Received: 2 December 2019 | Revised: 23 June 2020 | Accepted: 24 June 2020

DOI: 10.1002/ab.21914

RESEARCH ARTICLE

AGGRESSIVE BEHAVIOR | WILEY

A combination of combat experience, early abduction, and severe traumatization fuels appetitive aggression and violence among abductees of rebel war in Northern Uganda

Anja C. Zeller[1,2] | Daniela Conrad[1,3] | Anna Schneider[2,3] | Alexander Behnke[3] | Anett Pfeiffer[2] | Gerrit F. Blum[4] | Sarah Wilker[2,3] | Thomas Elbert[1,2] | Iris-Tatjana Kolassa[2,3]

[1]Clinical Psychology and Neuropsychology, Department of Psychology, University of Konstanz, Konstanz, Germany

[2]vivo international e.V., Konstanz, Germany

[3]Department of Clinical and Biological Psychology, Institute of Psychology and Education, Ulm University, Ulm, Germany

[4]Institute of Psychology and Education, Ulm University, Ulm, Germany

Correspondence
Anja C. Zeller, Clinical Psychology and Neuropsychology, Department of Psychology, University of Konstanz, P.O. Box 905, 78457 Konstanz, Germany.
Email: anja.zeller@uni-konstanz.de

Present address
Sarah Wilker, Clinical Psychology and Psychotherapy, Department of Psychology, University Bielefeld, Bielefeld, Germany.

Funding information
Hector Fellow Academy; Studienstiftung des Deutschen Volkes

Abstract

Individuals who perpetrate violence may likely perceive violence as appealing and infliction of violence to derive pleasure is termed as *appetitive aggression*. Individuals who were abducted as children into an armed group often experience a higher number of traumatic event types, that is traumatic load and are usually socialized in a violence-endorsing environment. This study aims to investigate the interaction between age at initial abduction with that of traumatic load, and their influence on appetitive aggression along with perpetration of violent acts by former members of an armed rebel group of both sexes. Semi-structured interviews were conducted among a target group of formerly abducted rebel-war survivors (including participants with and without combat experience) from Northern Uganda. Participants included 596 women and 570 men with $N = 1{,}166$ ($M_{age} = 32.58$, $SD_{age} = 9.76$, range: 18–80 years). We conducted robust linear regression models to investigate the influence of age at initial abduction, traumatic load, combat experience, and biological sex on appetitive aggression as well as their perpetrated violent acts. Our study shows, appetitive aggression and the number of perpetrated violent acts were specifically increased in individuals who were abducted young, experienced several traumatic events in their lifetime, and with previous combat experience. For perpetrated violence men showed increased levels whereas for appetitive aggression the association was independent of biological sex. Therefore, early abducted individuals with a higher traumatic load, who have combat experience, need to be given special intervention to prevent any further violence.

KEYWORDS

abduction, appetitive aggression, Lord's Resistance Army, sensitive period, traumatic load, violence

> *"[After committing violence] commanders told us to sing and laugh … to show that we were happy over a job well done. They did not want to see anyone showing sadness … It showed that [killing] was a good thing – we were brave enough to withstand killing and we were prepared to kill at all times"* (Maclure & Denov, 2006, p. 126).

1 | INTRODUCTION AND THEORETICAL BACKGROUND

For victims of conflict and terror, repeated exposure to traumatic experiences can lead to mental health disorders such as anxiety, depression, and posttraumatic stress disorder (PTSD; e.g., Ceri et al., 2016; Murthy & Lakshminarayana, 2006). Perpetrators who live in violent environments where aggression is socially accepted and even encouraged (e.g., child soldiers or combatants) often perceive perpetrating violent acts as enjoyable (Elbert, Schauer, & Moran, 2018) and this disposition is referred as *appetitive aggression* (Elbert, Weierstall, & Schauer, 2010; Weierstall & Elbert, 2011). In contrary to *reactive aggression*, as a spontaneous reaction to a perceived threat, and *instrumental aggression*, which is used to achieve a specific goal (e.g., Anderson & Bushman, 2002; Geen, 2001) whereas the purpose of *appetitive aggression* lies in the execution of the violent act itself and the perpetrators display feelings of fascination and positive emotional arousal (Elbert et al., 2010; Weierstall & Elbert, 2011). Elbert et al. (2018) recently described the development and mutual intensification of reactive aggression and appetitive aggression in a concept termed *bi-cycle of violence*. According to this concept, repeated exposure to threatening situations intensifies PTSD symptomatology, such as hyperarousal symptoms and angry outbursts, which in turn lowers the threshold for reactive aggressive behavior. However, for individuals who experience perpetration of violence as enjoyable, ongoing violent behavior increases their pleasure of harming others, and this intensifies their trait of appetitive aggression. These individuals' role shifts from *victim* to *perpetrator*, or to quote Karl Jaspers (1986): "Where violence is used, violence is awakened."

In modern wars, male adolescents are particularly targeted for forceful recruitment as they are more suggestible than adults and physically stronger than younger children (Blattman & Annan, 2010). Childhood and especially adolescence are critical periods for brain development and maturation-related hormonal changes (Keshavan, Giedd, Lau, Lewis, & Paus, 2014). As a result, fundamental changes in the social environment such as abduction into an armed group could cause effects that are more deleterious to individuals in critical maturation periods.

Initial evidence from Eastern Congo (Democratic Republic of the Congo) indicated that individuals recruited as children and adolescents are particularly vulnerable to perceiving violence more positively than those who joined the armed forces during adulthood (Hecker, Hermenau, Maedl, Elbert, & Schauer, 2012; Hermenau, Hecker, Maedl, Schauer, & Elbert, 2013; Köbach & Elbert, 2015; Weierstall, Haer, Banholzer, & Elbert, 2013). Weierstall, Haer, et al. (2013) assessed the age at which former Congolese combatants joined the armed group and found higher appetitive aggression among those who joined earlier in life. In accordance with the findings of Köbach and Elbert (2015), adolescents recruited at the age of 16–17 showed higher appetitive aggression than adolescents at a younger or older age.

In addition, underage abductees not only reported higher appetitive aggression, but also perpetrated more violent acts than those who joined military groups as adults (Hecker et al., 2012; Hermenau et al., 2013). Individuals who were recruited at a younger age possibly remain longer in the rebel group as they would not know a way to escape and also be fearful of the consequences of an unsuccessful escape attempt (Blattman & Annan, 2010). These individuals subsequently commit a higher number of violent acts.

Some rebel groups even prefer recruiting children, as socialization into the group is particularly successful at this age group and as individuals have not yet developed a stable identity, they can easily be transformed into loyal members (Vermeij, 2014). In such cases, socialization takes place in an environment that fosters and even explicitly encourages the use of violence (Maclure & Denov, 2006). In fact, former child soldiers from Sierra Leone regarded the rebel group as a substitute family where more aggressive behavior was frequently rewarded with promotion as well as increased power over resources and people (Maclure & Denov, 2006).

As initiation into the group is often accompanied by physical abuse, children and youths in armed groups are at high risk of experiencing maltreatment as well as traumatic events (Maclure & Denov, 2006). Former child soldiers even experienced more violence than former adult recruits (Hermenau et al., 2013), and corporal punishment in childhood is linked to self-perpetrated aggressive acts in adulthood (King et al., 2018). Additionally, research with prison inmates showed that physical abuse during childhood predicted violent offenses (Wang et al., 2012). The number of experienced or witnessed traumatic event types (traumatic load) not only increases the risk for PTSD in a dose-dependent manner (Kolassa et al., 2010; Mollica, McInnes, Poole, & Tor, 1998; Neugebauer et al., 2009; Neuner et al., 2004), but also appears to promote appetitive aggression (Nandi, Crombach, Bambonye, Elbert, & Weierstall, 2015; Sommer et al., 2017). Similarly, the number of experienced traumatic events during military deployment had a dose–response effect on self-perpetrated violent offenses of soldiers (MacManus et al., 2013).

When it comes to armed groups, it is of importance to consider that not every member is involved in the fighting. According to the Paris Principles, the term child soldier refers to any minor who is associated with an armed group (United Nations International Children's Emergency Fund, 2007). As members can have a plethora of different duties, which can include fighting but also nonmilitary tasks like carrying looted goods, cooking, child care, or being used for sexual purposes. To date, there is a sparsity of research on mental health effects of belonging to an armed group for persons with military versus nonmilitary functions. Among the existent research is

a study from Augsburger, Meyer-Parlapanis, Bambonye, Elbert, and Crombach (2015) in which women who were formerly associated with an armed group in Burundi were interviewed, to investigate group differences between individuals with combat experience and those who performed solely supportive tasks for the armed force. The authors found significantly higher levels of traumatic load, perpetrated violence, and appetitive aggression in former combatants compared to former supporters of the armed group. However, it should be noted that the experiences for females differ substantially from that of males in rebel groups, which are characterized by a higher workload, lower ranks, sexual violence, and less implication in combat (Denov, 2008; Haer, 2019; Marks, 2017). Nevertheless, an increasing body of research describes that girl soldiers are also involved in combat actions (e.g., Denov & MacLure, 2006; Haer, 2019; Vermeij, 2014) and sometimes even hold commanding positions (McKay, 2005). Nonetheless, to our knowledge research on sex differences among individuals with and without combat experiences in armed groups is sparse.

Even though studies on sex differences in relation to appetitive aggression have been conducted, findings are not yet conclusive. While some previous investigations indicated lower appetitive aggression among females than males (Weierstall, Schaal, Schalinski, Dusingizemungu, & Elbert, 2011), other studies showed that women can perceive violent acts as equally appealing as men (Augsburger et al., 2017; Meyer-Parlapanis et al., 2016; Weierstall, Castellanos, Neuner, & Elbert, 2013). Augsburger et al. (2017) found a positive correlation between childhood maltreatment, traumatic load, and appetitive aggression in men. They also found, among women, childhood maltreatment was negatively related to appetitive aggression while traumatic load was not significantly linked to appetitive aggression and likewise, the link between perpetrated events and appetitive aggression was more pronounced among female participants in the study.

From 1986 to 2006, a brutal civil war was fought between the Ugandan governmental troops and the Lord's Resistance Army (LRA) in Northern Uganda. During this period, the LRA abducted about 50,000–75,000 civilians in Northern Uganda and more than half of them were children (Pham, Vick, & Stover, 2007). Among them, around a quarter of LRA members were girls (McKay, 2005). Due to the long duration of the LRA war against the Ugandan governmental troops and the high number of abducted civilians, a significant part of today's adult population in Northern Uganda has experienced extreme levels of traumatic events. This leaves them highly vulnerable to trauma-spectrum disorders (Ertl, Pfeiffer, Schauer-Kaiser, Elbert, & Neuner, 2014). Even though the LRA has moved to adjacent countries by now, members regularly escape and try to find their way back to the civil community. Studies from neighboring countries at war showed that particularly former child soldiers are at increased risk to abort reintegration programs and rejoin armed groups (Hermenau et al., 2013).

Based on the premises of the Northern Ugandan civil war and the aforementioned findings, we conducted the present study in a sample of former LRA abductees. In this study, we aimed to investigate the associations between traumatic load, age at abduction, and appetitive aggression/perpetrated violence in the context of biological sex and combat experience. Furthermore, with this study, we intended to contribute to a better understanding of predisposing factors which enables the development of appetitive aggression. And, this could help to identify individuals at risk as well as contribute to developing adequate therapeutic approaches to treat individuals' trauma symptoms along with addressing their appetitive aggression and violent acts.

2 | METHOD

2.1 | Study cohort

Study participants were survivors of the war between the rebel group LRA and the Ugandan governmental troops. They were recruited as part of a larger study, investigating the genetic underpinnings of PTSD development and treatment success. The participants were informed about the study aim and procedures, at their homes in the former internally displaced person (IDP) camps Anaka, Pabbo, and Koch Goma or by introducing the study during community meetings in villages of Gulu district, Northern Uganda. Individuals interested in participation were invited to schedule an appointment for a diagnostic interview. Before the study participation, written informed consent was obtained from the participants. In total, 1,815 persons aged 18 years and above were interviewed. Included study participants were at least once abducted by the LRA (N = 1,279). Of the excluded participants, 532 were never abducted and four had missing data regarding their history of abduction. Another participant was excluded due to doubts in the validity of the reported times of abduction. Additionally, eight participants had to be excluded for signs of current alcohol abuse as this may have affected the reliability of the person's responses. Furthermore, 104 participants were excluded from the analyses due to incomplete or nonvalid data obtained. Thus, the final study cohort comprised of N = 1,166 former LRA abductees (M_{age} = 32.58, SD_{age} = 9.76, range: 18–80 years), including 596 females (51.11%) and 570 males (48.89%). In total, 690 participants reported not having had previous combat experience, while 476 affirmed fighting actions. Out of these 476 individuals, 160 were women and 316 men. As displayed in Table 1, female and male participants differed significantly with respect to their age at initial abduction and the number of perpetrated violent acts. Female participants were initially abducted at a younger age and they perpetrated fewer violent acts while there were no differences in the levels of traumatic load and appetitive aggression.

2.2 | Materials and study procedure

The study procedures were approved by the Institutional Review Board of Gulu University; the Lacor Hospital Institutional Research Ethics Committee (LHIREC); the Ugandan National Council for Science

TABLE 1 Demographic comparison of females and males

	Total (*N* = 1,166) Mdn (IQR; range)	Females (*N* = 596) Mdn (IQR; range)	Males (*N* = 570) Mdn (IQR; range)	Test statistic *U*	*p* value	*z*	Effect size, *r*
Age (in years)	31 (14; 1,880)	30 (14; 18–72)	31 (15; 18–80)	337488.50	.074	−1.789	0.052
Age at initial abduction	16 (10; 0–59)	15 (8; 0–58)	17 (10; 4–59)	322586.50	<.001	−4.386	0.128
Perpetrated violent acts	6 (7; 0–17)	5 (7; 0–17)	7 (7.75; 0–17)	313036.00	<.001	−6.057	0.177
Appetitive aggression sum score	11 (20; 0–60)	12 (21; 0–57)	11 (20; 0–60)	346298.50	.798	−0.256	0.007
Traumatic load (number of experienced and witnessed traumatic events)	29 (9; 7–57)	28 (11; 7–57)	29 (9; 9–48)	342905.00	.397	−0.846	0.025

Note: z = standardized test statistic.
Abbreviations: IQR, interquartile range; Mdn, median.

and Technology (UNCST); the ethics committee of the University of Konstanz, Germany. Local counselors conducted interviews under the close supervision of experienced psychologists. These local counselors were intensively trained in concepts of mental health disorders especially about trauma and PTSD as well as counseling and quantitative data collection. All diagnostic instruments were translated into Luo, the local language of Northern Uganda. To avoid any misinterpretation, it was back-translated and reviewed by trained interpreters before application in the interviews. Each interview lasted approximately 2 hr. Due to their remote residence location some participants were remunerated for their travel expenses.

2.2.1 | Sociodemographics, abduction history, and combat experience

During the interview, participants were asked for their sociodemographic information, for example, year and place of birth, age, and educational background. Also, the history of abductions by the LRA, including the year and duration of each abduction was assessed. Participants' age at initial abduction was calculated based on their year of birth and the year of initial abduction. Furthermore, we included a question in regard of combat experience ("*Have you ever been fighting in a combat?*"), which was answered with either yes or no.

2.2.2 | Perpetrated violent acts

The number of perpetrated violent acts was assessed by a questionnaire including 17 predefined events (e.g., "*Have you ever physically assaulted another person?*") (Weierstall & Elbert, 2011). The number of perpetrated violent acts (range 0–17) was used for subsequent data analyses.

2.2.3 | Appetitive aggression

Appetitive aggression was measured with the Appetitive Aggression Scale (AAS; Weierstall & Elbert, 2011). Participants responded to 15 questions (e.g., "*Is it exciting for you if you make an opponent really suffer?*") on a 5-point Likert scale from 0 ("*Disagree*") to 4 ("*Agree*"). For statistical analyses, the sum score of all 15 items was calculated (range 0–60; Cronbach's $\alpha = .89$). The questionnaire has been validated among various populations of war-affected and combat-experienced individuals from East African and South American countries; it also showed good psychometric properties (e.g., Hecker et al., 2012; Nandi et al., 2015; Weierstall et al., 2011).

2.2.4 | Traumatic load

Experience of traumatic event types was assessed with a 62-item event checklist that had been previously used in the Ugandan context (e.g., Wilker et al., 2014, 2015). It assessed experiences related to war and

violence in general, and the LRA war in specific. It also assessed natural disasters, domestic violence, and other traumata (e.g., life-threatening illness or accidents). Participants were asked whether each event ever happened to them (in person or witnessed). In accordance with the statistical analyses of previous studies among Burundian and Congolese cohorts, individual traumatic load was calculated as the sum score of all self-experienced (39 items) and witnessed traumatic event types (18 items), whereas perpetrated event types (5 items) were excluded, as they were covered in more detail by another questionnaire. As previously shown, the sum score represents a precise and economic measure of trauma exposure (Conrad et al., 2017; Wilker et al., 2015).

2.3 | Data analysis

All statistical analyses were performed in R 3.6.3 (R Core Team, 2020). Given non-normal data distribution, non-parametric statistical tests (Mann-Whitney-*U* test for continuous data, Fisher's exact test for count data) were used for demographic comparisons between males and females. Variable associations were analyzed with Kendall's tau correlations (using the R package *correlation*; Makowski, Ben-Shachar, Patil, & Lüdecke, 2020). Linear regression analyses were used to fit a model for appetitive aggression and the number of perpetrated violent acts by the age at initial abduction, traumatic load, and their interaction. Additionally, we included biological sex and combat experience coded as dummy variables in the analyses (for sex 0 was coded as female, for combat experience 0 indicated that the person did not have combat experience). As recommended by Field and Wilcox (2017), robust linear regressions based on MM-estimators were performed (using the R package *robustbase*; Maechler et al., 2018) to correct nonnormal distributed model residuals and heteroscedasticity.

3 | RESULTS

3.1 | Modeling of appetitive aggression

Bivariate correlations of all study variables are detailed in Table S1 for the total sample as well as for women and men separately. The results of the robust linear regression model for appetitive aggression by traumatic load, age at initial abduction, combat experience, biological sex, and the interaction of traumatic load and age at initial abduction are displayed in Table 2. The model explained 24% of the variance of appetitive aggression in this sample, $F(5, 1160) = 227.51$, $p < .001$. There were significant main effects for traumatic load, age at initial abduction, and combat experience in the model for appetitive aggression (see Table 2). The significant interaction effect of traumatic load with age at initial abduction further revealed that the increase in appetitive aggression related to traumatic experiences was stronger among individuals who were initially abducted at a younger age. Figure 1a and 1b display the results for individuals "with" versus "without" combat experience. There was no significant main effect of biological sex in this regression model.

3.2 | Modeling of perpetrated violent acts

A robust linear regression revealed that traumatic load, combat experience, and biological sex, as well as the interaction of traumatic

TABLE 2 Robust linear regression analysis for appetitive aggression and perpetrated violent acts (total sample, $N = 1{,}166$)

Outcome variable	Predictor	*β*	*B*	*SE B*	95% CI	*t*
Appetitive Aggression[a]	Intercept	–	−19.513	3.349	−26.083; −12.943	−5.827***
	Traumatic load	.680	1.374	0.134	1.110; 1.637	10.239***
	Age at initial abduction	.411	0.723	0.150	0.429; 1.017	4.827***
	Combat experience	.078	2.331	0.979	0.411; 4.251	2.382*
	Biological sex	−.018	−0.537	0.800	−2.106; 1.032	−0.671n.s.
	Traumatic load × age at initial abduction	−.645	−0.037	0.006	−0.049; −0.025	−6.162***
Perpetrated Violent Acts[b]	Intercept	6.567	−3.380	0.924	−5.192; −1.569	−3.660***
	Traumatic load	2.582	0.354	0.036	0.284; 0.424	9.937***
	Age at initial abduction	.472	0.056	0.046	−0.033; 0.146	1.238n.s.
	Combat experience	1.205	2.450	0.292	1.877; 3.023	8.387***
	Biological sex	.495	0.989	0.216	0.566; 1.412	4.586***
	Traumatic load × age at initial abduction	−1.364	−0.005	0.002	−0.009; −0.002	−2.946**

Note: β = standardized regression coefficient, B = regression coefficient.
Abbreviations: 95% CI, 95% confidence interval of regression coefficients; SE, standard error.
[a]$F(5, 1160) = 227.51$, $p < .001$, $R^2 = .24$.
[b]$F(5, 1160) = 1000.4$, $p < .001$, $R^2 = .44$.
*$p \leq .050$.
**$p \leq .010$.
***$p \leq .001$.
n.s.$p > .050$.

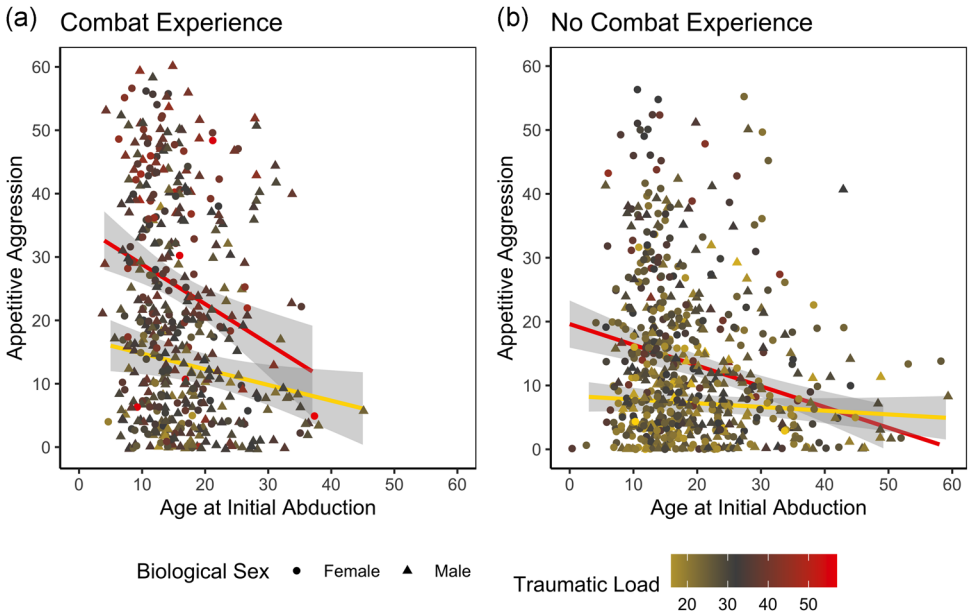

FIGURE 1 Jitterplots for robust linear regression models for appetitive aggression. The left figure (a) represents the data of participants with combat experience, whereas the right figure (b) displays the data of individuals without combat experience. Interactions were tested with continuous variables. For the purpose of displaying the results, conditional regression lines are displayed for low traumatic load (i.e., *median* minus 1*SD*; yellow) and high traumatic load (i.e., *median* plus 1 *SD*; red). Shading around the regression lines represents the 95% confidence intervals [Color figure can be viewed at wileyonlinelibrary.com]

load and age at initial abduction were associated with the number of perpetrated violent acts, $F(5, 1160) = 1000.4$, $p < .001$, $R^2 = .44$. There was no significant main effect for age at initial abduction (see Table 2). As displayed in Table 2, higher traumatic load, combat experience, and male sex were associated with a higher number of perpetrated violent acts. The significant interaction effect between traumatic load and age at initial abduction further indicated that individuals initially abducted earlier in life and who have experienced a high level of traumatic events also perpetrated a higher number of violent acts. Figures 2a and 2b display these associations separately for the subsample "with" and "without" combat experience.

4 | DISCUSSION

Our study investigated relationships between the age at initial abduction, traumatic load, appetitive aggression, and perpetrated violent acts, as well as sex differences, in a war-affected sample which included individuals "with" and "without" combat experience, the latter primarily involved in nonmilitary tasks for the LRA.

4.1 | Appetitive aggression

In line with our hypothesis, a combination of abduction at a younger age with more traumatic experiences was associated with higher levels of appetitive aggression. This corresponds with previous research, indicating higher appetitive aggression in individuals who joined military groups earlier in life (Hecker et al., 2012; Hermenau et al., 2013; Weierstall, Haer, et al., 2013). Entering an armed group in adolescence could play a crucial role for the development of high levels of appetitive aggression. Previous research found the ages from 16 to 17 to be a sensitive period to develop a robust trait of appetitive aggression (Köbach & Elbert, 2015). Adolescence is an important time for the development of the "social brain", for instance, to be able to handle increasingly complex social situations and relationships (Keshavan et al., 2014). The development of brain regions important for decoding mental states of others continues in late childhood until early adulthood (Keshavan et al., 2014), and this might contribute to perpetrating atrocities, assuming that children still lack the capacity to understand the adverse consequences of their actions. For adolescents, it might be difficult for them to adjust to life in a civil community after their return from an armed group due to a lack of adequate role models or the society to teach them social rules promoting peaceful coexistence. This could also contribute to their higher rate of voluntary return to armed groups than those of adult combatants (Hermenau et al., 2013).

On the systemic level, it must be noted that social norms and moral concepts develop among children in relation to their social interactions, perceptions, and interpretations of the same (Wainryb & Pasupathi, 2008). Research focusing on internally displaced children and youths in a violence-affected area of Bogota (Colombia) showed that even though the children had basic moral concepts (e.g., stealing or hurting others is wrong), this was not necessarily reflected on their expectations of others' behavior (Wainryb & Pasupathi, 2008). In this regard, the concept of in- and outgroup is crucial,

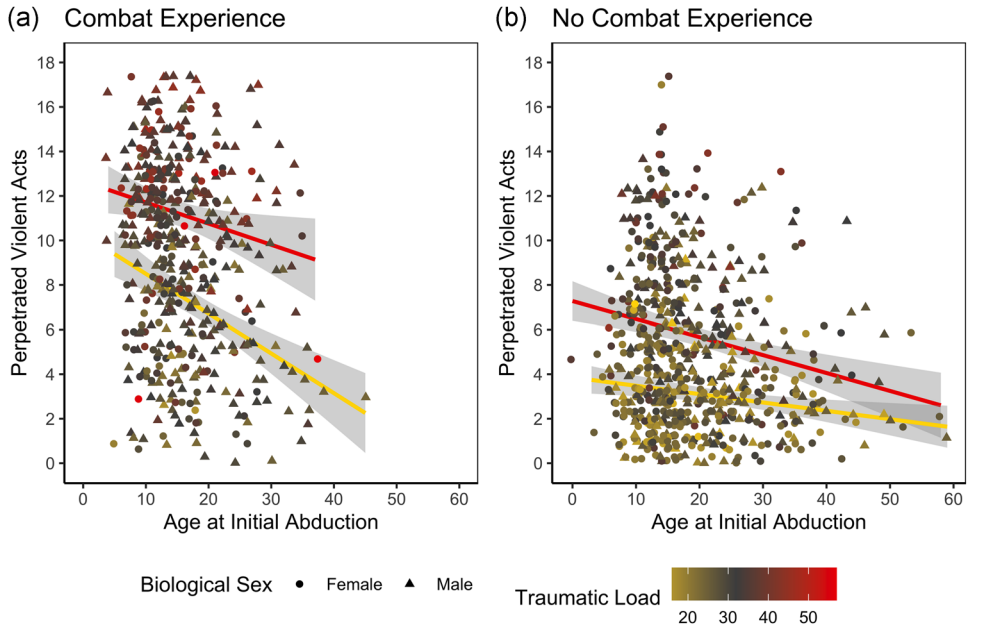

FIGURE 2 Jitterplots for robust linear regression models for perpetrated violent acts. The left figure (a) represents the data of participants with combat experience, whereas the right figure (b) displays the data of individuals without combat experience. Interactions were tested with continuous variables. For the purpose of displaying the results, conditional regression lines are displayed for low traumatic load (i.e., *median* minus 1 *SD*; yellow) and high traumatic load (i.e., *median* plus 1 *SD*; red). Shading around the regression lines represents the 95% confidence intervals [Color figure can be viewed at wileyonlinelibrary.com]

as violence against enemies was justified based on membership to an ingroup and the collective narrative of dehumanizing outgroup members (Wainryb & Pasupathi, 2008). This, in conjunction with the promotion to use violence could adversely impact adolescents as they have not yet developed a thorough commitment to norms of civil society. Their norms, values, and motivation to fight for the rebel group becomes intrinsic after socialization into armed groups (Vermeij, 2014). This combination makes them easily susceptible to overcome moral barriers of cruelty and even to enjoy the perpetration of violent acts (Elbert, Moran, & Schauer, 2017a).

Furthermore, living with the LRA, especially for recent abductees, is characterized by experiences of physical violence (Veale & Stavrou, 2003). As indicated by our results, this traumatic environment also impacts the levels of appetitive aggression. Similarly, in the context of prison inmates, it has been shown that there exists a positive correlation between appetitive aggression and physical peer violence experienced during childhood (Dudeck et al., 2016).

Our study results suggest that among the LRA abductees, individuals with combat experience showed higher levels of appetitive aggression than the ones without combat experience. This confirms the findings of a previous study with women formerly associated with combat in Burundi (Augsburger et al., 2015), however, in our study, we also included men. Interestingly, we could not detect any sex differences in our analysis for appetitive aggression. Importantly, in regard to appetitive aggression so far findings are inconclusive on sex differences (e.g., Augsburger et al., 2017; Hecker, Fetz, Ainamani, & Elbert, 2015; Meyer-Parlapanis et al., 2016; Weierstall, Castellanos, et al., 2013; Weierstall et al., 2011). Therefore, our results are a valuable addition to the growing research body showing that there is no sex difference in experiencing positive feelings when perpetrating violence.

4.2 | Perpetrated violent acts

In addition, our results showed that the interaction of traumatic load and age at initial abduction is associated with an increase in perpetrated violent acts. Members of the LRA and particularly abductees are exposed to extreme physical and psychological adversities, these are well described in qualitative interviews. These narrations confirm that the first period after the abduction is characterized by being physically and psychologically tortured, being forced to witness murder, and sometimes even being forced to kill others (Veale & Stavrou, 2003). Especially children and adolescents may be suggestible to the commanders' constant threats of punishment (Veale & Stavrou, 2003), which makes the attempt to escape less likely. Consequently, individuals abducted earlier in life remain longer in the rebel group and, thus, commit a higher number of violent acts. At the same time, elevated violent experiences are positively correlated with violence perpetration among former child soldiers (Hermenau et al., 2013). Building upon these findings, two studies among former Congolese (Hermenau et al., 2013) and Ugandan child soldiers (Crombach, Weierstall, Hecker, Schalinski, & Elbert, 2013) found positive correlations between the military rank, the number of self-committed offenses, and the fascination with violence. In contrast to adults, whose military rank depends primarily on their age and

education, children were evaluated with regard to their identification with the rebel group (Crombach et al., 2013). Thus, a higher commitment, that is, a higher number of perpetrated acts of violence and fascination with violence, may help children to promote their position in the group's hierarchy, which allows them to regain at least some autonomy and control of their life (Maclure & Denov, 2006).

Apart from armed groups, the association between childhood maltreatment or adverse childhood experiences and violence perpetration has been shown in several populations for instance in sexual offenders (Levenson & Socia, 2015), violent offenders (Wang et al., 2012), and perpetrators of intimate partner violence (Anda et al., 2006). Furthermore, as Elbert, Moran, and Schauer (2017b) described, there are overlapping features of appetitive aggression and psychopathy, and therefore it seems of importance to consider research of psychopathy in the scope of violent behavior. Prior research showed that psychopathy in early adolescences, along with elevated psychopathy in adulthood are associated with later offenses (Lynam, Miller, Vachon, Loeber, & Stouthamer-Loeber, 2009) and violent acts during lifetime (Lang, Af Klinteberg, & Alm, 2002). Findings on the association between childhood victimization and psychopathy, on the other hand, are mixed, some research revealing elevated psychopathy scores for persons with a history of childhood abuse and/or neglect (Weiler & Widom, 1996) while others did not find such a relationship (Lang et al., 2002). Moreover, it has been shown that prison inmates with diagnosed psychopathy were more often sadistic than individuals not fulfilling a psychopathy diagnosis (Holt & Strack, 1999). In the forensic context, concepts of appetitive aggression and sadism have similarities. Paulhus, Curtis, and Jones (2018) in their dark tetrad framework described the sadistic personality as "unique among the Dark Tetrad in involving an appetite for cruelty". Furthermore, the sadistic facet is distinguished from the other members of the dark tetrad through the fact that individuals scoring high in the sadistic trait do inflict harm on others for pleasure (Paulhus, 2014), which it has in common with appetitive aggression. Based on the aforementioned associations, it might be interesting to assess overlapping characteristics of sadism, psychopathy, appetitive aggression, and violence perpetration in future research.

Overall, our results indicate that individuals who were abducted earlier in life and who were exposed to a high number of traumatic events perpetrated a higher number of violent acts. The results did depend on the participants' biological sex and their previous combat experience. Thus, our results partially replicate previous findings from male cohorts of active soldiers and ex-combatants (MacManus et al., 2013; Nandi et al., 2015). Even though Augsburger et al. (2017) could not find any sex differences among former combatants in the context of committed violence, being a male did play a significant role in our regression model for perpetrated violent acts. This may be due to the fact that men are commonly to be found on the frontlines of combat in military groups (Zack-Williams, 2001), which provides more opportunities for violence, whereas women usually engage in parallel to combat also in noncombat tasks such as domestic work, child care, and they are also not deployed to combat during pregnancy (Baines, 2014).

5 | STRENGTHS AND LIMITATIONS

Our pioneer study shows appetitive aggression and perpetrated acts of violence were significantly modeled by the interaction of traumatic load, age at initial abduction, and combat experience. In our regression model, for appetitive aggression biological sex was not significant, whereas male sex was significant for perpetrated violent acts. To our knowledge this is the first study to investigate the interplay of traumatic load, age at initial abduction, combat experience, biological sex, along with their influence in modeling appetitive aggression and perpetrated violent acts. Thus, our study provides an in-depth insight into the vicious cycle of violence perpetration in both women and men formerly associated with an armed rebel group.

However, the study is limited by its correlative–retrospective design; thus, the associations that were found do not describe causality but are of correlative nature. Longitudinal study designs can be utilized to further our knowledge of appetitive aggression and its causal relationship. In this context, it is relevant to study diverse populations with traumatic history (e.g., prisoners, refugees, war survivors, children in street situations). Furthermore, all variables of interest were assessed as retrospective self-reports, which might cause potential biases due to memory effects and social desirability.

6 | CONCLUSION AND FUTURE DIRECTIONS

Our study provides a unique contribution by identifying the possible links between traumatization at a young age, being forced to perform cruelties, and appetitive aggression. In future research, we recommend to include constructs of psychopathy and sadism, as well as individual risk factors such as self-control and behavioral disorders while investigating appetitive aggression. In addition, childhood maltreatment may lead to deteriorated cognitive functioning, including lower self-control (e.g., Cowell, Cicchetti, Rogosch, & Toth, 2015; Kort-Butler, Tyler, & Melander, 2011), and also increases the risk for behavioral disorders (e.g., Dvir, Ford, Hill, & Frazier, 2014; Perepletchikova & Kaufman, 2010) therefore future research is needed to address those concepts in combination with appetitive aggression.

Among high-risk population and environment (e.g., post-war), it would be beneficial to implement, individual and community level aggression prevention programs for children as well as youth. Evidence-based therapeutic approaches such as Narrative Exposure Therapy for Forensic Offender Rehabilitation (FORNET; Elbert, Hermenau, Hecker, Weierstall, & Schauer, 2012) should be considered, as it addresses PTSD symptoms as well as elevated levels of appetitive aggression (Hinsberger et al., 2019; Robjant et al., 2019). Inevitably, there is a huge need to further develop evidenced-based prevention programs.

ACKNOWLEDGMENTS

We are grateful to the Hector Fellow Academy, which has awarded Ph.D. scholarships to M.Sc.-Psych. Anja C. Zeller and Dr. Daniela

Conrad. Dipl.-Psych. Alexander Behnke was awarded a Ph.D. scholarship from the Studienstiftung des Deutschen Volkes (German Academic Scholarship Foundation). We thank our team of Ugandan counselors who conducted the interviews with the highest empathy and professionalism. We thank Suchithra Varadarajan for English language revision.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

AUTHOR CONTRIBUTIONS

I.-T. K. and T. E. developed the study concept. A. S., S. W., and A. P. conducted the study setup and data collection under supervision of I. T. K. and T. E. Authors A. C. Z., D. C., A. S., S. W., and G. B. prepared the data for statistical evaluation and A. C. Z., A. B., and D. C. performed the statistical data analysis with critical input from I. T. K. and T. E. Authors A. C. Z. and D. C. drafted the paper and all authors critically revised the manuscript. All authors approved the final version of the paper for submission.

ORCID

Anja C. Zeller http://orcid.org/0000-0002-2889-9164
Sarah Wilker https://orcid.org/0000-0002-0887-4672
Thomas Elbert https://orcid.org/0000-0003-1332-4939
Iris-Tatjana Kolassa https://orcid.org/0000-0001-7847-1847

REFERENCES

Anda, R. F., Felitti, V. J., Bremner, J. D., Walker, J. D., Whitfield, C., Perry, B. D., … Giles, W. H. (2006). The enduring effects of abuse and related adverse experiences in childhood. *European Archives of Psychiatry and Clinical Neuroscience*, *256*(3), 174–186. https://doi.org/10.1007/s00406-005-0624-4

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology*, *53*, 27–51. https://doi.org/10.1146/annurev.psych.53.100901.135231

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*, 1756.

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*, 751. https://doi.org/10.3389/fpsyg.2017.00751

Baines, E. (2014). Forced marriage as a political project: Sexual rules and relations in the Lord's Resistance Army. *Journal of Peace Research*, *51*(3), 405–417. https://doi.org/10.1177/0022343313519666

Blattman, C., & Annan, J. (2010). On the nature and causes of LRA abduction: What the abductees say. In T. Allen & K. Vlassenroot (Eds.), *The Lord's Resistance Army: Myth and reality* (pp. 132–155). London: Zed Books.

Ceri, V., Özlü-Erkilic, Z., Özer, Ü., Yalcin, M., Popow, C., & Akkaya-Kalayci, T. (2016). Psychiatric symptoms and disorders among Yazidi children and adolescents immediately after forced migration following ISIS attacks. *Neuropsychiatrie*, *30*(3), 145–150. https://doi.org/10.1007/s40211-016-0195-9

Conrad, D., Wilker, S., Pfeiffer, A., Lingenfelder, B., Ebalu, T., Lanzinger, H., … Kolassa, S. (2017). Does trauma event type matter in the assessment of traumatic load? *European Journal of Psychotraumatology*, *8*, 1344079. https://doi.org/10.1080/20008198.2017.1344079

Cowell, R. A., Cicchetti, D., Rogosch, F. A., & Toth, S. L. (2015). Childhood maltreatment and its effect on neurocognitive functioning: Timing and chronicity matter. *Development and Psychopathology*, *27*(2), 521–533. https://doi.org/10.1017/S0954579415000139

Crombach, A., Weierstall, R., Hecker, T., Schalinski, I., & Elbert, T. (2013). Social status and the desire to resort to violence: Using the example of Uganda's former child soldiers. *Journal of Aggression, Maltreatment & Trauma*, *22*(5), 559–575. https://doi.org/10.1080/10926771.2013.785458

Denov, M. (2008). Girl soldiers and human rights: Lessons from Angola, Mozambique, Sierra Leone and Northern Uganda. *The International Journal of Human Rights*, *12*(5), 813–836. https://doi.org/10.1080/13642980802396903

Denov, M., & MacLure, R. (2006). Engaging the voices of girls in the aftermath of Sierra Leone's conflict: Experiences and perspectives in a culture of violence. *Anthropologica*, *48*(1), 73–85. https://doi.org/10.2307/25605298

Dudeck, M., Sosic-Vasic, Z., Otte, S., Rasche, K., Leichauer, K., Tippelt, S., … Streb, J. (2016). The association of adverse childhood experiences and appetitive aggression with suicide attempts and violent crimes in male forensic psychiatry inpatients. *Psychiatry Research*, *240*, 352–357. https://doi.org/10.1016/j.psychres.2016.04.073

Dvir, Y., Ford, J. D., Hill, M., & Frazier, J. A. (2014). Childhood maltreatment, emotional dysregulation, and psychiatric comorbidities. *Harvard Review of Psychiatry*, *22*(3), 149–161. https://doi.org/10.1097/HRP.0000000000000014

Elbert, T., Hermenau, K., Hecker, T., Weierstall, R., & Schauer, M. (2012). FORNET: Behandlung von traumatisierten und nicht-traumatisierten Gewalttätern mittels Narrativer Expositionstherapie. In J. Endrass, A. Rossegger & B. Borchard (Eds.), *Interventionen bei Gewalt- und Sexualstraftätern. Risk-Management, Methoden und Konzepte der forensischen Therapie* (pp. 255–276). Berlin: MWV Medizinisch-Wissenschaftliche Verlagsgesellschaft.

Elbert, T., Moran, J., & Schauer, M. (2017b). Appetitive aggression. In B. J. Bushman (Ed.), *Aggression and violence: A social psychological perspective (Frontiers of Social Psychology)* (pp. 119–136). New York: Psychology Press.

Elbert, T., Moran, J. K., & Schauer, M. (2017a). Lust for violence: Appetitive aggression as a fundamental part of human nature. *E-Neuroforum*, *23*(2), 77–84. https://doi.org/10.1515/nf-2016-A056

Elbert, T., Schauer, M., & Moran, J. K. (2018). Two pedals drive the bi-cycle of violence: Reactive and appetitive aggression. *Current Opinion in Psychology*, *19*, 135–138. https://doi.org/10.1016/j.copsyc.2017.03.016

Elbert, T., Weierstall, R., & Schauer, M. (2010). Fascination violence: On mind and brain of man hunters. *European Archives of Psychiatry and Clinical Neuroscience*, *260*(2), 100–105.

Ertl, V., Pfeiffer, A., Schauer-Kaiser, E., Elbert, T., & Neuner, F. (2014). The challenge of living on: Psychopathology and its mediating influence on the readjustment of former child soldiers. *PLOS One*, *9*, e102786. https://doi.org/10.1371/journal.pone.0102786

Field, A. P., & Wilcox, R. R. (2017). Robust statistical methods: A primer for clinical psychology and experimental psychopathology researchers. *Behaviour Research and Therapy*, *98*, 19–38.

Geen, R. G. (2001). *Human aggression* (2nd ed.). Buckingham: Open University Press.

Haer, R. (2019). Children and armed conflict: Looking at the future and learning from the past. *Third World Quarterly*, *40*(1), 74–91. https://doi.org/10.1080/01436597.2018.1552131

Hecker, T., Fetz, S., Ainamani, H., & Elbert, T. (2015). The cycle of violence: Associations between exposure to violence, trauma-related symptoms and aggression—Findings from Congolese refugees in Uganda. *Journal of Traumatic Stress*, *28*(5), 448–455.

Hecker, T., Hermenau, K., Maedl, A., Elbert, T., & Schauer, M. (2012). Appetitive aggression in former combatants—Derived from the

ongoing conflict in DR Congo. *International Journal of Law and Psychiatry*, *35*, 244–249. https://doi.org/10.1016/j.ijlp.2012.02.016

Hermenau, K., Hecker, T., Maedl, A., Schauer, M., & Elbert, T. (2013). Growing up in armed groups: Trauma and aggression among child soldiers in DR Congo. *European Journal of Psychotraumatology*, *4*(1), 21408. https://doi.org/10.3402/ejpt.v4i0.21408

Hinsberger, M., Holtzhausen, L., Sommer, J., Kaminer, D., Elbert, T., Seedat, S., … Weierstall, R. (2019). Long-term effects of psychotherapy in a context of continuous community and gang violence: Changes in aggressive attitude in high-risk South African adolescents. *Behavioural and Cognitive Psychotherapy*, *48*, 1–13. https://doi.org/10.1017/S1352465819000365

Holt, S. E., & Strack, S. (1999). Sadism and psychopathy in violent and sexually violent offenders. *Journal of the American Academy of Psychiatry and the Law Online*, *27*(1), 23–32.

Jaspers, K. (1986). *Die Schuldfrage: Für Völkermord gibt es keine Verjährung*. München: Piper Verlag GmbH.

Keshavan, M. S., Giedd, J., Lau, J. Y. F., Lewis, D. A., & Paus, T. (2014). Changes in the adolescent brain and the pathophysiology of psychotic disorders. *The Lancet Psychiatry*, *1*(7), 549–558. https://doi.org/10.1016/S2215-0366(14)00081-9

King, A. R., Ratzak, A., Ballantyne, S., Knutson, S., Russell, T. D., Pogalz, C. R., & Breen, C. M. (2018). Differentiating corporal punishment from physical abuse in the prediction of lifetime aggression. *Aggressive Behavior*, *44*(3), 306–315.

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*, 169–174. https://doi.org/10.1037/a0019362

Kort-Butler, L. A., Tyler, K. A., & Melander, L. A. (2011). Childhood maltreatment, parental monitoring, and self-control among homeless young adults: Consequences for negative social outcomes. *Criminal Justice and Behavior*, *38*(12), 1244–1264. https://doi.org/10.1177/0093854811423480

Köbach, A., & Elbert, T. (2015). Sensitive periods for developing a robust trait of appetitive aggression. *Frontiers in Psychiatry*, *6*, 144.

Lang, S., Af Klinteberg, B., & Alm, P.-O. (2002). Adult psychopathy and violent behavior in males with early neglect and abuse. *Acta Psychiatrica Scandinavica*, *106*(s412), 93–100. https://doi.org/10.1034/j.1600-0447.106.s412.20.x

Levenson, J. S., & Socia, K. M. (2015). Adverse childhood experiences and arrest patterns in a sample of sexual offenders. *Journal of Interpersonal Violence*, *31*(10), 1883–1911. https://doi.org/10.1177/0886260515570751

Lynam, D. R., Miller, D. J., Vachon, D., Loeber, R., & Stouthamer-Loeber, M. (2009). Psychopathy in adolescence predicts official reports of offending in adulthood. *Youth Violence and Juvenile Justice*, *7*(3), 189–207. https://doi.org/10.1177/1541204009333797

Maclure, R., & Denov, M. (2006). "I didn't want to die so I joined them": Structuration and the process of becoming boy soldiers in Sierra Leone. *Terrorism and Political Violence*, *18*, 119–135. https://doi.org/10.1080/09546550500384801

MacManus, D., Dean, K., Jones, M., Rona, R. J., Greenberg, N., Hull, L., … Fear, N. T. (2013). Violent offending by UK military personnel deployed to Iraq and Afghanistan: A data linkage cohort study. *The Lancet*, *381*(9870), 907–917. https://doi.org/10.1016/S0140-6736(13)60354-2

Maechler, M., Rousseeuw, P., Croux, C., Todorov, V., Ruckstuhl, A., Salibian-Barrera, M., … Anna di Palma, M. (2018). robustbase: Basic robust statistics R package version 0.93-3. *CRAN*.

Makowski, D., Ben-Shachar, M. S., Patil, I., & Lüdecke, D. (2020). Methods for Correlation Analysis. *CRAN*.

Marks, Z. (2017). In R. Woodward & C. Duncanson (Eds.), *Gender Dynamics in Rebel Groups BT—The Palgrave International Handbook of Gender and the Military* (pp. 437–454). London: Palgrave Macmillan UK. https://doi.org/10.1057/978-1-137-51677-0_27

McKay, S. (2005). Girls as "Weapons of Terror" in Northern Uganda and Sierra Leonean Rebel Fighting Forces. *Studies in Conflict & Terrorism*, *28*(5), 385–397. https://doi.org/10.1080/10576100500180253

Meyer-Parlapanis, D., Weierstall, R., Nandi, C., Bambonyé, M., Elbert, T., & Crombach, A. (2016). Appetitive aggression in women: Comparing male and female war combatants. *Frontiers in Psychology*, *6*, 1972.

Mollica, R. F., McInnes, K., Poole, C., & Tor, S. (1998). Dose-effect relationships of trauma to symptoms of depression and post-traumatic stress disorder among Cambodian survivors of mass violence. *British Journal of Psychiatry*, *173*, 482–488. https://doi.org/10.1192/bjp.173.6.482

Murthy, R. S., & Lakshminarayana, R. (2006). Mental health consequences of war: A brief review of research findings. *World Psychiatry*, *5*(1), 25–30.

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

Neugebauer, R., Fisher, P. W., Turner, J. B., Yamabe, S., Sarsfield, J. A., & Stehling-Ariza, T. (2009). Post-traumatic stress reactions among Rwandan children and adolescents in the early aftermath of genocide. *International Journal of Epidemiology*, *38*, 1033–1045. https://doi.org/10.1093/ije/dyn375

Neuner, F., Schauer, M., Karunakara, U., Klaschik, C., Robert, C., & Elbert, T. (2004). Psychological trauma and evidence for enhanced vulnerability for posttraumatic stress disorder through previous trauma among West Nile refugees. *BMC Psychiatry*, *4*, 34. https://doi.org/10.1186/1471-244X-4-34

Paulhus, D. L. (2014). Toward a taxonomy of dark personalities. *Current Directions in Psychological Science*, *23*(6), 421–426. https://doi.org/10.1177/0963721414547737

Paulhus, D. L., Curtis, S. R., & Jones, D. N. (2018). Aggression as a trait: The Dark Tetrad alternative. *Current Opinion in Psychology*, *19*, 88–92. https://doi.org/10.1016/j.copsyc.2017.04.007

Perepletchikova, F., & Kaufman, J. (2010). Emotional and behavioral sequelae of childhood maltreatment. *Current Opinion in Pediatrics*, *22*(5), 610–615. https://doi.org/10.1097/MOP.0b013e32833e148a

Pham, N. P., Vick, P., & Stover, E. (2007). *Abducted: The Lord's Resistance Army and forced conscription in Northern Uganda*. Berkeley, CA: Human Rights Center, University of California.

R Core Team. (2020). *R: A Language and Environment for Statistical Computing*. Vienna: R Foundation for Statistical Computing.

Robjant, K., Koebach, A., Schmitt, S., Chibashimba, A., Carleial, S., & Elbert, T. (2019). The treatment of posttraumatic stress symptoms and aggression in female former child soldiers using adapted Narrative Exposure therapy—a RCT in Eastern Democratic Republic of Congo. *Behaviour Research and Therapy*, *123*, 103482. https://doi.org/10.1016/j.brat.2019.103482

Sommer, J., Hinsberger, M., Elbert, T., Holtzhausen, L., Kaminer, D., Seedat, S., … Weierstall, R. (2017). The interplay between trauma, substance abuse and appetitive aggression and its relation to criminal activity among high-risk males in South Africa. *Addictive Behaviors*, *64*, 29–34. https://doi.org/10.1016/J.ADDBEH.2016.08.008

United Nations International Children's Emergency Fund. (2007). *Principles and Guidelines on Children Associated with Armed Forces or Armed Groups, February 2007*. Paris: United Nations International Children's Emergency Fund.

Veale, A., & Stavrou, A. (2003). Violence, reconciliation and identity: The reintegration of Lord's Resistance Army child abductees in Northern Uganda. ISS Monograph. South Africa: Institute of Security Studies.

Vermeij, L. (2014). *"The bullets sound like music to my ears": Socialization of child soldiers within African rebel groups*. Wageningen: Wageningen University.

Wainryb, C., & Pasupathi, M. (2008). Developing moral agency in the midst of violence: Children, political conflict, and values. In I. A. Karawan, W. McCormack & S. E. Reynolds (Eds.), *Values and violence* (pp. 169–187). Dordrecht: Springer. https://doi.org/10.1007/978-1-4020-8660-1_11

Wang, Y., Xu, K., Cao, G., Qian, M., Shook, J., & Ai, A. L. (2012). Child maltreatment in an incarcerated sample in China: Prediction for crime types in adulthood. *Children and Youth Services Review*, *34*(8), 1553–1559. https://doi.org/10.1016/j.childyouth.2012.04.015

Weierstall, R., Castellanos, C. P. B., Neuner, F., & Elbert, T. (2013). Relations among appetitive aggression, post-traumatic stress and motives for demobilization: A study in former Colombian combatants. *Conflict and Health*, *7*, 9. https://doi.org/10.1186/1752-1505-7-9

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*, 8430. https://doi.org/10.3402/ejpt.v2i0.8430

Weierstall, R., Haer, R., Banholzer, L., & Elbert, T. (2013). Becoming cruel: Appetitive aggression released by detrimental socialisation in former Congolese soldiers. *International Journal of Behavioral Development*, *37*(6), 505–513.

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), 6345.

Weiler, B. L., & Widom, C. S. (1996). Psychopathy and violent behaviour in abused and neglected young adults. *Criminal Behaviour and Mental Health*, *6*(3), 253–271. https://doi.org/10.1002/cbm.99

Wilker, S., Pfeiffer, A., Kolassa, S., Elbert, T., Lingenfelder, B., Ovuga, E., … Kolassa, I.-T. (2014). The role of FKBP5 genotype in moderating long-term effectiveness of exposure-based psychotherapy for posttraumatic stress disorder. *Translational Psychiatry*, *4*, e403. https://doi.org/10.1038/tp.2014.49

Wilker, S., Pfeiffer, A., Kolassa, S., Koslowski, D., Elbert, T., & Kolassa, T.-I. (2015). How to quantify exposure to traumatic stressors? Reliability and validity of measures for cumulative trauma exposure in a post-conflict population. *European Journal of Psychotraumatology*, *6*, 28306. https://doi.org/10.3402/ejpt.v6.28306

Zack-Williams, A. B. (2001). Child soldiers in the civil war in Sierra Leone. *Review of African Political Economy*, *28*(87), 73–82. https://doi.org/10.1080/03056240108704504

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

How to cite this article: Zeller AC, Conrad D, Schneider A, et al. 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*. 2020;46:465–475. https://doi.org/10.1002/ab.21914