence that perpetrating violence in war can become pleasurable to a substantial number of combatants and that developing this “appetitive” form of aggression can diminish PTSD severity. Secondary analyses were conducted on data from a study of moral injury in U.S., Iraq, and Afghanistan combat veterans, to examine the impact of recognizing that one enjoyed war-related violence on outcomes of PTSD, depression, and trauma-related guilt. **Method:** Three multiple regression models evaluated the impact of endorsing the item, “I came to realize during the war that I enjoyed violence” on PTSD, depression, and trauma-related guilt, after controlling for age, gender, and combat exposure. **Results:** Results indicated that enjoying violence was positively associated with PTSD, β (SE) = 15.86 (3.02), $p < .001$, depression, β (SE) = 5.41 (0.98), $p < .001$, and guilt, β (SE) = 0.20 (0.08), $p < .05$. Enjoying violence moderated the relationship between combat exposure and PTSD symptoms, β (SE) = -0.28 (0.15), $p < .05$, such that there was a decrease in the strength of the relationship between combat exposure and PTSD in the presence of endorsing having enjoyed violence. **Conclusions:** Implications for understanding the impact of combat experiences on postdeployment adjustment, and for applying this understanding to effectively treating posttraumatic symptomatology, are discussed.

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Clinical Impact Statement

A substantial portion of U.S. combat veterans reported having enjoyed violence during war. This positively valenced, appetitive response to violence may co-occur with some of the same negatively valenced postcombat psychological sequelae, such as posttraumatic stress disorder and depression, with which clinicians are often more familiar. Our findings point to the importance of being open to the possibility that appetitive aggression is not uncommon in U.S. combat veterans and to the need to be prepared to face this sequela of combat with the same compassion, openness, and understanding we currently offer when encountering other wounds of war.

Keywords: appetitive aggression, posttraumatic stress disorder, trauma-related guilt, depression, moral injury

In the decades since World War II, the American military has developed techniques to overcome humans' natural aversion to killing other humans (Grossman, 1995). Research has suggested that exposure to violence in warfare, whether it be through witnessing or perpetrating atrocities or through killing, can leave profound and lasting psychological wounds on combatants after they return from the battlefield including posttraumatic stress disorder (PTSD; Beckham et al., 1998; Dennis et al., 2017), depression (Currier et al., 2015; Dennis et al., 2017), and suicidality (Bryan et al., 2015). Yet there are also reports that violence in war can sometimes be associated with positive affective states, including enjoyment, that may persist even after the conflict is over (Currier et al., 2015; Nandi et al., 2020; Weierstall et al., 2011). For example, the feeling of a "combat high" has been reported by soldiers who served in Vietnam and other recent U.S. conflicts (Grossman, 1995; Shay, 1994), and killing in war has been described as addictive: "Killing can be like sex, and you can get carried away with it" (Grossman, 1995, p. 137).

Substantial bodies of research support both reactions to exposure to atrocities and killing in warfare. With respect to posttraumatic symptomatology, research with U.S. veterans of the Vietnam War has found that involvement in atrocities during the war was associated with both PTSD severity and feelings of guilt (Beckham et al., 1998; Dennis et al., 2017), and a meta-analysis of studies of deployment-related predictors of suicide found that exposure to killing or atrocities was among the strongest predictors of suicide-related outcomes among military personnel and veterans (Bryan et al., 2015). One way of understanding the relationship between engaging in violence during warfare and these outcomes is through the concept of "moral injury," which involves a painful sense of having betrayed one's own moral values that results in negative long-term, social, behavioral, emotional, spiritual, and psychological effects (Griffin et al., 2019; Litz et al., 2009; Purcell et al., 2018; Shay, 2014). Research has supported the legitimacy and importance of moral injury as a sequela of war-related trauma that is distinct from but highly correlated with PTSD (Griffin et al., 2019; Litz et al., 2009). From a moral injury perspective, the phenomenon of the combat high leads to the belief that one has the capacity to experience positive affect during the commission of extreme violence, which conflicts with prior beliefs about the self as good or moral and results in excruciating emotional suffering that is manifested as PTSD, trauma-related guilt, or depression (Purcell et al., 2016, 2018). This theory would predict that individuals who report having enjoyed violence during wartime would experience elevated levels of these outcomes postdeployment,

once they have returned to the context in which their moral foundation was developed.

Yet there is also a body of research suggesting violence in war can sometimes be associated with positive affective states that persist beyond the moment of violence, such that perpetrating cruelty or killing an enemy can become intrinsically rewarding and thus self-perpetuating (Köbach et al., 2014, 2015; Moran et al., 2014; Nandi et al., 2015; Schaal et al., 2015, 2014; Weierstall & Elbert, 2011; Weierstall, Huth, et al., 2012; Weierstall et al., 2015, 2011). This idea that engaging in highly aggressive acts can be exciting and pleasurable has been termed "appetitive aggression," and has typically been investigated in areas of the world that have experienced protracted war and genocide (e.g., German WWII soldiers, Weierstall, Huth, et al., 2012; Democratic Republic of the Congo, Köbach et al., 2014; Burundi, Crombach & Elbert, 2014; Köbach et al., 2015; Nandi et al., 2016; Uganda, Weierstall, Schalinski, et al., 2012). Some studies have found that for those who live in chronically traumatic and violent environments, appetitive aggression is negatively associated with PTSD, at least up to a threshold of trauma exposure (Crombach & Elbert, 2014; Köbach et al., 2014, 2015; Nandi et al., 2016; Weierstall, Huth, et al., 2012; Weierstall et al., 2011). For example, in a study with former street children in Burundi, PTSD was found to be negatively associated with appetitive aggression (Crombach & Elbert, 2014); and in former child soldiers in Northern Uganda, while a dose-response relationship was found between exposure to trauma and scores on a scale of posttraumatic symptomatology, the association between trauma and posttraumatic stress was reduced among those with elevated scores on a scale of appetitive aggression (Weierstall, Schalinski, et al., 2012). In some cases, then, it appears that when repetitive killing is required and is reinforced by the environment, the natural aversion to killing may eventually be overcome, and violent behaviors and associated cues may become more reinforcing than horrifying. In such an environment, appetitive aggression may become adaptive.

In attempting to understand the phenomenon of appetitive aggression, researchers have labeled the network of associations that becomes activated in appetitive aggression the "hunting network" and have juxtaposed this with the PTSD-related "fear network" (Hecker et al., 2015). Critical to the understanding of appetitive aggression is that both the fear network and the hunting network are activated in the context of violence-related trauma, but the hunting network only becomes salient after repeated use of violence. As such, while PTSD may occur in high trauma contexts, appetitive aggression is most likely to occur in these contexts when there is the necessity and/or opportunity for the use of violence. It is only

in a context of chronic trauma combined with the perpetration of violence that appetitive aggression would likely become adaptive and thus protective against further exacerbation of PTSD. One interesting caveat to the protective effects of appetitive aggression from PTSD is that some studies have found that appetitive aggression is only protective to a threshold of trauma exposure, after which the protective effects diminish and PTSD becomes severe (Weierstall et al., 2011, 2012).

The current investigation sought to explore the construct of appetitive aggression in a sample of U.S. veterans who had been deployed to Iraq or Afghanistan. Specifically, we asked the question: In the context of warfare as experienced by contemporary U.S. warfighters, is enjoyment of violence more strongly associated with a framework informed by traditional constructs of posttraumatic symptomatology and moral injury (i.e., PTSD, depression, guilt), or might it more closely align to a framework informed by the concepts of the hunting network and appetitive aggression?

To answer this question, we evaluated whether endorsing the item, “I came to realize during the war that I enjoyed violence” was positively or negatively associated with PTSD, depression, and guilt, while controlling for demographic variables and combat exposure, and whether enjoying violence moderated the impact of combat exposure on these outcomes (Bryan et al., 2015; Hoge et al., 2004), in a sample of U.S. veterans who had been deployed to the wars in Iraq or Afghanistan. If endorsing having enjoyed violence in the context of war is positively associated with PTSD, depression, and guilt as a main effect, and if enjoying violence did not moderate the impact of trauma exposure on these outcomes, then this would suggest that a moral injury framework is most useful in understanding the impact of using violence in combat on this population (Griffin et al., 2019; Litz et al., 2009; Purcell et al., 2018). On the other hand, if endorsing enjoying violence serves as a moderator by decreasing the impact of combat on these trauma-related outcomes, this would suggest that the framework of the hunting network and appetitive aggression could be helpful in understanding postcombat emotional sequelae in this population (Köbach et al., 2014, 2015; Moran et al., 2014; Nandi et al., 2015; Schaal et al., 2014; Weierstall & Elbert, 2011; Weierstall, Huth, et al., 2012; Weierstall et al., 2011).

Method

Participants and Procedure

This investigation is based on secondary analyses of data collected for the Moral Injury in Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn (OEF/OIF/OND) Veterans Study. This survey recruited from the Veterans Affairs (VA) Mid-Atlantic Mental Illness Research, Education, and Clinical Center’s Post-Deployment Mental Health (PDMH) Repository, a database of over 3,000 veterans and military personnel who have served since September 11, 2001. Inclusion criteria and further details about PDMH dataset are available (Branču et al., 2017). PDMH Repository data were used to determine study eligibility for the OEF/OIF/OND Veterans Study. Inclusion in the OEF/OIF/OND Veterans Study further required (a) consent to be recontacted for future research studies and (b) service in a war or operation zone. Participants were excluded if they were diagnosed with schizophrenia or another psychotic disorder (see Nieuwsma et al., 2021, for

further details). Ethical approval was obtained from the Institutional Review Board at the Durham Veterans Affairs Health Care System, and all participants provided informed consent before any study procedures were initiated. A total of 315 participants were enrolled in the OEF/OIF/OND Veterans Study.

Measures

A single item from the 20-item Moral Injury Questionnaire-Military Version (MIQ-M; Currier et al., 2015) was used to assess the construct of *appetitive aggression*. Veterans rated the item, “I came to realize during the war that I enjoyed violence” on a 4-point Likert scale ranging from 1 = *never* to 4 = *often*. The MIQ-M captures a range of potentially morally injurious experiences during combat deployment.

PTSD was measured using the Davidson Trauma Scale (DTS; Davidson et al., 1997), a 17-item self-report measure of the frequency and severity of Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) PTSD symptoms experienced in the prior week. The measure has a range of 0–136 and demonstrated acceptable reliability and validity in samples of Iraq and Afghanistan war era veterans, with a cut-off score of 40 recommended as optimal for the classification of PTSD (McDonald et al., 2009). Cronbach’s alpha for the DTS in this sample was 0.98.

Guilt was measured using the four-item Global Guilt subscale of the Trauma-Related Guilt Inventory (TRGI; Kubany et al., 1996), which includes items that assess the degree to which an individual experiences guilt associated with a traumatic event (e.g., “I experience intense guilt that relates to what happened”) rated on a scale from 0 to 4. The participant is not required to list the traumatic event but is instructed to consider a trauma and to “take a few minutes to think about what happened” and then respond to the items in reference to this experience. The TRGI is one of the only validated measures of trauma-related guilt, and it has been found to have adequate reliability in a sample of veterans receiving treatment for PTSD (Cunningham et al., 2017). Cronbach’s alpha for the TRGI in this sample was 0.95.

Depression was measured using the Beck Depression Inventory-2 (BDI-2; Beck et al., 1996), a widely used 21-item self-report measure of depression symptom severity that has demonstrated excellent reliability and validity (Wang & Gorenstein, 2013). The BDI-2 has a range of 0–63. Cronbach’s alpha for the BDI-2 in this sample was 0.96.

Covariates in the models included gender, age, and exposure to combat. Combat exposure was measured by the 15-item Combat Experiences Scale of the Deployment Risk and Resilience Inventory (DRRI), second edition (Vogt et al., 2012), which measures exposure to warfare experiences, including firing a weapon or being fired upon and witnessing injury and death; has a range of 15–90; and has been found to have high reliability, discriminant validity, and criterion-related validity in U.S., Iraq, and Afghanistan war combat veterans (Vogt et al., 2013). Cronbach’s alpha for the Combat Experiences Scale of the DRRI in this sample was 0.94.

Analysis

Measures with <75% of responses complete were not scored; mean substitution was used to manage missing data for measures for which 75% or more of items were completed. Mean substitution

was employed in <3% of cases for all measures in this dataset. Analyses presented here used all available data, resulting in small differences in sample size among the models. With respect to listwise deletion of cases with missing data, of a total dataset of 315, two cases were deleted due to missing predictor (Combat Experiences Scale); and five were deleted due to missing moderator (appetitive aggression item). Of the remaining 308 cases, 30 were deleted in the PTSD model due to missing DTS ($n = 278$); one was deleted in the depression model due to missing BDI-2 ($n = 307$); and 18 were deleted in the guilt model due to missing TRGI ($n = 290$).

During data screening, responses to the variable “enjoy violence” demonstrated a significant right skew, such that 78% of participants responded “never,” 8% responded “seldom,” 10.7% responded “sometimes,” and 3.6% responded “often.” Considering that the 78% of those who reported that they never enjoyed violence can be both conceptually and statistically distinguished from the 22.3% who indicated that they ever enjoyed violence, we dichotomized this item to reflect self-report of never enjoying violence versus self-report of enjoying violence “seldom,” “sometimes,” or “often.”

Partial correlations were run to evaluate the association of enjoying violence with each of the outcomes controlling for age, gender, and combat experiences. Linear regressions using PROCESS (Hayes, 2012) were used to model the contribution of enjoying violence to the variance in posttraumatic symptomatology beyond what was explained by gender, age, and combat exposure. Alpha level (one-tailed) was set at $p < .05$. We chose this alpha level because prior research has found interaction effects supporting a moderating effect of appetitive aggression on the association of trauma exposure and PTSD (Crombach & Elbert, 2014; Weierstall et al., 2012); we are aware of no research that has found an interaction supporting a facilitative effect of appetitive aggression on this relationship.

The variables of “enjoy violence” and combat exposure were centered for the interaction term. Given that appetitive aggression is only expected to occur in the context of trauma, the protective effect of appetitive aggression was expected to manifest as a decrease in the strength of the relationship between combat exposure and PTSD in the presence of endorsing having enjoyed violence. To model this, we included in the regressions an interaction term between the centered combat exposure and the “enjoy violence” items. If appetitive aggression were protective against PTSD in the context of combat, the interaction term would be significant in the regression model

predicting PTSD, with a flattened slope in the association of combat exposure and PTSD among those who endorsed enjoying violence. The regression model was repeated for the two outcome measures of depression and trauma-related guilt.

Results

Table 1 displays demographic and clinical information for participants in the current study for whom data were available for both the predictor (Combat Experiences Scale) and moderating (appetitive aggression) variables common to all models ($N = 308$). Fifty-seven percent of participants identified as White, 42% as Black, and 1% as Asian or Pacific Islander. Twenty-two percent ($n = 68$) of the sample endorsed enjoying violence to at least some degree.

The Pearson partial correlation coefficient for the association of enjoying violence with each of the outcome variables was as follows: PTSD, $r = .28$, $p < .0001$; BDI-2, $r = .31$, $p < .0001$; TRGI Global Guilt, $r = .11$, $p = .06$. Table 2 displays the results of the three linear regressions evaluating the variance in PTSD symptoms, depression symptoms, and trauma-related guilt explained by the recognition of enjoying violence. Enjoying violence was a significant predictor of the variance in PTSD scores, β (SE) = 15.86 (3.02), $p < .001$, after accounting for combat experiences, age, and gender. The interaction of combat exposure and enjoying violence was significant, β (SE) = -0.28 (0.15), $p < .05$; $\Delta R^2 = 0.0091$. Probing of the interaction using simple slopes analysis indicated that the slope of the association between combat exposure and PTSD symptoms was flatter among those who endorsed enjoying violence than among those who did not. Specifically, among those who did not enjoy violence, as combat exposure increased, PTSD symptoms did as well, $\theta_{x \rightarrow y} = 1.056$, $t(272) = 5.84$, $p < .001$. Among those who did enjoy violence, as combat exposure increased, PTSD symptoms did as well, but the slope was flatter $\theta_{x \rightarrow y} = 0.774$, $t(272) = 4.76$, $p < .001$. At both high and low levels of combat exposure, endorsement of enjoying violence was associated with higher levels of PTSD symptomatology, such that the mean DTS score fell below the suggested PTSD cut-off of 40 only among those veterans with low appetitive aggression and low combat exposure (see Figure 1).

Enjoying violence was also a significant predictor of the variance in BDI-2 scores, β (SE) = 5.41 (0.98), $p < .001$, and Global Guilt

Table 1
Demographics and Clinical Data for Total Sample and by Endorsement of “I Came to Realize During the War That I Enjoyed Violence”

Variable	Total sample % (N) or M (SD)	Enjoy violence absent % (N) or M (SD)	Enjoy violence present % (N) or M (SD)	Chi-square/ t-test
% Female (N)	13.3 (41)	12.34 (38)	0.97 (3)	5.99*
Age	46.36 (10.36)	46.75 (10.09)	44.41 (10.93)	1.66
Total DTS score	48.11 (39.86)	38.89 (37.15)	79.08 (33.01)	7.60***
Total BDI-2 score	17.32 (13.25)	14.08 (11.86)	27.95 (11.88)	8.51***
Global Guilt score	1.14 (1.10)	0.96 (1.01)	1.69 (1.18)	4.93***
DRRI CES score	30.19 (15.45)	26.39 (12.23)	43.21 (18.24)	7.16***

Note. DTS = Davidson Trauma Scale; DRRI = Deployment Risk and Resilience Inventory; CES = Combat Exposure Scale; BDI-2 = Beck Depression Inventory-2.

* $p < .05$. *** $p < .001$.

Table 2
Linear Regression Models Predicting PTSD, Depression, and Guilt Symptom Severity

Dependent variable	B (SE)	R ²
Total DTS score		0.25***
Intercept	30.10 (10.11)**	
Gender	13.96 (6.52)*	
Age	0.37 (0.21)	
CES scale score	0.94 (0.16)***	
“Enjoy violence”	15.86 (3.02)***	
CES × “Enjoy Violence”	−0.28 (0.16)*	
Total BDI-2 score		0.22***
Intercept	17.44 (3.21)***	
Gender	2.88 (2.05)	
Age	−0.008 (0.07)	
CES scale score	0.22 (0.05)***	
“Enjoy violence”	5.41 (0.98)***	
CES × “Enjoy Violence”	−0.04 (0.05)	
TRGI Global Guilt score		0.16***
Intercept	0.72 (0.29)**	
Gender	0.002 (0.18)	
Age	0.01 (0.06)	
CES scale score	0.02 (0.004)***	
“Enjoy violence”	0.20 (0.08)**	
CES × “Enjoy Violence”	−0.007 (0.004)	

Note. DTS = Davidson Trauma Scale; CES = Combat Exposure Scale; BDI-2 = Beck Depression Inventory-2; TRGI = Trauma-Related Guilt Inventory; PTSD = posttraumatic stress disorder.
* $p < .05$. ** $p < .01$. *** $p < .001$ (one-tailed).

scores, β (SE) = 0.20 (0.08), $p < .05$, after controlling for the covariates. Interactions were not significant in these models.

Discussion

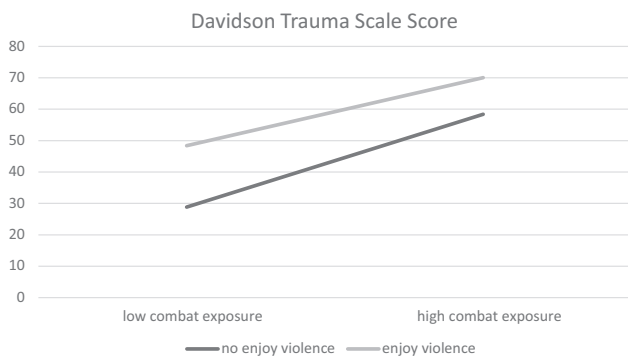
Within the past few decades, research has increasingly focused on the psychological impact of having caused injury or death in the context of war (Grossman, 1995). In the broader literature, two separate bodies of work have evolved that, on their surface, appear to present a contradictory picture of the psychological aftermath of harming or killing others in war. One body of work has found that harming or killing others is associated with trauma-related psychopathology like PTSD and depression, and with moral injury, or a painful sense of having betrayed one’s own moral values (Dennis et al.,

2017; Griffin et al., 2019; Litz et al., 2009; Purcell et al., 2018). A second area of research has found that harming or killing can be “protective” against the development of PTSD (Köbach et al., 2014, 2015; Weierstall, Schalinski, et al., 2012; Weierstall et al., 2011). To grapple with the apparent discrepancy between findings that indicate a negative impact of enjoying violence in warfare (a traditional posttraumatic sequelae or moral injury framework) and those that indicate a protective effect of enjoying violence (an appetitive aggression framework), this study sought to evaluate whether endorsing the item, “I came to realize during the war that I enjoyed violence,” would be positively associated with posttraumatic symptomatology in a sample of U.S. veterans who had a history of deployment to war in Iraq or Afghanistan, or whether the presence of appetitive aggression would diminish the association between combat exposure and PTSD in this sample.

Findings reflected that after controlling for age, gender, and combat exposure, endorsing a realization of having enjoyed violence during war was associated with elevated levels of PTSD, depression, and trauma-related guilt. At both high and low levels of combat exposure, those who endorsed enjoying violence had elevated levels of PTSD symptomatology compared to those who did not endorse enjoying violence (see Figure 1). Broadly, this seems to support the hypothesis that recognizing that one enjoyed violence in a combat setting may leave a painful residue after demobilization and is more consistent with a posttraumatic sequelae or moral injury framework.

On the other hand, and consistent with the hypothesis that appetitive aggression is protective against increased PTSD in the presence of elevated levels of trauma, a significant interaction was found between combat exposure and enjoying violence on PTSD: Among those veterans who reported enjoying violence, the strength of the relationship between degree of combat exposure and PTSD

Figure 1
Interaction of Enjoying Violence and Combat Exposure on PTSD Severity



Note. PTSD = posttraumatic stress disorder.

was attenuated as compared to those veterans who did not report enjoying violence. Our findings are similar to those observed in former child soldiers in Northern Uganda, where the dose–response relationship of trauma exposure to posttraumatic symptoms was less pronounced among those with higher levels of appetitive aggression (Weierstall et al., 2012). While the variance explained by the interaction in our sample is small and therefore should be interpreted with caution, the data suggest a more complex association between combat exposure, enjoying violence, and PTSD than can be explained exclusively by a traditional posttraumatic sequelae or moral injury framework.

Prior research on the role of childhood trauma in PTSD and appetitive aggression may shed some light on these findings, specifically with regard to threshold levels of PTSD symptomatology among veterans with appetitive aggression even in the presence of low combat exposure. Research has found that childhood trauma, including experiences of childhood maltreatment, is associated with both trauma-related symptomatology (Kolassa et al., 2010; Van Voorhees et al., 2012) and with increased appetitive aggression in the presence of self-committed violence (Augsburger et al., 2015, 2017; Nandi et al., 2015; Zeller et al., 2020). It may be that a subset of veterans who entered the military with histories of exposure to trauma and violence (Blosnich et al., 2014) developed trauma-related symptoms and appetitive aggression before combat deployment and that among these veterans, preexisting appetitive aggression is protective against further PTSD symptomatology in response to combat-related trauma. Thus, while they enter a combat setting with threshold-level PTSD from prior trauma, the presence of appetitive aggression diminishes the degree of further psychological injury they suffer in the context of war. Taken together, our findings that enjoying violence during the war is associated with posttraumatic symptomatology postdeployment are tempered by the finding that appetitive aggression may be functional and protective during war because it allows for continued engagement in the business of violence and protects against more negative and vulnerable emotions and behaviors such as fear, horror, grief, and retreat. However, once a fighter leaves the battlefield, preeminent cultural values shift from the protection of the unit to the morals of civilian life. In this new context, it is hard to integrate the memory of having enjoyed violence in one setting, with a self-image rooted in a civilian-based moral code that dictates that intentionally harming or killing anyone is wrong, and trauma-related symptoms emerge. Such an interpretation has been supported by qualitative research that found that many U.S. veterans report that killing during war has had devastating consequences on their sense of self, spirituality, and relationships with others (Purcell et al., 2016).

On the other hand, one limitation of the current study is that it is unclear whether the act of perpetrating (and enjoying) violence was the index traumatic event underlying PTSD, depression, and guilt. In fact, in a combat setting, there are likely to be multiple traumas and multiple violent acts, and some of our clinical experiences have suggested that the index trauma and the act associated with enjoying violence may be related in complicated ways. For example, some of the veterans with severe PTSD whom we see in a clinical context described not only enjoying violence during war, but also continuing to enjoy the memory of this violence. In such cases, the enjoyed violent act often occurred after the traumatic death of a fellow soldier, and the killing was viewed as a retaliation for another soldier's death (see Shay, 1994). In such cases, guilt, shame, and PTSD

symptomatology may have been more linked with experiences of loss, victimization, and powerlessness, while instances of perpetration were characterized by feelings of power and control (Schaal et al., 2015; Stuewig et al., 2010).

The clinical implications of developing a deeper understanding of the complexity of reactions to having harmed or killed others in the context of war may be profound. Close and nonjudgmental listening to the individual's narrative is essential, with the awareness that enjoyment of violence may have been adaptive for self- and other-protection and for fulfilling a human need for a sense of power and strength. Some moral injury researchers have developed an intervention specifically for addressing the guilt, shame, and moral injury associated with killing in warfare, and there is preliminary evidence that this is critically important to the recovery of some war veterans (Maguen et al., 2017). Researchers in the area of appetitive aggression, on the other hand, have developed a treatment for individuals who have both PTSD and appetitive aggression, and there is evidence that this treatment is effective in reducing both PTSD symptoms and the inclination to reengage with violence after demobilization (Crombach & Elbert, 2015; Hecker et al., 2015; Köbach et al., 2017). As such, determining which approach would be most appropriate for an individual Veteran may require a careful evaluation of what violence means to that individual, with an openness to understanding that both shameful and appetitive responses may be common in the context of the prolonged violence of war.

The results of this study must be interpreted in light of significant limitations. First and foremost, the original study from which the data were drawn was designed to evaluate the moral injury, and thus our single-item measure of appetitive aggression allows for only a gross estimation of whether or not appetitive aggression was actually present. In contrast, the Appetitive Aggression Scale was developed specifically to examine the construct in detail, and includes more pointed questions about enjoying violence such as, "Is defeating the opponent more fun for you, when you see them bleed?" (Weierstall & Elbert, 2011). Further, while the phrasing of the question, "I came to realize during the war that I enjoyed violence" appears to be relatively neutral, the placement of the question in the context of a study on moral injury may imply that such enjoyment is morally questionable. Future research in post-9/11 U.S. combat Veteran populations should include more extensive measures of the construct of appetitive aggression as separate from the construct of moral injury. Second, as discussed above, it is impossible to determine from this design whether the event associated with PTSD and with enjoying violence were the same event or whether they were different events that both occurred in the violent context of war (Köbach et al., 2015; Schaal et al., 2015). Future research may benefit from using a validated clinical interview like the Clinician-Administered PTSD Scale (Weathers et al., 2013) to allow for more specific detail about the type of traumas that are associated with both PTSD and appetitive aggression. Similarly, the TRGI does not require the participant to list the trauma associated with the guilt they experience. A more nuanced investigation would require an evaluation of the index event or events most strongly associated with PTSD and other posttraumatic psychological sequelae, as well as an evaluation of the situation or situations in which the individual discovered that he or she enjoyed violence. Finally, future research should examine the role of childhood trauma and maltreatment in contributing to appetitive aggression and PTSD in this population.

Despite these limitations, this study adds to the literature by demonstrating that over one-fifth (22%) of U.S. combat veterans endorse having enjoyed violence at some level during the war, and that this positively valenced, appetitive response to violence may co-occur with some of the same negatively valenced post-combat psychological sequelae that many VA clinicians are more familiar with assessing and treating. Our findings here replicate, in U.S. combat veterans, what has been found in other chronically violent contexts (i.e., German WWII soldiers, Weierstall, Huth, et al., 2012; Democratic Republic of the Congo, Köbach et al., 2014; Uganda, Weierstall, Schalinski, et al., 2012). Our observation that, in the chronically violent and traumatic context of war, U.S. soldiers can suffer PTSD, guilt, and depression and also have been shaped through that context to enjoy violence in a way that may protect from further psychological injury, has important implications for how clinicians and society respond to these soldiers when they return home. We hope that the findings reported here will serve as a starting point for a deeper and more nuanced discussion of the impact of trauma in the context of the reinforced use of violence on the emotional learning of war-fighters. At the very least, it will be important for both clinicians and researchers to be sensitive to the possibility that appetitive aggression is not uncommon in U.S. veterans, and to be prepared to face this sequela of combat with the same compassion, openness, and understanding we currently offer when encountering other wounds of war.

References

- Augsburger, M., Meyer-Parlapanis, D., Bambonye, M., Elbert, T., & Crombach, A. (2015). Appetitive aggression and adverse childhood experiences shape violent behavior in females formerly associated with combat. *Frontiers in Psychology, 6*, Article 1756. <https://doi.org/10.3389/fpsyg.2015.01756>
- Augsburger, M., Meyer-Parlapanis, D., Elbert, T., Nandi, C., Bambonye, M., & Crombach, A. (2017). Succumbing to the call of violence—sex-linked development of appetitive aggression in relation to familial and organized violence. *Frontiers in Psychology, 8*, Article 751. <https://doi.org/10.3389/fpsyg.2017.00751>
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Beck depression inventory-II*. The Psychological Corporation.
- 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*(4), 777–785. <https://doi.org/10.1023/A:1024453618638>
- Blosnich, J. R., Dichter, M. E., Cerulli, C., Batten, S. V., & Bossarte, R. M. (2014). Disparities in adverse childhood experiences among individuals with a history of military service. *JAMA Psychiatry, 71*(9), 1041–1048. <https://doi.org/10.1001/jamapsychiatry.2014.724>
- Brancu, M., Wagner, H. R., Morey, R. A., Beckham, J. C., Calhoun, P. S., Tupler, L. A., ... Fairbank, J. A. (2017). The Post-Deployment Mental Health (PDMH) study and repository: A multi-site study of US Afghanistan and Iraq era veterans. *International Journal of Methods in Psychiatric Research, 26*(3), e1570. <https://doi.org/10.1002/mp.1570>
- Bryan, C. J., Griffith, J. E., Pace, B. T., Hinkson, K., Bryan, A. O., Clemans, T. A., & Imel, Z. E. (2015). Combat exposure and risk for suicidal thoughts and behaviors among military personnel and veterans: A systematic review and meta-analysis. *Suicide and Life-Threatening Behavior, 45*(5), 633–649. <https://doi.org/10.1111/sltb.12163>
- Crombach, A., & Elbert, T. (2014). The benefits of aggressive traits: A study with current and former street children in Burundi. *Child Abuse and Neglect, 38*(6), 1041–1050. <https://doi.org/10.1016/j.chiabu.2013.12.003>
- Crombach, A., & Elbert, T. (2015). Controlling offensive behavior using narrative exposure therapy: A randomized controlled trial of former street children. *Clinical Psychological Science, 3*(2), 270–282. <https://doi.org/10.1177/2167702614534239>
- Cunningham, K. C., Farmer, C., LoSavio, S. T., Dennis, P. A., Clancy, C. P., Hertzberg, M. A., Collie, C. F., Calhoun, P. S., & Beckham, J. C. (2017). A model comparison approach to trauma-related guilt as a mediator of the relationship between PTSD symptoms and suicidal ideation among veterans. *Journal of Affective Disorders, 221*, 227–231. <https://doi.org/10.1016/j.jad.2017.06.046>
- Currier, J. M., Holland, J. M., Drescher, K., & Foy, D. (2015). Initial psychometric evaluation of the Moral Injury Questionnaire—Military version. *Clinical Psychology & Psychotherapy, 22*(1), 54–63. <https://doi.org/10.1002/cpp.1866>
- Davidson, J. R., Book, S. W., Colket, J. T., Tupler, L. A., Roth, S., David, D., Hertzberg, M., Mellman, T., Beckham, J. C., Smith, R. D., Davison, R. M., Katz, R., & Feldman, M. E. (1997). Assessment of a new self-rating scale for post-traumatic stress disorder. *Psychological Medicine, 27*(1), 153–160. <https://doi.org/10.1017/S0033291796004229>
- Dennis, P. A., Dennis, N. M., Van Voorhees, E. E., Calhoun, P. S., Dennis, M. F., & Beckham, J. C. (2017). Moral transgression during the Vietnam war: A path analysis of the psychological impact of veterans' involvement in wartime atrocities. *Anxiety, Stress, & Coping, 30*(2), 188–201. <https://doi.org/10.1080/10615806.2016.1230669>
- Griffin, B. J., Purcell, N., Burkman, K., Litz, B. T., Bryan, C. J., Schmitz, M., Villierme, C., Walsh, J., & Maguen, S. (2019). Moral injury: An integrative review. *Journal of Traumatic Stress, 32*(3), 350–362. <https://doi.org/10.1002/jts.22362>
- Grossman, D. (1995). *On killing: The psychological cost of learning to kill in war and society* (1st ed.). Back Bay Books.
- Hayes, A. F. (2012). *PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling*. University of Kansas.
- Hecker, T., Hermenau, K., Crombach, A., & Elbert, T. (2015). Treating traumatized offenders and veterans by means of narrative exposure therapy. *Frontiers in Psychiatry, 6*(3), 80. <https://doi.org/10.3389/fpsyg.2015.00080>
- Hoge, C. W., Castro, C. A., Messer, S. C., McGurk, D., Cotting, D. I., & Koffman, R. L. (2004). Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *New England Journal of Medicine, 351*(1), 13–22. <https://doi.org/10.1056/NEJMoa040603>
- Köbach, A., Nandi, C., Crombach, A., Bambonyé, M., Westner, B., & Elbert, T. (2015). Violent offending promotes appetitive aggression rather than posttraumatic stress—A replication study with Burundian ex-combatants. *Frontiers in Psychology, 6*(1518), 1755. <https://doi.org/10.3389/fpsyg.2015.01755>
- Köbach, A., Schaal, S., & Elbert, T. (2014). Combat high or traumatic stress: Violent offending is associated with appetitive aggression but not with symptoms of traumatic stress. *Frontiers in Psychology, 5*, Article 1518. <https://doi.org/10.3389/fpsyg.2014.01518>
- Köbach, A., Schaal, S., Hecker, T., & Elbert, T. (2017). Psychotherapeutic intervention in the demobilization process: Addressing combat-related mental injuries with narrative exposure in a first and second dissemination stage. *Clinical Psychology & Psychotherapy, 24*(4), 807–825. <https://doi.org/10.1002/cpp.1986>
- Kolassa, I. T., Ertl, V., Eckart, C., Kolassa, S., Onyut, L. P., & Elbert, T. (2010). Spontaneous remission from PTSD depends on the number of traumatic event types experienced. *Psychological Trauma: Theory, Research, Practice, and Policy, 2*(3), 169–174. <https://doi.org/10.1037/a0019362>
- Kubany, E. S., Haynes, S. N., Abueg, F. R., Manke, F. P., Brennan, J. M., & Stahura, C. (1996). Development and validation of the trauma-related guilt

- inventory (TRGI). *Psychological Assessment*, 8(4), 428–444. <https://doi.org/10.1037/1040-3590.8.4.428>
- Litz, B. T., Stein, N., Delaney, E., Lebowitz, L., Nash, W. P., Silva, C., & Maguen, S. (2009). Moral injury and moral repair in war veterans: A preliminary model and intervention strategy. *Clinical Psychology Review*, 29(8), 695–706. <https://doi.org/10.1016/j.cpr.2009.07.003>
- Maguen, S., Burkman, K., Madden, E., Dinh, J., Bosch, J., Keyser, J., Schmitz, M., & Neylan, T. C. (2017). Impact of killing in war: A randomized, controlled pilot trial. *Journal of Clinical Psychology*, 73(9), 997–1012. <https://doi.org/10.1002/jclp.22471>
- McDonald, S. D., Beckham, J. C., Morey, R. A., & Calhoun, P. S. (2009). The validity and diagnostic efficacy of the Davidson Trauma Scale in military veterans who have served since September 11, 2001. *Journal of Anxiety Disorders*, 23(2), 247–255. <https://doi.org/10.1016/j.janxdis.2008.07.007>
- Moran, J. K., Weierstall, R., & Elbert, T. (2014). Differences in brain circuitry for appetitive and reactive aggression as revealed by realistic auditory scripts. *Frontiers in Behavioral Neuroscience*, 8, Article 425. <https://doi.org/10.3389/fnbeh.2014.00425>
- Nandi, C., Crombach, A., Bambonye, M., Elbert, T., & Weierstall, R. (2015). Predictors of posttraumatic stress and appetitive aggression in active soldiers and former combatants. *European Journal of Psychotraumatology*, 6(1), 26553. <https://doi.org/10.3402/ejpt.v6.26553>
- Nandi, C., Crombach, A., Bambonye, M., Elbert, T., & Weierstall, R. (2016). Appetitive aggression and its relation to posttraumatic stress in Burundian ex-combatants. *Peace and Conflict: Journal of Peace Psychology*, 22(2), 102–108. <https://doi.org/10.1037/pac0000138>
- Nandi, C., Crombach, A., Elbert, T., Bambonye, M., Pryss, R., Schobel, J., & Weierstall-Pust, R. (2020). The cycle of violence as a function of PTSD and appetitive aggression: A longitudinal study with Burundian soldiers. *Aggressive Behavior*, 46(5), 391–399. <https://doi.org/10.1002/ab.21895>
- Nieuwsma, J. A., Brancu, M., Wortmann, J., Smigelsky, M. A., King, H. A., VISN 6 MIRECC Workgroup, & Meador, K. G. (2021). Screening for moral injury and comparatively evaluating moral injury measures in relation to mental illness symptomatology and diagnosis. *Clinical Psychology and Psychotherapy*, 28(1), 239–250. <https://doi.org/10.1002/cpp.2503>
- Purcell, N., Burkman, K., Keyser, J., Fucella, P., & Maguen, S. (2018). Healing from moral injury: A qualitative evaluation of the impact of killing treatment for combat veterans. *Journal of Aggression, Maltreatment & Trauma*, 27(6), 645–673. <https://doi.org/10.1080/10926771.2018.1463582>
- Purcell, N., Koenig, C. J., Bosch, J., & Maguen, S. (2016). Veterans' perspectives on the psychosocial impact of killing in war. *The Counseling Psychologist*, 44(7), 1062–1099. <https://doi.org/10.1177/0011000016666156>
- Schaal, S., Heim, L., & Elbert, T. (2014). Posttraumatic stress disorder and appetitive aggression in Rwandan genocide perpetrators. *Journal of Aggression, Maltreatment & Trauma*, 23(9), 930–945. <https://doi.org/10.1080/10926771.2014.956916>
- Schaal, S., Koebach, A., Hinkel, H., & Elbert, T. (2015). Posttraumatic stress disorder according to DSM-5 and DSM-IV diagnostic criteria: A comparison in a sample of Congolese ex-combatants. *European Journal of Psychotraumatology*, 6(1), Article 24981. <https://doi.org/10.3402/ejpt.v6.24981>
- Shay, J. (1994). *Achilles in Vietnam: Combat trauma and the undoing of character*. Simon and Schuster.
- Shay, J. (2014). Moral injury. *Psychoanalytic Psychology*, 31(2), 182–191. <https://doi.org/10.1037/a0036090>
- Stuewig, J., Tangney, J. P., Heigel, C., Harty, L., & McCloskey, L. (2010). Shaming, blaming, and maiming: Functional links among the moral emotions, externalization of blame, and aggression. *Journal of Research in Personality*, 44(1), 91–102. <https://doi.org/10.1016/j.jrp.2009.12.005>
- Van Voorhees, E. E., Dedert, E. A., Calhoun, P. S., Brancu, M., Runnals, J., & Beckham, J. C. (2012). Childhood trauma exposure in Iraq and Afghanistan war era veterans: Implications for posttraumatic stress disorder symptoms and adult functional social support. *Child Abuse & Neglect*, 36(5), 423–432. <https://doi.org/10.1016/j.chiabu.2012.03.004>
- Vogt, D., Smith, B. N., King, L. A., King, D. W., Knight, J., & Vasterling, J. J. (2013). Deployment risk and resilience inventory-2 (DRRI-2): An updated tool for assessing psychosocial risk and resilience factors among service members and veterans. *Journal of Traumatic Stress*, 26(6), 710–717. <https://doi.org/10.1002/jts.21868>
- Vogt, D., Smith, D. N., King, D. W., & King, L. A. (2012). *Manual for the deployment risk and resilience inventory-2 (DRRI-2): A collection of measures for studying deployment-related experiences of military veterans*. National Center for PTSD.
- Wang, Y.-P., & Gorenstein, C. (2013). Psychometric properties of the Beck Depression Inventory-II: A comprehensive review. *Brazilian Journal of Psychiatry*, 35(4), 416–431. <https://doi.org/10.1590/1516-4446-2012-1048>
- Weathers, F. W., Blake, D. D., Schnurr, P. P., Kaloupek, D. G., Marx, B. P., & Keane, T. M. (2013). *The clinician-administered PTSD scale for DSM-5 (CAPS-5)*. [Assessment] www.ptsd.va.gov
- Weierstall, R., & Elbert, T. (2011). The Appetitive Aggression Scale—development of an instrument for the assessment of human's attraction to violence. *European Journal of Psychotraumatology*, 2(1), Article 8430. <https://doi.org/10.3402/ejpt.v2i0.8430>
- Weierstall, R., Huth, S., Knecht, J., Nandi, C., & Elbert, T. (2012). Appetitive aggression as a resilience factor against trauma disorders: Appetitive aggression and PTSD in German World War II veterans. *PLoS One*, 7(12), e50891. <https://doi.org/10.1371/journal.pone.0050891>
- Weierstall, R., Schaal, S., Schalinski, I., Dusingizemungu, J. P., & Elbert, T. (2011). The thrill of being violent as an antidote to posttraumatic stress disorder in Rwandese genocide perpetrators. *European Journal of Psychotraumatology*, 2(1), Article 6435. <https://doi.org/10.3402/ejpt.v2i0.6345>
- Weierstall, R., Schalinski, I., Crombach, A., Hecker, T., & Elbert, T. (2012). When combat prevents PTSD symptoms—Results from a survey with former child soldiers in Northern Uganda. *BMC Psychiatry*, 12(1), Article 41. <https://doi.org/10.1186/1471-244x-12-41>
- Zeller, A. C., Conrad, D., Schneider, A., Behnke, A., Pfeiffer, A., Blum, G. F., Wilker, S., Elbert, T., & Kolassa, I. (2020). A combination of combat experience, early abduction, and severe traumatization fuels appetitive aggression and violence among abductees of rebel war in Northern Uganda. *Aggressive Behavior*, 46(6), 465–475. <https://doi.org/10.1002/ab.21914>

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