

## **Posttraumatic Stress Disorder and Appetitive Aggression in Rwandan Genocide Perpetrators**

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*The objectives of this study were to investigate rates of posttraumatic stress disorder (PTSD) and levels of appetitive aggression and potential risk factors for appetitive aggression in a sample of 200 Rwandan genocide perpetrators. Five percent of the perpetrators presented with PTSD, and high levels of appetitive aggression were common. High levels of appetitive aggression were associated with male gender, a high number of past committed offenses, and low levels of positive and elevated levels of negative religious coping. Considering the substantial extent of appetitive aggression, the reintegration of these individuals into the community should consider the inclusion of programs that restrain appetitive aggression and restore psychological functioning to facilitate a peaceful coexistence.*

**KEYWORDS** *appetitive aggression, combat trauma, exposure to violence, genocide, perpetrators, posttraumatic stress disorder, Rwanda*

During the genocide in Rwanda in 1994, it is estimated that nearly 1 million people were murdered over the course of 3 months. Fighting erupted between two artificially divided “ethnic” groups, the Hutu majority and the Tutsi minority. The main goal of the perpetrators of the genocide was to eliminate the Tutsi minority and the Hutu opponents. Many people, including ordinary citizens, either willingly joined the slaughter or did so under

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coercion. The perpetrator group carried out extreme violence, encouraged by impunity. In fact, there were even negative consequences for refusing the order to kill. According to Scherrer (1997), 25% of the Hutu population (including children and women) directly participated in the perpetration of the Rwandan genocide. A period of norm shifts preceded the killings. It was propagated that the Tutsi would be a dangerous threat to the Hutu and the conclusion that the killings of the Tutsi were necessary and justifiable acts of perceived revenge was generated. This collective shift in perceptions altered the consciousness to acceptance of killings (Dutton, 2007). Moreover, because of the impunity, violence became “normalized.” According to Moshman (2011) the mass killings during the genocide were crimes of group violence, which involved a dichotomization of social identities. The dehumanization of the outgroup (Tutsi) turned the killing acceptable and less bad. Conformity was reinforced through extreme social pressure. Moreover, the phenomenon of *groupthink*—a mode of thinking that can be found in people who deeply belong to a cohesive group—further enhanced participation in killings. According to Dutton (2007), killers engaging in groupthink have an illusion of invulnerability and moral righteousness, which might result in extreme risk taking and negative stereotypes of outgroups. They strive for unanimity that renders them blind to realistically evaluate alternative courses of action. A feeling of perceived threat could enhance this phenomenon.

In recent years, research into the mental health consequences of the Rwandan genocide has increased. Several surveys have demonstrated that symptoms of posttraumatic stress disorder (PTSD; Brounéus, 2010; Pham, Weinstein, & Longman, 2004; Schaal & Elbert, 2006; Sezibera, Van Broeck, & Philippot, 2009) and depression (Brounéus, 2010; Schaal, Jacob, Dusingizemungu, & Elbert, 2011) are common among Rwandan genocide survivors. Research on the mental health of the Rwandan perpetrators is scarce. Some have argued that participation in mass violence and the infliction of harm on others could be considered a potentially traumatizing event that could also cause trauma-related symptoms (MacNair, 2002a; Staub, 2006). Indeed, the results of a recent study showed that imprisoned perpetrators of the Rwandan genocide exhibit a considerable degree of psychiatric morbidity (Schaal, Weierstall, Dusingizemungu, & Elbert, 2012).

Following the genocide, the judicial system in Rwanda was completely destroyed. Trials proceeded only slowly and, over the years, the suspects were still detained in overcrowded jails. All those who participated could not possibly be imprisoned. Thus, a traditional Rwandan community-based conflict resolution system called *Gacaca* was initiated. People who confessed their crimes during the Gacaca trials and who were found guilty of participating in the genocide receive a reduction of their sentences and serve all or part of their sentence doing community service. Travail d'Intérêt Général (TIG) is the French acronym that refers to community service, which is meant to help confessed perpetrators return to Rwandan society. During the

week, the so-called *tigistes* live in camps (comparable to prisons); however, they have more rights in comparison to prisoners, as they are sometimes allowed to visit their families for the weekend. The first goal of this study was thus to examine rates of PTSD in Rwandan genocide perpetrators who do community service as part of their punishment (*tigistes*).

Whereas some authors have argued that the commitment of violence might be traumatizing (MacNair, 2002a; Staub, 2006), other researchers have noted that the commitment of violence can even be appealing and fascinating (Elbert, Weierstall, & Schauer, 2010; Nell, 2006; Silva, Derecho, Leong, Weinstock, & Ferrari, 2001). Elbert and colleagues (2010) defined appetitive aggression as the “perpetration of violence or the infliction of harm to a victim that is aimed to experience violence-related enjoyment by the exposure to violence cues” (p. 104). Thus, it is not solely the instrumental gain that drives aggression, but aiming for an intrinsic reward. A number of recent studies have investigated appetitive aggression in Rwandan genocide prisoners (Weierstall, Schaal, Schalinski, Dusingizemungu, & Elbert, 2011), former Congolese combatants (Hecker, Hermenau, Maedl, Elbert, & Schauer, 2012), and child soldiers from Uganda (Weierstall, Schalinski, Crombach, Hecker, & Elbert, 2012). “We became more and more cruel, more and more calm, more and more bloody” is one of numerous statements of Rwandan genocide perpetrators describing appetitive aggression (Hatzfeld, 2004, p. 50).

Several studies have shown that appetitive aggression might be a protective factor for the development of PTSD symptoms (Elbert et al., 2010; Weierstall et al., 2011). Elbert and coauthors (2010) found fewer symptoms of PTSD in those who reported higher levels of appetitive violence. The authors explained a resilience mechanism on the basis of the competition between two associative memory networks, the trauma/fear network (e.g., Schauer, Neuner, & Elbert, 2011) and the “hunting network,” and suggested that appetitive aggression might prevent the integration of traumatic events into the fear network (Elbert et al., 2010). We therefore examined whether those perpetrators with a higher PTSD symptom severity would display lower levels of appetitive aggression compared with those who showed less severe symptoms of PTSD.

In terms of demographic variables, male gender constitutes one reported risk factor in the development of appetitive aggression. Several studies have found that males show a higher degree of appetitive aggression than female participants (Hecker et al., 2012; Weierstall et al., 2011). Violence might therefore be more fascinating and appealing for men than for women (Elbert et al., 2010). We explored whether male genocide perpetrators would display higher levels of appetitive aggression compared to female perpetrators.

Several researchers have found appetitive aggression to be a predictor of the number of committed crimes in different African conflict regions. They reported that appetitive aggression was positively associated with perpetrated violent acts in Ugandan child soldiers (Elbert et al., 2010),

Congolese ex-combatants (Hecker et al., 2012), and Rwandan genocide perpetrators (Weierstall et al., 2011). This study investigated the association between the number of committed offenses and appetitive aggression.

It has often been argued that religiosity might be considered a control system that prescribes socially acceptable behavior and cultural norms. Hence, adherence to religious principles might be expected to be negatively related to aggression and violent behavior. A large number of studies have found that religiosity might inhibit aggressive behavior (Hardy, Walker, Rackham, & Olsen, 2012; Landau, Björkqvist, Lagerspetz, Österman, & Gideon, 2002; Leach, Berman, & Eubanks, 2008). However, the association between appetitive aggression and religiosity has received no attention to date. We examined the relationship between religious coping and appetitive aggression and assumed that high levels of positive religious coping would restrict appetitive aggression and that low levels of negative religious coping would boost this characteristic.

The second goal of this study was to examine levels of appetitive aggression and explore variables associated with appetitive aggression in perpetrators. We investigated the following correlates and thus potential predictors of levels of appetitive aggression: PTSD symptom severity, gender, number of committed types of crimes, and religious coping. In accordance with previous research, we hypothesized that appetitive aggression would be predicted by lower levels of PTSD symptom severity, male gender, higher levels of reported crimes, and higher levels of negative but lower levels of positive religious coping.

## METHOD

### Participants and Procedure

Eligible participants were perpetrators of the Rwandan genocide who were at least 18 years old during the genocide in 1994 and who had experienced the genocide. They had all confessed genocide-related crimes and were all performing community service as part of their punishment in one of the following TIG camps in Kigali: Mont-Kigali (26.5%,  $n = 53$ ; total number of inmates,  $N = 300$ ), Nduba (30.0%,  $n = 60$ ; total number of inmates,  $N = 235$ ), Kinyinya (28.0%,  $n = 56$ ; total number of inmates,  $N = 145$ ), Kayanga (9.0%,  $n = 18$ ; total number of inmates,  $N = 361$ ), or Rusororo (6.5%,  $n = 13$ ; total number of inmates,  $N = 256$ ). A total of 200 genocide perpetrators were interviewed for this study. Six individuals who were approached refused to participate in the trial. The sample consisted of 67 women (33.5%) and 133 men (66.5%); the mean age was 52.13 years ( $SD = 10.37$ ; range = 35–80). As more men committed serious offenses during the genocide, more men than women have been convicted. The random selection reflects this gender imbalance. Further characteristics of the sample can be drawn from Table 1.

**TABLE 1** Demographic Characteristics in Rwandan Genocide Perpetrators

Variable	<i>n</i>	%	<i>M</i>	<i>SD</i>
Sex				
Male	133	66.5	—	—
Female	67	33.5	—	—
Age	—	—	52.13	10.37
Highest school degree obtained				
No degree	143	71.5	—	—
Primary school	53	26.5	—	—
Secondary school	—	—	—	—
Apprenticeship	4	2.0	—	—
University	—	—	—	—
Number of school years completed			2.86	2.79
Religion				
Catholic	122	61.0	—	—
Protestant	50	25.0	—	—
Islamic	3	1.5	—	—
Adventist	21	10.5	—	—
Other	3	1.5	—	—
No religion	1	0.5	—	—
Marital status				
Married	156	78.0	—	—
Widowed	32	16.0	—	—
Other (single, separated, divorced)	12	6.0	—	—
TIG camp				
Nduba	58	29.0	—	—
Kininya	56	28.0	—	—
Mont Kigali	55	27.5	—	—
Kayanga	18	9.0	—	—
Rusororo	13	6.5	—	—

*Note.* *N* = 200. TIG = Travail d'Intérêt Général.

The study was conducted in Kigali, Rwanda, in January and February 2011. It was approved by the University of Konstanz Ethical Review Board, the Rwandan Ministry of Science and Technology, and the Ministry of Internal Security/Rwanda Prisons Service. All participants were fully informed of the study's procedure and aims, including voluntary participation, and provided us their signed, written informed consent. Participants were informed that the interviewers operated independently of the TIG system and that the information given would be kept strictly confidential. The diagnostic interviews were carried out by 10 local psychologists. Participants were randomly assigned to the interviewers. All local raters had already received extensive training in conducting structured diagnostic interviews and the various questionnaires had already been translated into Kinyarwanda as part of previous studies (Schaal, Jacob, Dusingizemungu, & Elbert, 2010, 2012). The Brief Religious Coping Scale (Brief RCOPE; Pargament, Smith, Koenig, & Perez, 1998) was translated into Kinyarwanda and blind-reverse translated by Rwandans. The interviews were individually carried out in

private rooms at the TIG camps. Researchers informed TIG staff about the aforementioned inclusion criteria and perpetrators were randomly selected from a complete list of inmates. The interviews lasted about 2 hr. Participants received no financial compensation.

## Measures

Interviewers obtained sociodemographic data from each respondent. Ethnicity was not directly asked, as it is illegal to collect this type of information in Rwanda. However, to assign the participants to a probable ethnic group, interviewers asked the following question: During the genocide, did you belong to the group which had been persecuted? During the genocide, the Tutsi minority was the group that had been persecuted. Almost all (97%,  $n = 194$ ) indicated that they did not belong to the group that had been persecuted during the genocide. The respective TIG personnel provided objective information on criminological characteristics (e.g., the crime for which interviewees had been convicted, the amount of time spent in prison, and in the TIG camp) on the basis of official documents. The interviewers measured potentially traumatic events using the modified Event Scale of Schaal and Elbert (2006), which assessed the lifetime exposure to 26 different potentially traumatic event types. Interviewers asked if the person had ever committed any of 16 different types of crimes (Offense Scale) in the past. This list has already been used in a previous study (Schaal et al., 2012). Participants were asked to indicate the most frightening event ever experienced (from the Event Scale or the Offense Scale) to which the rating of PTSD symptoms referred.

Appetitive aggression was assessed using the Appetitive Aggression Scale (AAS; Weierstall & Elbert, 2011). The AAS is a 15-item scale carried out as a semistructured interview, which has also been successfully used and validated in East Africa (Hecker et al., 2012; Weierstall et al., 2011). Respondents rate each of the statements according to a 5-point scale ranging from 0 (*totally disagree*) to 4 (*totally agree*), representing increasing levels of agreement. The AAS refers to the appetitive perception of violence (e.g., “is it exciting for you if you make an opponent really suffer,” “once you got used to being cruel, did you want to be crueller and crueller”). The appetitive aggression score was the sum of all 15 items (possible scores range from 0–60; Cronbach’s  $\alpha = .88$ ). We assessed current diagnostic status and symptom severity of PTSD using the PTSD Symptom Scale–Interview (PSS–I), in which possible scores of the PTSD sum score range from 0 to 51 (Cronbach’s  $\alpha = .93$ ; Foa & Tolin, 2000). Religious coping was assessed using the Brief Religious Coping Scale (Brief RCOPE; Pargament et al., 1998). The Brief RCOPE measures current positive (seven items) and negative (seven items) patterns of religious coping methods (“wondered what I did for God to punish me” or “tried to see how God might be trying to strengthen me in

this situation” are examples of negative and positive religious coping items). Participants indicate the extent to which they currently use the particular religious method of coping on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*a great deal*).

The positive religious coping score (Cronbach's  $\alpha = .84$ ) and the negative religious coping score (Cronbach's  $\alpha = .77$ ) was the sum of the respective seven items (possible scores range from 0–21). All diagnostic instruments were administered as clinical interviews.

### Data Analysis

The presented descriptive data are expressed as frequencies (%), mean scores, and standard deviations. As the appetitive aggression sum score is a count variable and is not normally distributed and heteroscedatic (Breusch Pagan Test,  $\chi^2 = 30.21$ ,  $p < .001$ ), multiple linear regression was not appropriate. The association between appetitive aggression and different predictor variables was therefore investigated through negative binomial regression analysis. The following independent variables were simultaneously entered into the analysis: gender, PTSD sum score, number of committed offenses, positive religious coping score, and negative religious coping score. The number of types of lifetime traumatic events was entered as a control variable to regulate confounding effects. Data analysis was conducted using version 20 of the SPSS software. The reported statistical tests were one-tailed.

## RESULTS

### Trauma Exposure and Posttraumatic Stress Disorder

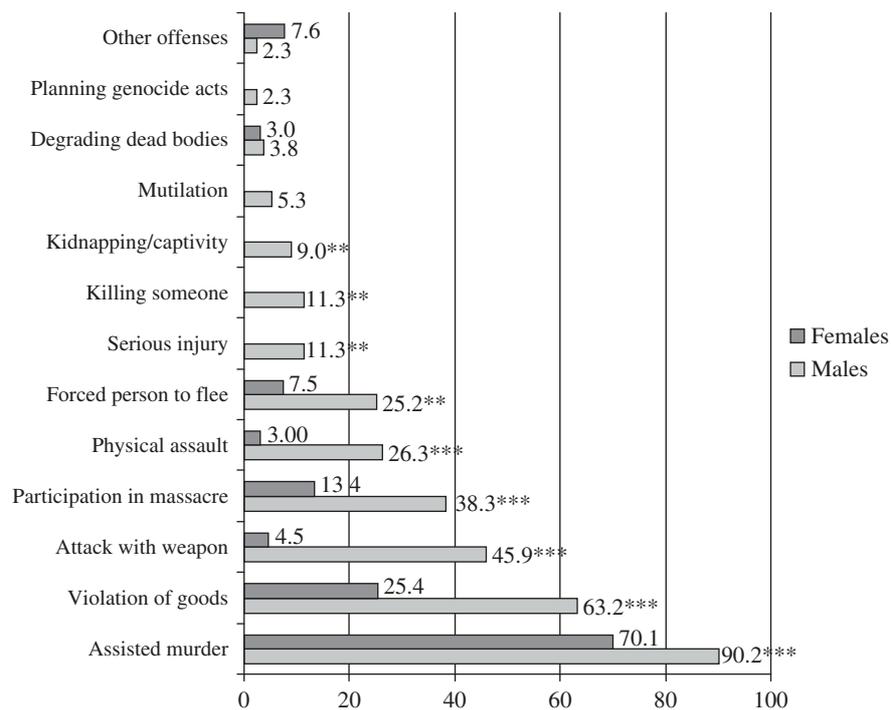
Perpetrators were exposed to a wide range of potentially traumatic events. The mean number of reported types of lifetime potentially traumatizing events was 8.16 ( $SD = 3.36$ , range = 1–19) from a possible 26 (Event Scale). From the total sample, the majority of those interviewed (73.5%;  $n = 147$ ) indicated an event from the Event Scale as the most frightening event they had ever experienced; 14% ( $n = 28$ ) indicated an event where they themselves had perpetrated violent acts as their most frightening event (Offense Scale); and 12.5% ( $n = 25$ ) indicated that none of these events were experienced as frightening.

The mean of the PTSD sum score was  $M = 2.66$  ( $SD = 5.45$ , range = 0–27). Diagnostic criteria for PTSD were met by 5.3% ( $n = 10$ ). Of those who fulfilled diagnostic criteria for PTSD, the majority indicated an event they had experienced themselves as an etiological event for their PTSD symptomatology (70.0%;  $n = 7$ ); one third (30.0%;  $n = 3$ ) indicated a crime that they had committed as the event to which their symptoms referred.

### Criminological Characteristics and Committed Offenses

All of the perpetrators had been convicted. On average, 4.02 years had passed since their conviction ( $SD = 0.64$ , range = 1–6 years). According to the official documents, the main offenses for which the perpetrators had been convicted included murder (12.0%;  $n = 24$ ) and assisted murder (72.5%;  $n = 145$ ). At the time of their conviction, the sentences ranged from 10 to 336 months (28 years) with a mean of  $M = 136.94$  months (11 years;  $SD = 61.90$  months). Before doing community service in the TIG camps, perpetrators had spent an average of 16.68 months in prison ( $SD = 33.07$ , range = 0–156 months). At the time of the interview, they had already spent of average 28.34 months in the TIG camps ( $SD = 12.19$ , range = 4–62 months).

The most frequently reported offenses for males and females included “assisted murder” (90.2%;  $n = 120$  vs. 70.1%;  $n = 47$ ) and “violation of goods” (63.2%;  $n = 84$  vs. 25.4%;  $n = 17$ ). Figure 1 summarizes the offenses of males and females. Gender comparisons on the different offenses committed found significant group differences for the offenses



**FIGURE 1** Percentage of committed offenses in Rwandan male ( $n = 133$ ) and female ( $n = 67$ ) perpetrators. Note. Two offenses of the Offense Scale (“poisoning” and “sexual assault”) were indicated by none of the participants. \*\* $p < .01$ . \*\*\* $p < .001$ .

“assisted murder,”  $\chi^2(1, N = 200) = 13.03, p < .001$ ; “violations of goods,”  $\chi^2(1, N = 200) = 25.45, p < .001$ ; “attack with weapon,”  $\chi^2(1, N = 200) = 35.97, p < .001$ ; “participation in massacre,”  $\chi^2(1, N = 200) = 13.17, p < .001$ ; “physical assault,”  $\chi^2(1, N = 200) = 16.09, p < .001$ ; “forced person to flee,”  $\chi^2(1, N = 200) = 8.98, p = .002$ ; “serious injury,”  $\chi^2(1, N = 200) = 8.17, p = .003$ ; “killing someone,”  $\chi^2(1, N = 200) = 8.17, p = .003$ ; and “kidnapping/captivity,”  $\chi^2(1, N = 200) = 6.41, p = .009$ . Men reported significantly more types of committed offenses ( $M = 3.33, SD = 2.24$ ) than women ( $M = 1.35, SD = 0.85$ ),  $U = 1,740.50, p < .001$ .

### Appetitive Aggression and Correlates of Appetitive Aggression

The mean of the AAS score in the total sample was 10.49 ( $SD = 10.46$ , range = 0–60). Negative binomial regression analysis was used to analyze the relationship between the independent variables of the PTSD sum score, gender, number of committed offenses, and religious coping. The number of experienced lifetime traumatic events was entered as a control variable. The results of the negative binomial regression analysis are presented in Table 2.

Male perpetrators displayed significantly higher levels of appetitive aggression than female perpetrators,  $M = 12.82 (SD = 11.60)$  versus  $M = 5.87 (SD = 5.31)$ , respectively. Perpetrators who reported a greater number of past committed crimes were more likely to show higher levels of appetitive aggression. There was a negative correlation between current positive religious coping and appetitive violence, demonstrating that respondents with more positive religious coping displayed lower levels of appetitive violence. Negative religious coping, in turn, was positively related to appetitive aggression. A greater number of past potentially traumatic lifetime events was associated with a higher AAS. PTSD symptom severity did not significantly contribute to the prediction of the AAS.

**TABLE 2** Negative Binomial Regression Analysis with the Appetitive Aggression Score (AAS) as the Dependent Variable in Rwandan Genocide Perpetrators

Predictors	$B_{AAS}$	$B SE_{AAS}$
Gender <sup>a</sup>	-0.27*	0.16
PTSD sum score	0.01	0.01
Number of committed offenses	0.17***	0.04
Positive religious coping score	-0.04*	0.02
Negative religious coping score	0.03**	0.01
Number of traumatic events	0.03*	0.02

Note.  $N = 200$ . PTSD = posttraumatic stress disorder.

<sup>a</sup>Gender coded as female = 0, male = 1.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

## DISCUSSION

The purpose of this study was to investigate rates of PTSD and levels of appetitive aggression among Rwandan genocide perpetrators who were doing community work as part of their punishment (so-called TIG). Moreover, we aimed at examining predictors of appetitive aggression. In Rwanda, perpetrators who confess at their trials and who are found guilty of participating in the genocide receive a reduction of their sentences and serve all or part of their sentence doing community service. Generally, participants reported low rates of PTSD and high levels of appetitive violence. Higher levels of appetitive aggression were associated with male gender, greater number of past committed offenses, lower levels of positive and higher levels of negative religious coping, and a higher number of lifetime traumatic events. PTSD symptom severity was unrelated to levels of appetite aggression.

Previous studies in Rwanda have consistently reported high rates of PTSD among adult survivors, 8 to 13 years following the genocide, ranging from 25% to 51% (Brounéus, 2010; Pham et al., 2004; Schaal et al., 2011). A recent study with imprisoned perpetrators found that 14% fulfilled diagnostic criteria for PTSD (Schaal et al., 2012). The study reported here demonstrates that diagnostic criteria for current PTSD were met by 5% of the perpetrators. There are several possible explanations for this difference in PTSD rates. One potential explanation is that perpetrators in the TIG camps reported exposure to fewer potentially traumatic events compared to the Schaal et al. (2012) study with imprisoned perpetrators. Another plausible explanation is that the enduring marginalization and stigmatization that people constantly experience in the prisons might aggravate their mental health problems. In contrast to prisoners, perpetrators in the TIG camps are reintegrated into society, which might better help them come to terms with their past.

Whereas some researchers have noted that the participation in intense violence against others might be considered to be potentially traumatizing and might also cause symptoms of PTSD (MacNair, 2002a; Staub, 2006), the results of this study indicate that few perpetrators (14%) identified a crime that they had committed as their most distressing event. Some authors have argued that humans might even enjoy violence and that violence itself might be fascinating and appealing for the perpetrators (Elbert et al., 2010; Nell, 2006). This concept has been defined as appetitive aggression (Elbert et al., 2010). Results of this study indicate that even though levels of appetitive aggression were high in perpetrators serving community work, they were lower than those reported in a previous study with imprisoned perpetrators (Weierstall et al., 2011). Although perpetrators in our study reported a wide range of committed offenses, contrary to the Weierstall et al. (2011) study, there were no perpetrators who had committed sexual offenses in

this study population. In Rwanda, sexual offenders receive life imprisonment and are therefore excluded from the TIG system. It could be that the inclusion of sexual offenders might explain the elevated levels of appetitive aggression in imprisoned perpetrators. Moreover, it could be that the gradual reintegration into the community contributes to a reduction in appetitive aggression. Indeed, it has been reported that perpetrators who had spent more time in society after the genocide had lower levels of appetitive aggression (Weierstall et al., 2011).

As our second goal, we examined correlates of appetitive aggression. Levels of appetitive aggression were significantly associated with male gender, a greater number of committed offenses, lower levels of positive and elevated levels of negative religious coping, and higher lifetime trauma exposure. In contrast, the variable of PTSD symptom severity did not impact levels of appetitive aggression.

Several researchers have reported that an appetitive perception of violence might reduce the likelihood that a perpetrator develops severe mental health problems, including symptoms of PTSD (Elbert et al., 2010; Nadelson, 1992; Weierstall et al., 2011). Other studies have documented that involvement in atrocities is related to PTSD symptom severity (Beckham, Feldman, & Kirby, 1998; Breslau & Davis, 1987; MacNair, 2002b; Marx et al., 2010) and that participation in killing in particular can be a significant predictor of PTSD, even after controlling for combat exposure (MacNair, 2002b; Maguen et al., 2010). Contrary to our hypothesis, we found no relationship between appetitive aggression and symptom severity of PTSD. Others have also reported that there is no simple association between appetitive aggression and PTSD (Hecker et al., 2012). In general, studies have revealed that the inverse association between appetitive aggression and symptoms of PTSD was only present as long as the number of traumatic events did not exceed a certain threshold and that this resilience against mental illness wanes as the exposure to traumatic stressors exceeds this threshold (Weierstall et al., 2012).

We found that the male gender is a significant predictor of appetitive aggression. The results of this study therefore confirm the findings of previous studies that men are more likely than women to perceive violence as fascinating and appealing (Elbert et al., 2010; Hecker et al., 2012; Weierstall et al., 2011). This is in line with Nell (2006), who proposed a strongly male-gendered human blood lust. Evolutionary perspective supports the assumption that men, especially, display an innate disposition of appetitive aggression (Elbert et al., 2010; Nell, 2006). It has been argued that perpetrating violence and being cruel offer an evolutionary advantage and are associated with gratification in perpetrators (Nell, 2006). According to O'Neil and Harway (1997), male violence could be viewed as socialized components of the gender norms, which promote success and power and often reflect a method to restore pride and balance. The state of manhood could be

considered as a precarious social status that continuously needs to be maintained (Vandello & Bosson, 2013). The anxiety in males over their gender status and the uncertainty about their ability to demonstrate manhood status might motivate a variety of maladaptive behaviors, including aggression (Vandello & Bosson, 2013).

In this study, those perpetrators who reported a greater number of different types of committed offenses had higher levels of appetitive aggression than those who reported fewer types of perpetrated violence. This finding aligns with previous studies that showed that the types of perpetrated violence were a significant predictor of appetitive aggression (Hecker et al., 2012; Weierstall et al., 2011). According to Holowka et al. (2012), the association between aggression and participation in atrocities—defined as behavior that people would consider excessively violent or brutal—is fully mediated by combat exposure.

Religion has been described as an impulse control system that prescribes socially acceptable behavior and cultural norms. Positive and negative religious coping styles have been proposed as two independent methods (Pargament et al., 1998). As expected, our study found that positive religious coping was a protecting factor for appetitive aggression and negative religious coping reinforced appetitive perceptions of violence. The participants with the highest levels of appetitive aggression were those who had high scores of negative religious coping and low scores of positive religious coping. That religiosity has a positive impact on aggression was stressed by Landau et al. (2002), who reported that secular respondents scored higher on aggressive behavior than their religious counterparts. There are several possible explanations for this relationship. One potential explanation is that religiosity might foster moral development. There is evidence that moral identity might explain the association between religious commitment and aggression (Hardy et al., 2012). Although it could be possible that positive religious coping facilitates the formation of moral processes and therefore protects against aggression, another plausible (and causally opposite) explanation might be that appetitive aggression increases negative religious coping. Such a relationship between killing and changes in moral injury and spirituality or religiosity was reported by Fontana and Rosenheck (2004).

In line with existing research, trauma exposure was found to increase the risk for appetitive aggression: Those perpetrators who reported a greater number of types of experienced traumatic events reported higher levels of appetitive aggression than those who reported fewer trauma experiences. Evidence on this relationship between trauma exposure and appetitive aggression has been reported by other researchers (Elbert et al., 2010; Weierstall et al., 2011, 2012). It is possible that negative feelings like hatred, anger, and the desire to take revenge resulting from self-experienced traumatic events could play a role in this process. According to Holowka et al.

(2012), exposure to heavy combat should be considered not only a risk factor for physical or mental illness, but also an important risk factor for the commitment of violent atrocities.

This study has a number of limitations. Due to the cross-sectional and retrospective nature of the design, it is impossible to establish causal relationships between the different variables. Moreover, socially desirable responses can never be completely ruled out. However, the participation of respondents was anonymous and questioning took place in an explicit research context, thereby reducing the likelihood of a strong bias. Finally, due to the retrospective self-reporting, response and memory biases are possible. Participants are not representative of all Rwandan perpetrators. Therefore, findings should not be generalized to all Rwandan perpetrators, as the sample included perpetrators who all had confessed their crimes and did community work as part of their punishment. Moreover, the number of participants was not proportional to the total number of inmates in each camp. The sample did not include perpetrators who had committed sexual offenses.

In conclusion, this study shows that Rwandan genocide perpetrators who will be released into society after having served their community work display generally low rates of current PTSD but high levels of appetitive aggression. This finding suggests that there is a need for community-based interventions, which include treatment elements to reduce levels of appetitive aggression and to restore psychological functioning. A recent pilot study with former Congolese ex-combatants demonstrated that symptoms of PTSD and levels of appetitive aggression can be successfully treated in perpetrators of mass violence (Hermeu, Hecker, Schaal, Maedl, & Elbert, 2013). Such effective treatments should be part of reintegration programs of perpetrators to facilitate a peaceful coexistence.

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