

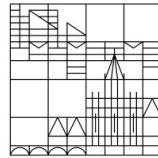
**Deconstructing the Cycles of Violence:**  
Female Experiences of Appetitive Aggression

**Doctoral dissertation for obtaining the academic degree  
Doctor of Natural Sciences (Dr. rer. nat)**

submitted by  
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# Contents

Figures and Tables

Summary

Zusammenfassung

Record of Achievement

|          |   |           |
|----------|---|-----------|
| <b>1</b> | <b>Introduction</b>   | <b>1</b>  |
| 1.1      | The Cycle of Violence . . . . .   | 2         |
| 1.2      | The Mind and Exposure to Violence . . . . .   | 4         |
| 1.2.1    | Neurological Response . . . . .   | 4         |
| 1.2.2    | Psychological Response . . . . .  | 4         |
| 1.3      | Enjoying Violence: The Role of Appetitive Aggression . . . . .                      | 8         |
| 1.3.1    | Appetitive Aggression in Context . . . . .  | 10        |
| 1.3.2    | The Context of Combat . . . . .   | 13        |
| 1.3.3    | The Context of Civil Society . . . . .  | 16        |
| 1.4      | Rationale of the Present Dissertation . . . . .                                     | 17        |
| <b>2</b> | <b>Torture and its Consequences, Psychology of.</b>                                 | <b>21</b> |
| 2.1      | Abstract . . . . .  | 22        |
| 2.2      | Introduction . . . . .  | 22        |
| 2.3      | The Torture Victim: Experience and Consequences . . . . .                           | 23        |
| 2.4      | The Torture Victim: Narrative Exposure Therapy as a Treatment Option . . . . .      | 27        |
| 2.5      | The Torturer: Motivation . . . . .  | 30        |
| 2.6      | The Trained Torturer: Experience and Consequences . . . . .                         | 32        |
| 2.7      | Untraining the Trained Torturer: FORNET as a Treatment Option . . . . .             | 33        |
| 2.8      | Conclusion and Future Directions . . . . .  | 35        |
| <b>3</b> | <b>Appetitive Aggression in Women: Comparing Male and Female War<br/>Combatants</b> | <b>37</b> |
| 3.1      | Abstract . . . . .  | 38        |
| 3.2      | Introduction . . . . .  | 38        |

---

|          |  |           |
|----------|--|-----------|
| 3.3      | Methods . . . . .  | 41        |
| 3.3.1    | Participants . . . . .   | 41        |
| 3.3.2    | Recruitment . . . . .  | 42        |
| 3.4      | Measures . . . . .   | 42        |
| 3.4.1    | Traumatic Event Types . . . . .  | 42        |
| 3.4.2    | Perpetrated Event Types . . . . .  | 43        |
| 3.4.3    | PTSD Symptom Severity . . . . .  | 43        |
| 3.4.4    | Appetitive Aggression . . . . .  | 43        |
| 3.5      | Data Analysis . . . . .  | 43        |
| 3.6      | Results . . . . .  | 44        |
| 3.7      | Discussion . . . . .   | 47        |
| 3.8      | Conclusion . . . . .   | 49        |
| <b>4</b> | <b>Succumbing to the Call of Violence Sex-linked Development of Appetitive Aggression in Relation to Familial and Organized Violence</b> | <b>51</b> |
| 4.1      | Abstract . . . . .   | 52        |
| 4.2      | Introduction . . . . .   | 52        |
| 4.3      | Material and Methods . . . . .   | 55        |
| 4.3.1    | Procedure . . . . .  | 55        |
| 4.3.2    | Participants . . . . .   | 55        |
| 4.3.3    | Measures . . . . .   | 55        |
| 4.3.4    | Data analysis . . . . .  | 57        |
| 4.4      | Results . . . . .  | 57        |
| 4.4.1    | Regression Analyses . . . . .  | 58        |
| 4.5      | Discussion . . . . .   | 61        |
| 4.6      | Conclusion . . . . .   | 64        |
| <b>5</b> | <b>Appetitive Aggression and Adverse Childhood Experiences Shape Violent Behavior in Females Formerly Associated with Combat</b>         | <b>67</b> |
| 5.1      | Abstract . . . . .   | 68        |
| 5.2      | Introduction . . . . .   | 68        |
| 5.3      | Methods . . . . .  | 71        |
| 5.3.1    | Participants . . . . .   | 71        |
| 5.3.2    | Procedure . . . . .  | 72        |
| 5.4      | Measures . . . . .   | 72        |
| 5.5      | Data Analysis . . . . .  | 74        |
| 5.6      | Results . . . . .  | 74        |
| 5.6.1    | Prediction of Current Violent Behavior . . . . .   | 75        |
| 5.7      | Discussion . . . . .   | 77        |
| 5.8      | Conclusion . . . . .   | 79        |

|          |  |            |
|----------|--|------------|
| <b>6</b> | <b>More Than the Win: The Relation between Appetitive Competition Motivation, Socialization, and Gender Role Orientation in Women’s Football</b> | <b>81</b>  |
| 6.1      | Abstract . . . . .   | 82         |
| 6.2      | Introduction . . . . .   | 82         |
| 6.3      | Method . . . . .   | 85         |
| 6.3.1    | Sample . . . . .   | 85         |
| 6.3.2    | Design . . . . .   | 86         |
| 6.3.3    | Material . . . . .   | 87         |
| 6.4      | Results . . . . .  | 88         |
| 6.5      | Discussion . . . . .   | 91         |
| 6.6      | Conclusion . . . . .   | 93         |
| <b>7</b> | <b>General Discussion of the Results</b>   | <b>95</b>  |
|          | <b>References</b>  | <b>107</b> |

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**Figures**

- Figure 1.1 The Trajectory of Violence
- Figure 1.2 The Transmission of Violence
- Figure 1.3a The Fear Network
- Figure 1.3b The Hunting Network
- Figure 1.4 The Cycles of Violence
- Figure 2.1 The Defense Cascade
- Figure 2.2 The Physiological Reactions to Perceived Stress
- Figure 2.3 The Fear-Trauma Network
- Figure 2.4 The Therapeutic Agents of Narrative Exposure Therapy
- Figure 2.5 Major Brain Regions Associated with PTSD
- Figure 2.6 Conceptualization of Appetitive Aggression
- Figure 3.1 Mean AAS Sum Scores in Males and Females with and without Combat Experience
- Figure 4.1 Two-way interactions between sex and perpetrated events, child maltreatment, traumatic events, age & combat
- Figure 4.2 Two-way interaction in the combatant sample between sex/perpetrated events and sex/childhood maltreatment
- Figure 5.1 Group Differences: childhood violence, traumatic/perpetrated event types, PTSD & appetitive aggression
- Figure 6.1 Masculine role model, modern upbringing & appetitive competition motivation
- Figure 7.1 The Trajectory of Violence
- Figure 7.2 The Transmission of Violence
- Figure 7.3 Binary overlap of Sex and the Players in the Cycle of Violence
- Figure 7.4 The Updated Transmission of Violence
- Figure 7.5 The Cycles of Violence

**Tables**

- Table 3.1 Demographic overview of participants
- Table 3.2 Summary of Statistics Performed on AAS Scale
- Table 4.1 Correlation matrix grouped by sex for the overall sample
- Table 4.2 Final regression models predicting appetitive aggression from a sex-linked pathway perspective
- Table 5.1 Participant demographics and military involvement
- Table 5.2 Correlations between outcome variables
- Table 5.3 Multiple regression analysis for the prediction of current aggressive behavior
- Table 6.1 Demographic data for premier and regional league players
- Table 6.2 Intercorrelation matrix of the central dependent variables
- Table 6.3 Regression model to predict appetitive competition motivation

## Summary

This dissertation deconstructs what is commonly understood as the cycle of violence into its two respective players, perpetrators and victims, and closely examines their experiences with appetitive aggression. The first article addresses one of the most extreme expressions of violence: torture. By examining both the implementers and recipients of torture, this article serves to establish the binarily juxtaposed roles of perpetrators and victims, respectively. Outlining the psychological consequences of the cycle of violence, this article highlights that both perpetrators and victims are often impacted by the violence they experienced. The current perpetrator-victim binary is unable to depict the complexity of the reality presented in the current literature: many perpetrators were also once victims themselves, and many victims can go on to perpetrate violence against others.

This binary of perpetrator versus victim can also reinforce other reductionist conceptualizations, such as assuming that males have a higher propensity for enjoying aggression than females. Inasmuch as males and females each have comparable capacities for being traumatized by victimization, they can also find the perpetration of aggression appealing. The second article compares male and female combatants and found similar levels of appetitive aggression as compared to their civilian counterparts. Furthermore, the more violence perpetrated, often were the levels of appetitive aggression higher. The results demonstrate that, just as there is overlap between the mental health complications challenging perpetrators and victims following perpetration of and exposure to, respectively, violence, there can also be significant similarities between males and females with respect to their experience of perpetrating violence.

The third article continues the disentangling of the perpetrator-victim binary by exploring male and female experiences of violence, this time taking both perpetrated and endured violence into account. Specifically, this study found significant moderation effects of sex that suggest sex-linked pathways in the development of appetitive aggression. Childhood maltreatment was negatively associated and traumatic events were not associated with appetitive aggression in females, while in males, appetitive aggression was positively associated with both childhood maltreatment and traumatic events. Moreover, perpetrated events were more strongly correlated with appetitive aggression for females than for males, especially in combatants.

The fourth article zooms in on the developmental factors involved in appetitive aggression as evaluated in the third article, however this time focusing only on female individuals with varying degrees of violent perpetration: former combatants, armed-group supporters, and civilians. Former combatants experienced more traumatic events, perpetrated more violence, had the highest levels of PTSD and reported higher levels of appetitive aggression than supporters and civilians. Supporters had higher levels of appetitive aggression than civilians, while all three groups reported similar exposure to

childhood maltreatment, and childhood maltreatment was a stronger predictor for appetitive aggression than PTSD. Appetitive aggression and childhood maltreatment contributed to various forms of aggression independent of one another, increasing overall levels of aggression. These findings illustrate that abuse suffered during childhood, symptoms of PTSD and finding violence appealing all play roles in current levels of aggressive behavior. This study demonstrates that especially in contexts of armed conflict, individuals can transition from victims' roles to perpetrating roles only to return to victims' roles again, and even be in both roles simultaneously. The perpetrator-victim binary is likely better represented by a more dualistic understanding of the perpetrator and victim roles in the cycle of violence.

The results from the second, third and fourth articles highlight that neither sex is immune to appetitive aggression and should not be underestimated as such in the consideration of mental health interventions and reintegration programs. The fifth and final article transitions the investigation of appetitive aggression from the conflict region of Burundi to a civilian context in Germany and examines appetitive competition motivation in the high level, high contact sport of women's football, simultaneously investigating its relationship with gender identity and other socialization factors. This study is a first step in exploring a civilian form of appetitive aggression exclusively in females in a context with far less exposure and access to violence than in high conflict contexts, such as in regions reeling from multiple waves of civil war.

These investigations combine to provide evidence that the current perpetrator-victim binary inadequately represents the reality of individuals involved in the system of violence. This research shows that in contexts in which individuals are perpetrating violence against others, all individuals are at an increased risk for experiencing appetitive aggression, regardless of sex. The case is made that not only should individuals having perpetrated violence be holistically evaluated with respect to their experiences as victims, but also that individuals who perpetrate violence should be examined in all of their diversity, regardless of where they lie on the biological sex and gender spectrums and in light of their own individual experiences with violence and aggression.

## Zusammenfassung

Diese Dissertation dekonstruiert, was gemeinhin als der Zyklus der Gewalt verstanden wird in seine beiden jeweiligen Spieler, Täter und Opfer, und untersucht detailliert ihre Erfahrungen mit appetitiver Aggression. Der erste Artikel richtet sich an eine der extremsten Formen von Gewalt: Folter. Durch die Untersuchung sowohl der Ausführender als auch der Empfänger von Folter dient dieser Artikel dazu, die binär nebeneinanderstehenden Rollen von Tätern und Opfern zu etablieren. Um die psychologischen Konsequenzen des Gewaltzyklus zu skizzieren, hebt dieser Artikel hervor, dass sowohl die Täter als auch die Opfer oft von der Gewalt betroffen sind, die sie selbst erlebt haben. Das gegenwärtige Täter-Opfer Binär ist nicht in der Lage, die Komplexität der in der vorliegenden Literatur präsentierten Wirklichkeit darzustellen: Viele Täter waren auch selbst einmal Opfer und viele Opfer können weiter Gewalt gegen andere verüben.

Das Täter-Opfer Binär kann auch andere reduktionistische Konzeptualisierungen verstärken, wie etwa die Annahme, dass Männer eine höhere Neigung haben, Aggressionen zu genießen als Frauen. Insofern Männer und Frauen jeweils vergleichbare Kapazität haben, um durch Viktimisierung traumatisiert zu werden, können sie auch gleichermaßen Gefallen an Aggression finden. Der zweite Artikel vergleicht männliche und weibliche Kombattanten und fand ähnliche Grade der appetitiven Aggression im Vergleich zu ihren zivilen Pendanten und auch, dass je mehr Gewalt begangen wird, der Grad der appetitiven Aggression oft umso höher ausfällt. Die Ergebnisse zeigen, dass es, ebenso wie es eine Überschneidung zwischen den Komplikationen der psychischen Gesundheit von Tätern und Opfern nach Verübung und Aussetzung von Gewalt gibt, auch signifikante 11 Ähnlichkeiten zwischen Männern und Frauen in Bezug auf ihre Gewalterfahrung auftreten können.

Der dritte Artikel setzt die Entwirrung des Täter-Opfer Binärs fort, indem er die männlichen und weiblichen Erlebnisse von Gewalt erforscht, wobei diesmal die begangene und ausgesetzte Gewalt berücksichtigt wird. Speziell diese Studie fand signifikante Mäßigungseffekte des biologischen Geschlechts, die auf geschlechtsgebundene Wege in der Entwicklung der appetitiven Aggression hindeuten. Zum Beispiel waren Kindheitsmisshandlung bei Frauen negativ assoziiert und traumatische Ereignisse nicht mit appetitiven Aggression verbunden, während bei Männern appetitive Aggression positiv mit Kindheitsmisshandlung als auch traumatischen Ereignissen assoziiert war. Darüber hinaus korrelieren ausgeübte Gewaltereignisse stärker mit der appetitiven Aggression bei Frauen als bei Männern, vor allem bei Kombattanten.

Der vierte Artikel wirft einen detaillierten Blick auf die Entwicklungsfaktoren, die in der appetitiven Aggression involviert sind, die Auswertung wird dabei methodisch wie im dritten Artikel vollzogen, aber hier nun bezogen auf weibliche Personen mit unterschiedlichem Grad an Gewalterfahrung: ehemalige Kombattanten, bewaffnete Gruppenunterstützer und Zivilisten. Ehemalige Kämpfer erlebten mehr traumatische Ereignisse, verübten mehr

Gewalt, hatten das höchste Niveau der PTSD und berichteten über ein höheres Maß an appetitiver Aggression als Unterstützer und Zivilisten. Unterstützer zeigten einen höheren Grad an appetitiver Aggression auf als Zivilisten, während alle drei Gruppen über eine ähnliche Exposition von Kindheitsmisshandlung berichteten. Kindheitsmisshandlung galt als stärkerer Prädiktor für appetitive Aggression als PTSD. Appetitive Aggression und Kindheitsmisshandlung trugen unabhängig voneinander zu verschiedenen Formen der Aggression bei, mit einer Erhöhung des Gesamtaggressionsniveaus. Diese Ergebnisse zeigen, dass Missbrauch während der Kindheit, Symptome von PTSD und ein Gefallen an Gewalt, alle eine Rolle spielen in aktuellen Graden von Aggressionsverhalten. Diese Studie zeigt, dass vor allem in Kontexten des bewaffneten Konflikts, Personen von der Opfer- zur Täterrolle übertreten können, nur um wieder in die Rolle des Opfers zurückzukehren und sogar in beiden Rollen gleichzeitig zu sein. Das Täter-Opfer Binär wird besser repräsentiert durch ein dualistisches Verständnis der Täter- und Opferrolle im Zyklus der Gewalt.

Die Ergebnisse aus dem zweiten, dritten und vierten Artikel heben hervor, dass weder das Geschlecht gegen die appetitive Aggression immun ist und bei der Betrachtung von psychiatrischen Interventionen und Wiedereingliederungsprogrammen nicht unterschätzt werden sollte. Der fünfte und letzte Artikel überträgt die Untersuchung der appetitiven Aggression der Konfliktregion Burundi in einen zivilen Kontext in Deutschland und untersucht die appetitive Wettbewerbsmotivation im Frauenfußball im Bereich Hochleistungssport, wobei die Beziehung zu Geschlecht und anderen Sozialisierungsfaktoren berücksichtigt wird. Diese Studie ist ein erster Schritt bei der Erforschung einer zivilen Form der appetitiven Aggression ausschließlich bei Frauen in einem Kontext mit weit weniger Exposition und Zugang zu Gewalt als in hohen Konflikt-Kontexten wie in Regionen, die mehreren Wellen des Bürgerkrieges ausgesetzt sind.

Die Untersuchungen im Verbund machen evident, dass das gegenwärtige Täter-Opfer Binär die Realität der an dem System der Gewalt beteiligten Personen nur unzureichend repräsentiert. In Kontexten, in denen Einzelpersonen Gewalt gegen andere verüben, haben alle Individuen ein erhöhtes Risiko für das Auftreten von appetitiven Aggression, unabhängig vom biologischen Geschlecht. <sup>13</sup> Es wird das Argument vorgetragen, dass nicht nur Einzelpersonen, die Gewalt begangen haben, in Bezug auf ihre Erfahrungen als Opfer ganzheitlich beurteilt, sondern auch, dass Personen, die Gewalt verüben, in all ihrer Vielfalt untersucht werden sollten; und zwar unabhängig davon, wo sie auf den Spektren des biologischen und sozialen Geschlechts liegen und im Lichte ihrer eigenen individuellen Erfahrungen mit Gewalt und Aggression stehen.

## Record of Achievement

### **Article 1: Torture and its Consequences, Psychology of.**

Published: 2015, James D. Wright (editor-in-chief), International Encyclopedia of the Social & Behavioral Sciences, 2nd edition, Vol 24. Oxford: Elsevier. pp. 434–441. ISBN: 9780080970868

Authors: Danie Meyer-Parlapanis and Thomas Elbert

My contributions: Drafted the manuscript

### **Article 2: Appetitive Aggression in Women: Comparing Male and Female War Combatants.**

Published: 2016, Frontiers Psychology 6:1972. doi:10.3389/fpsyg.2015.01972

Authors: Danie Meyer-Parlapanis, Roland Weierstall, Corina Nandi, Manassé Bambonye, Thomas Elbert and Anselm Crombach

My contributions: Designed the study, participated in the interviewer training, carried out the majority of clinical interviews, conducted the statistical analysis, drafted the manuscript

### **Article 3: Succumbing to the Call of Violence – Sex-linked Development of Appetitive Aggression in Relation to Familial and Organized Violence**

Published: 2017, Frontiers Psychology 8:751. doi: 10.3389/fpsyg.2017.00751

Authors: Mareike Augsburger, Danie Meyer-Parlapanis, Thomas Elbert, Corina Nandi, Manassé Bambonye and Anselm Crombach

My contributions: Participated in project design, data collection and drafting the manuscript

### **Article 4: Appetitive Aggression and Adverse Childhood Experiences Shape Violent Behavior in Females Formerly Associated with Combat.**

Published: 2015, Frontiers Psychology 8:547. doi: 10.3389/fpsyg.2017.00547

Authors: Mareike Augsburger, Danie Meyer-Parlapanis, Manassé Bambonye, Thomas Elbert and Anselm Crombach

My contributions: Participated in project design, data collection and drafting the manuscript

### **Article 5: More than the Win: The Relation between Appetitive Competition Motivation, Socialization, and Gender Role Orientation in Women's Football.**

Published: 2017, Frontiers Psychology 8:547. doi: 10.3389/fpsyg.2017.00547

Authors: Danie Meyer-Parlapanis, Sabrina Siefert and Roland Weierstall

My contributions: Participated in the design and implementation of the study, Drafted the manuscript

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CHAPTER **1** 

**Introduction**

## 1.1 The Cycle of Violence

Despite earnest efforts, violence persists as an ultimate challenge to a civil society. It is likely that every individual alive has been exposed to a form of violence at least once in their lifetime, with a majority of those individuals having been exposed to multiple events. These instances of victimization are situated in a model of violence in which perpetrators inflict violence against victims.



Figure 1.1: The Trajectory of Violence. In this model, perpetrators inflict violence upon victims.

Unfortunately, violence often does not cease after being inflicted upon its victims. For example, regions battered by conflict are often afflicted by seemingly ever-increasing episodes of violence (e.g. Buvinic & Morrison, 2003; Mattaini, 2003). Extreme violence is consequential for all involved, whether directly or indirectly, and impacts both the implementers and the recipients of violence as well as anyone interacting with either of the two (Dekel & Goldblatt, 2008). Those impacted are left to pick up the pieces while often simultaneously needing to adapt and prepare for the next waves of violence likely to follow. Researchers have shown that the damage individuals incur following exposure to violence is not limited to physiological injuries but can be manifested in trauma symptomology and/or by perpetrating further forms of violence (Elbert, Rockstroh, Kolassa, Schauer & Neuner, 2006; Hecker, Hermenau, Maedl, Elbert, & Schauer, 2012; MacManus et al., 2012).

The phrase “violence breeds violence” was coined in the initial research efforts investigating the connections between abuse and neglect experienced in childhood and the subsequent violence perpetrated later in life (Curtis, 1963). Follow-up studies confirmed the “cycle of violence,” and went further to suggest that abuse suffered during childhood can predispose an individual to perpetrate violence against others (Widom, 1989). It is crucial to note that the violence perpetrated by individuals having been previously victimized may not only be limited to a reactionary effort directed at their prior assailants but also towards others unrelated to the violence they originally endured, and even possibly towards one’s own partner or children (Pears & Capaldi, 2001; Widom, Czaja, & DuMont, 2015). Individuals raised in violent households, in juxtaposition to those who were not, are twice as likely to abuse their own children (Elbert et al., 2006). As one victim can lead to countless subsequent victims, the cycle of violence has the potential to produce a never-ending stream of suffering individuals. This observed complexity is depicted in Figure 1.2.



Figure 1.2: The Transmission of Violence. This updated model represents a linear occurrence of violent events that produces subsequent victims.

The aforementioned literature offers empirical evidence that violence should not be reduced to a dialectical opposition of “good” victims versus “bad” perpetrators but rather viewed as a convoluted intermingling of the two in which victims can become perpetrators and perpetrators have often been, and can be again, victimized. The present dissertation works to transition the discourse on violence from a binary conceptualization, i.e. perpetrators and victims, to a more dualistic interpretation in which the individuals perpetrating violence and the individuals receiving violence are two aspects of the greater whole. A daunting task, attempts to curb or prevent this cycle of violence require a systematic evaluating the psychological mechanism fueling the utilization of violence: aggression. Human aggression is highly complex and has several forms that range on a reactive-proactive spectrum that will be discussed in greater detail (See sections 1.2.2 and 1.3).

This introduction begins by first exploring the neurological and psychological mechanisms at work in processing both exposure to and perpetration of violence. Secondly, the theoretical constructs delineating the forms of aggression utilized in violent perpetration will be defined and explored. Finally, there will be a deconstruction of commonly employed schematics that polarize victims and perpetrators, and later even males and females, in their attempts to generalize the key players in the cycle of violence. This process will demonstrate that reducing individuals to “good” victims juxtaposed to “bad” perpetrators not only underestimates the complexity of human violence by largely ignoring the intersection of numerous contextual factors but also undermines efforts to prevent or heal the damages incurred from that violence. A new model of the cycle of violence will be offered that hints towards the case that the very “cycle of violence” under investigation is a misnomer representing what could be better understood as the “cycles of violence.”

*\*Important aside: The terms “perpetrator” and “victim” will be used throughout this work to represent individuals who have perpetrated and been victimized by violence, respectively. This is done for brevity, however it is also accompanied with the admission that the utilization of highly reductionist terms run the risk of further entrenching the ideology of the very binary under scrutiny. The reader is asked to bear the complexity illustrated for each role in mind when considered both perpetrators’ and victims’ roles in the presented investigations and discussion.*

## 1.2 The Mind and Exposure to Violence

### 1.2.1 Neurological Response

Taking into account the experience of perpetration and victimization involved in the cycle of violence, researchers have developed neural pathway models that represent the networks established in response to victimization and perpetration- the fear and hunting networks- respectively. The fear network (see Figure 1.3a) is a neurological pathway that is established in response to violence and potentially life threatening experiences. In what is labeled the “building-block effect” following trauma exposure (for more detail, see Section 1.2), with each new hostile experience, an additional location within the network can be added (Elbert et al., 2006; Elbert & Schauer, 2002). However, there is also evidence that extension of the fear network can be minimized or possibly inhibited through the utilization of an additional, parallel network, the hunting network (see Figure 1.3b), which is characterized by approach to violent cues rather than the fear network’s distinctive avoidance thereof (Elbert et al., 2010; Weierstall et al., 2011).

The two networks function to compartmentalize threatening exposure to violence within the fear network and appealing elements associated with the perpetration of violence within the hunting network. As these networks develop over the lifespan, subsequent exposure to events that resemble previously experienced victimization or perpetration are registered as cues that trigger a response from the respective neural network, resulting in the evocation of either an aversive or an approach response to the cue. However, exposure to violence is often not so easily compartmentalized due to the potential overlap of cues, which can be a myriad of sensations, cognitions and physiological responses. For example, the smell of blood, a sensation cue, can trigger both the fear and the hunting networks depending on the context and other cues experienced (example: I smell blood which I am bound and gagged versus I smell blood while a man is bound and gagged below me).

### 1.2.2 Psychological Response

#### **Victimization**

Victimization occurs each time an individual’s life or integrity is threatened, and, rather than vanishing once the threat is neutralized, the damage remains and accumulates over the life span. Life-threatening accidents, serious injury, natural disasters or physical and sexual assault are all potentially traumatizing events that occur everyday around the world. And, exposure, whether directly experienced, witnessed, or indirectly experienced through the direct, violent or accidental experience of a close friend or family member, to even just one such event, can result in the development of Post-Traumatic Stress Disorder. PTSD significantly impacts daily functioning as it manifests in a network of intrusions, avoidance behaviors, and alterations in cognitions, mood, arousal, and reactivity (DSM-V; American

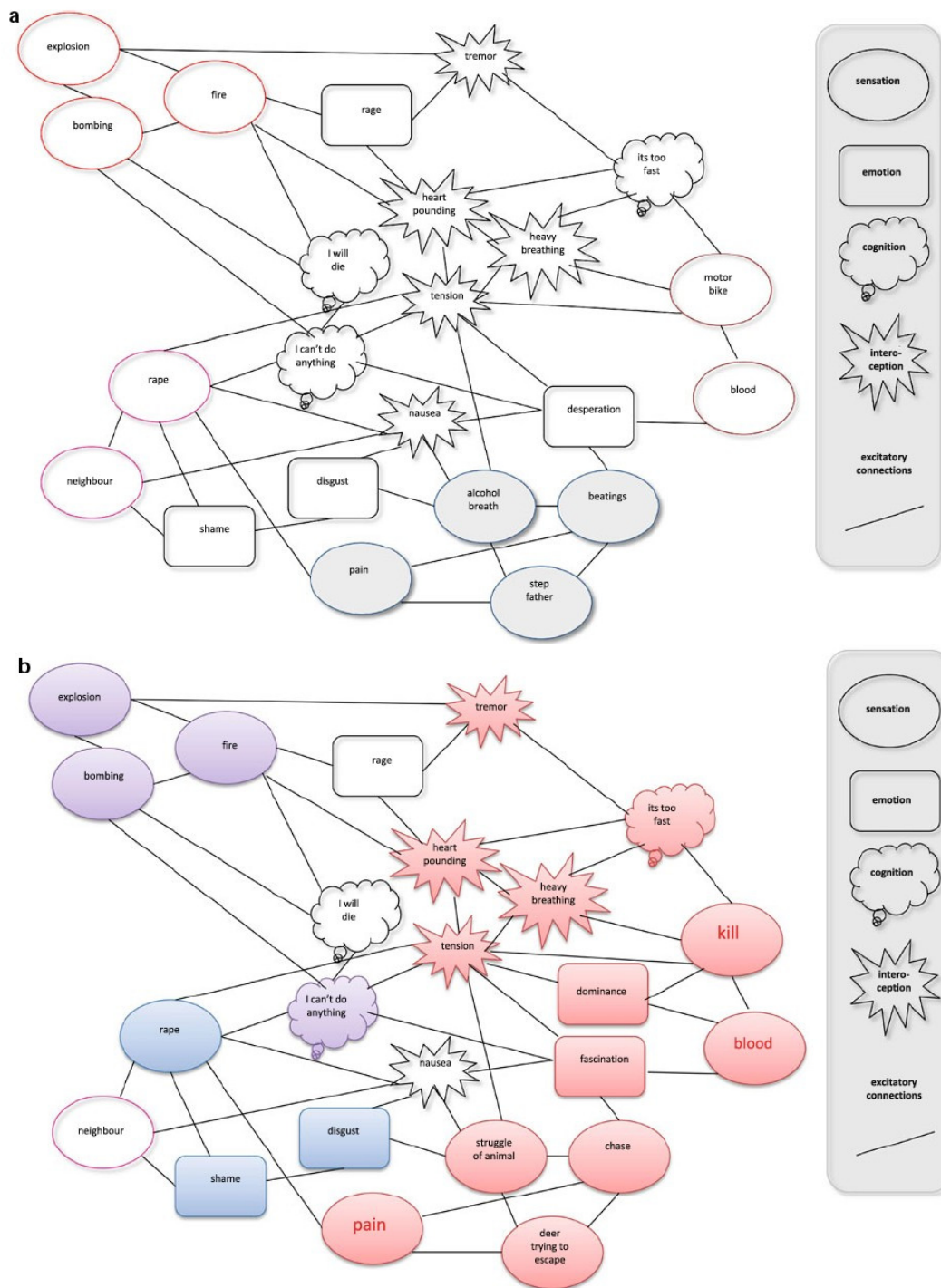


Figure 1.3: **(a)** The Fear Network, associated with negative affective valence, represents the related sensory, cognitive and physiological memories, devoid of temporal or situational cues that follow exposure to potentially traumatizing events and constitute PTSD symptomology. **(b)** The Hunting Network, representing the related sensory, cognitive and physiological memories, also devoid of temporal or situations cues that follow experiences of perpetrating violence, is characterized by positive affective valence. (from Elbert et al., 2010).

Psychiatric Association, 2013). Elbert et al. (2006) explain the core symptoms of PTSD in greater detail as:

1. re-experiencing symptoms that manifest at night in the form of nightmares and in the waking state as flashbacks and intrusive recollections which are so intense that the victim actually believes to be back amidst the atrocities,
2. an exaggerated startle response and a persistent hyperarousal, difficulties in calming down or falling asleep; all these symptoms describe a readiness for fight or flight rather than a permanently enhanced autonomic activation, and
3. an active avoidance of places or thoughts associated with traumatic experiences and/or passive avoidance symptoms, i.e., numbing emotional responsiveness as a way to cope with unbearable feelings. In severe cases this may include dissociative symptoms, e.g., feelings of detachment or estrangement from the external world (derealization) and of oneself (depersonalization), or even persecutory delusions. (p. 6)

PTSD is also often accompanied by other comorbid symptomatology, such as depression, suicidality, and substance abuse (Brady, Killeen, Brewerton, & Lucerini, 2000; Krysinaka & Lester, 2010). Increased risk for mental health complications then burdens individuals with an elevated risk for future victimization and exposure to violence that thereby render the “building block effect” of trauma that has been identified in numerous crisis regions (Amone-P’Olak, Garnefski, & Kraaij, 2007; Catani et al., 2008; Chapman et al., 2004; Edwards, Holden, Anda, & Felitti, 2003; Elbert et al., 2009, Hermenau et al., 2011; Kolassa & Elbert, 2007; Neuner, Schauer, Karunakara, et al., 2004).

This “building-block effect” of exposure to violence is particularly applicable in the context of war where potentially traumatizing events are often intensified and multiplied. Combatants in particular are exposed more frequently to intentional, interpersonal violence, such as hand-to-hand combat, enemy violence, violence from fellow comrades, capture and being held hostage, torture, starvation, massacres, and rape. Combatants adapted to the threats associated with war by prioritizing a stress-responsive pathway that supports the fight or flight response to the threat while also increasing the risk of mental illness (Elbert et al., 2006), severe PTSD (Priebe et al., 2013; Prigerson, Maciejewski, & Rosenheck, 2001) and other comorbidities (Ginzburg, Ein-Dor, & Solomon, 2010; Hendin, & Haas, 1991; Keane & Kaloupek, 1997; Seal et al., 2011; Klasen et al., 2010; Köbach et al., 2014; Odenwald et al., 2009; Pfeiffer & Elbert, 2011; Pham, Vinck, & Stover, 2009). This is problematic because, in juxtaposition to the “flight” mode and its associated avoidant behaviors, the “fight” trajectory of the stress response to threat can be expressed through aggressive behavior. In other words, reactions exhibited following activation of the fear network can present as aggressively as those stemming from the hunting network. For

example, the PTSD symptoms related to arousal and reactivity can be exhibited as unprovoked, angry outbursts directed at others (DSM-V; American Psychiatric Association, 2013). PTSD has been linked to aggressive behavior in combatants and veterans (Beckham, Feldman, Kirby, Hertzberg, & Moore, 1997; McFall, Fontana, Raskind, & Rosenheck, 1999). Moreover, violent behavior in soldiers and veterans has been specifically associated with PTSD hyperarousal symptoms in several studies (MacManus et al., 2013; Savarese, Suvak, King, & King, 2001; Taft et al., 2007). The reactive form of aggressive behavior plays a role in subsequent perpetuation of violence, domestic and otherwise, however it is a response to the aggression proactively imposed on the victims by the perpetrators. Thereby, the aggression exhibited by an activated fear network is categorically different than and not to be confused with the aggression exhibited by an activated hunting network.

### **Perpetration**

The perpetration of extreme violence is often not isolated to singular instances, but has been identified as prevalent in armed groups and even in the general population (Schaal, Heim, & Elbert, 2014; Weierstall, Castellanos, Neuner, & Elbert, 2013). The individuals proactively perpetrating violence utilize aggression as a means to accomplish a variety of goals. Aggression, understood generally as any and every attempt to inflict bodily damage or physical pain on a target motivated to avoid such behavior (Zillmann, 1979), is an evolved social behavior utilized in the defense or acquisition of resources (Berkowitz, 1993). Aggression offers competitive advantages, such as increased social status (Daly & Wilson, 1996; Shackelford, 2005), wealth (Anderson & Bushman, 2002), and reproductive success (Bernhardt, 1997). However, even when the rewards are highly motivating, aggressive behavior can be tedious and risky (Nelson & Trainor, 2007). Campbell (2005) describes aggression as a strategy contingent upon results in which the reward value multiplied by the probability of reward acquisition is greater than the cost value multiplied by the probability of cost incurrence. As extrinsic rewards often do not provide sufficient motivation for sustained personal risk, several researchers concluded that there are also intrinsic reward mechanisms at play. For example, in deconstructing the motivation behind a perpetrator's utilization of violence, Nell (2006) highlights cruelty, the deliberate and often pleasurable harming of another, as a vital component that has been substantially documented both empirically (Haney et al., 1973; Milgram, 1974; Zimbardo, 2003) and observationally (Browning 1993, Grossman 1995, Tester 1997). Nell theorizes cruelty to be an evolutionarily adaptive "behavioral by-product of predation" that is advantageous for survival and reproduction and that the pleasure associated with cruelty is a "culturally elaborated manifestation of the predatory adaptation" (p.211).

There are obvious consequences for perpetrating violence, such as personal injury, guilt or punishment. However there are also mental health implications. The clearest examples of the fallout following perpetration lie in contexts of extreme violence such as

### 1.3 Enjoying Violence: The Role of Appetitive Aggression

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combat. As several studies have demonstrated, the perpetration of extreme violence can be potentially traumatizing for the attacker (Bayer et al., 2007; Vinck et al., 2007). For example, even after controlling for battle intensity, veterans having killed another person demonstrated higher PTSD symptomology than their non-killing compatriots, suggesting a perpetration-induced form of traumatic stress (MacNair, 2001; 2002). Other researchers also demonstrated that, separate from combat exposure, killing and harming others in war leave some perpetrators traumatized (Dohrenwend, Yager, Wall, & Adams, 2013; Maguen et al., 2010; Van Winkle & Safer, 2011). Individuals can be damaged by their perpetration, which is likely the reason why many individuals report various aversions or resistance to inflicting violence on others, such as in cases in which only a small percentage of soldiers reported firing their weapons during combat (Grossman, 1995) or professional torturers have reported trauma symptoms (Gibson & Haritos-Fatouros, 1986).

It is evident that both victims and perpetrators contend with PTSD and aggressive behavior following their respective exposure to and perpetration of extreme violence. However there is a key distinction between aggression exhibited stemming from the hunting network as opposed to that from the fear network. A study with former combatants demonstrated that it was appetitive aggression and not PTSD symptomology that correlated with subsequent perpetration (Köbach, Schaal & Elbert, 2014). Perpetrators and victims are both potentially violent but for very different reasons. Owing to the strikingly opposing perspectives on the violence maintained by victims and perpetrators, it is crucial not to limit investigations on the cycle of violence only to the experience of the victims (Baumeister & Campbell, 1999). This dissertation proceeds to focus on the proactive players the cycle of violence by focusing on contexts of extreme violence and the form of aggression predominantly exhibited therein.

### **1.3 Enjoying Violence: The Role of Appetitive Aggression**

Cruelty has its rewards. Individuals actively involved in violence reported intrinsic rewards such as excitement and pleasure being associated with violent perpetration (Konner, 2006; MacNair, 2006; Silva, Derecho, Leong, Weinstock, & Ferrari, 2001), a form of aggression researchers label as “appetitive aggression” (Elbert et al., 2010; Weierstall & Elbert, 2011). As means to categorize the appetitive form of aggression, this dissertation utilizes the dichotomous conceptualization of aggression on a continuum ranging from instrumental (proactive, appetitive, predatory, or goal-oriented) to reactive (affective, defensive, hostile, or retaliatory) forms (Anderson & Bushman, 2002; Fontaine, 2007; McEllistrem & Joseph, 2004). This framework individuates appetitive aggression from other instrumental forms of aggression due to its functioning in contexts devoid of, unrelated or addition to extrinsic rewards. This lust-driven attraction to violence has been specifically and repeatedly evaluated and demonstrated in correlation with self-committed violence

in former combatants (Hecker, Hermenau, Maedl, Elbert, & Schauer, 2012; Weierstall, Schaal, Schalinski, Dusingizemungu, & Elbert, 2011). Appetitive Aggression is assessed using the Appetitive Aggression Scale (AAS); (Weierstall & Elbert, 2011) which was based on the Aggression Questionnaire (Buss & Perry, 1992), a 29, self-rated items instrument measuring physical aggression, verbal aggression, anger and hostility via a four-point Likert scale. The Aggression Questionnaire was itself based on the Hostility Inventory (Buss & Durkee, 1957), has been widely implemented, and demonstrates good psychometric properties (Collani & Werner, 2005; Garcia-Leon et al., 2002; Harris, 1997). As means to incorporate the aforementioned instrumental-reactive dichotomy, the 13- item Reactive-Proactive Questionnaire (Raine, Dodge, Loeber, et al., 2006) served as an additional point of reference due to its reliable and valid measures in civil child and adolescent populations and to its construct validity.

While enjoying violence for the sake of enjoying violence initially appeared to be sufficiently rewarding for many, some studies demonstrate additional intrinsic rewards of appetitive aggression include resilience against PTSD (Hecker, Hermenau, Maedl, Schauer, & Elbert, 2013; Weierstall, Castellanos, Neuner, & Elbert, 2013). As appetitive aggression functions to integrate violent cues into the hunting network, the fear network is not activated and thereby the risk of PTSD is buffered (Elbert et al., 2010). Additionally, there is evidence that appetitive aggression not only inoculates perpetrators against being traumatized by the violence they experience as victims but also against the violence they perpetrate against others. This was first demonstrated in Rwandan genocide perpetrators (Weierstall et al., 2011) and then replicated in Ugandan child soldiers (Weierstall et al., 2012) and in Colombian former combatants (Weierstall et al., 2013). However, there are limits to this protective effect. When a specific threshold of traumatization is surpassed, the fear and hunting networks overlap. Once overlapped, an increasing number of cues are linked to the fear network and lead to its activation and subsequent trauma symptomology (Weierstall et al., 2012). These observations indicate that while enjoying violent perpetration can reduce the risk for PTSD symptomology, there is no guarantee of immunization to traumatization. Despite this limitation, the finding that appetitive aggression buffers against the development of trauma symptomology is a critical explanation as to what motivates an individual to learn to love hunting and hurting others. When situated in a context in which it seems the only option is kill or be killed, it is advantageous for individuals to learn to savor the violence. In other words, when one loves the fight, is excited by the preparation and relishes the memories thereof, one is less likely to experience the helpless, horror or massive fear that was previously associated with traumatic events (DSM-IV, American Psychiatric Association, 2000) and is accordingly less likely to be subsequently traumatized.

### 1.3.1 Appetitive Aggression in Context

#### Intersectionality

In an effort to best situate the evidence presented in the present dissertation, this introduction elaborates on each of the contexts that play a role in the investigation of appetitive aggression. Intersectionality is the construct representing various elements that constitute an individual. A person is born unable to change their race, ethnicity, gender, sexuality and disability status and raised in a family that exists in a specific geographic location, having a certain socioeconomic status, education level and structure. That individual is surrounded by certain religious and political beliefs and is subject to their own personal experiences, perceptions and external changes to any of the above listed elements (Killerman, 2013). Intersectionality encompasses the concept that power relations should be viewed as interactions rather than additive principles (Crenshaw, 1993, 1994). Collins (1998) clarified that “rather than examining gender, race, class and nation as distinctive hierarchies, intersectionality examines how they mutually construct one another” (p.62). Cole (2009) specifies the relevance and utilization of intersectionality specifically within psychological research:

Intersectionality makes plain that gender, race, class, and sexuality simultaneously affect the perceptions, experiences and opportunities of everyone living in a society stratified along these dimensions. To understand any one of these dimensions, psychologists must address them in combination; intersectionality suggests that to focus on a single dimension in the service of parsimony is a kind of false economy. This insight invites researchers to approach the study of social categories with more complexity and suggests ways to bring more nuance and context to their research on the social categories that matter most in a stratified society. (p. 179)

The present dissertation utilizes this advice while constructing an investigation on appetitive aggression that focuses primarily at the axis of gender in one highly intersectional population—female combatants in Burundi.

#### The Context of Gender

Gender, one of the fundamental, unalienable elements of intersectionality, represents the cultural meanings assigned to male and female social categories (Wood & Eagly, 2009). Generally, using the filter of “like me” or “not like me,” most children are able to identify to which group they belong by age two, and by age three, they are able to categorize adults and other children to their gender groups. This categorization process is a crucial element of gender identity, which is in itself the step before the sex typing of behavior (Campbell, 1994). Sex-typed behavior establishes the rules for each gender category; these

rules are learned and culturally reinforced throughout the lifespan in a manner specific to each community and culture.

Embedded with expectations and assumptions, sex typing plays an important role in research as the differences between the sexes have historically been reduced in research to physiological and biochemical differences (Lightdale & Prentice, 1994). For example, brain sexual differentiation traditionally compares reproductively relevant brain structures responding to gonadal hormones that in turn activate sex-specific behaviors. In response, Ritchie et al. (2017) have advised that structural variations observed between male and female brains should not be solely ascribed to biologically determined sex differences and, furthermore, that sociological conditioning components likely to impact brain development are simultaneously at play and often outside of the scope of physiological and neurological investigations. Moreover, despite their findings of globally significant sex differences in cortical thickness, volume, surface area, diffusion parameters, and functional connectivity, they warn that the human brain should not be viewed as sexually dimorphic because, for every brain region in which large sex differences were observed in the stated measures, there was consistent overlap between males and females. Additionally, biological sex has been shown to interact with environmental, developmental and genetic factors that impact brain development, findings that have led Joel & Fausto-Sterling (2016) to assert that human brains should not be considered as distinctly male and female populations but rather as a single heterogeneous population in which sex effects should be evaluated in context. Moreover, McCarthey & Konkle (2005) make the case that sex dimorphisms are not tantamount to sex differences and that finding sex similarities is just as valuable as sex differences especially with regard to biological, sociological and cultural frameworks, stating that: "Understanding how the sexes are the same is just as important as how they differ, but the latter receives far less attention and little value as a genuine scientific finding. The imperativeness of equalizing the focus between same-sexness and sex-differences is self evident in the use of biological arguments to justify social inequities. . . ." (p.98). A point of contention, scientific research is wrought with accusations of frequent attempts to interpret women's social roles as being biologically or genetically determined and that behavior found to be sex-linked is often analyzed in such a manner that is disadvantageous to women (Richardson, 2013)". Aggression research faces similar challenges, predominantly highlighting sex differences in aggression, while the budding field of appetitive aggression research has to date largely avoided women's experiences overall. Although some similarities are conceded, such as the observation that both sexes are more likely to aggress men than women (Eagly & Steffen; Frodi, Macauley & Thome), there is nonetheless a prevalent understanding that:

. . . males are the more aggressive sex and this sex difference is evident at least as early as the preschool years and continues through the subsequent phases of development, although it may change in form and in the circumstances which

### 1.3 Enjoying Violence: The Role of Appetitive Aggression

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trigger it. We also believe that it is highly likely that there is a biological component underlying the sex difference, although aggression, like all behavior, is subject to social shaping and undergoes successive modifications through learning. (Maccoby & Jacklin, 1980. p. 1)

Furthermore, Archer (2004) offered a meta-analytic review of 78 studies that revealed robust differences in physical aggression between males and females, with males being found to be more aggressive. This finding continues to be utilized to support the general notion of males as the more aggressive sex and thereby inherent is the assumption that females are less vulnerable to aggressive impulses and/or behavior. However, in the same moment that males are being identified as more aggressive, the discrepancies in this generalization immediately begin to unfurl. For example, Lansford (2016) summarized the aforementioned sex differences as traversing:

age, cultural background or even species. Likewise, males had higher mean levels of verbal aggression than females. Gender differences in indirect aggression were less consistent. Averaged across age, females exhibit more indirect aggression than males when assessed using some methods (e.g. observations, peer ratings, teacher reports) but not others (e.g. peer nominations, self reports); effect sizes for these gender differences were small to medium. (p. 62)

The conflation of gender, sex, and species aside, Lansford's summary serves to perpetuate the initial findings from Archer that males are clearly the more aggressive sex, while simultaneously highlighting the various expressions of aggression, some of which, in this case indirect aggression, as being employed more regularly by females than males. While the research is clear is that, when measuring direct aggression in certain contexts, there is a clear finding that males might utilize it more often than females. However, this finding alone does not signify males as the more aggressive sex in general, but rather can suggest that individuals may demonstrate sex differences in the expression of aggression depending on context.

Björkqvist et al. (1994) disputes generalizations that males are more aggressive than females and goes on to explain that this generalization is the product of prior reductive classifications and operationalizations, and it specifically errs in its isolationist focus on physical aggression. Other researchers agree that aggression as expressed by males and females not only varies situationally (Frodi et al., 1977) but also that sex differences account for as little as 5% of the variation in aggression, while 95% is accounted for as within gender variation or chance (Hyde, 1984). Campbell (2009) confronts sex-difference generalizations by highlighting a need to disentangle aggression into its various expressions by identifying candidate psychological mediators. When specifically considering appetitive aggression research, the very foundations of Nell's (2006) conceptualization of blood lust are considered as an inherently male phenomenon. And while there is openness by appetitive aggression

researchers to consider reactive-impulsive forms of aggression to be equally experienced by males and females (Elbert et al., 2010), there is a demonstrable leaning towards human hunting behavior as being especially reserved for the male experience (Jones, 2008). For example, Weierstall et al. (2011) demonstrated that men rated violent acts more positively than women, a finding that supports the consensus that males are genetically predisposed to be attracted to aggression.

In an effort to either validate or repudiate the previous findings and simultaneously examine appetitive aggression with respect to the overarching contexts in which it is experienced, the investigations presented in this dissertation investigated women and their personal experiences with experienced and perpetrated aggression in a context of armed conflict and with sanctioned and unsanctioned aggression in a civilian sporting context.

### **1.3.2 The Context of Combat**

In terms of both frequency and intensity of violence exposure, individuals raised in peaceful societies have an obviously different experience of violence compared to those raised in areas in conflict or war. And within the communities ravaged by the threats and damages of armed conflict, there are both civilian and combatant experiences of that conflict. Civilians living in war zones are exposed to life threats directly related to the conflict and simultaneously the threats stemming from the instability created by the conflict, i.e. scarce resources, looting, lack of medical care. Dynamically vulnerable, they are at an increased risk for a rapid accumulation of numerous traumatic experiences in a small period of time that feed directly into the “building block effect” leading to PTSD. Furthermore, high exposure to violence by individuals then likely results in increases in family and community violence in interactive and complex patterns (Catani et al., 2008; Elbert et al., 2006; Weaver et al., 2008, Widom, 1989). Exposure to violence in war has been correlated with increased impulsive aggression toward intimate partners (Byrne & Riggs, 1996) and the amount of violence inflicted on children in their families (Catani et al., 2008). Parallel to the civilian uptick in violence, the combatants endure their own specific experience of the conflict.

The experience of aggression in combatants and soldiers is markedly different than that of the civilians. Combatants juggle the formal obligation of functioning as a perpetrator and the misfortune of surviving violence as a victim, both on and off the battlefield. Indeed, war-related PTSD has been identified in conjunction with violent behavior following deployment (MacManus et al., 2013; Orcutt, King, & King, 2003). In addition to a similarly increased risk of PTSD, the frequently observed comorbid conditions associated with PTSD, such as depression, suicidality and substance abuse, have been identified in both formal military (Ginzburg, Ein-Dor, & Solomon, 2010; Hendin, & Haas, 1991; Keane & Kaloupek, 1997; Seal et al., 2011) and East-African former combatants (Klasen et al., 2010; Köbach et al., 2014; Odenwald et al., 2009; Pfeiffer & Elbert, 2011; Pham, Vinck, & Stover, 2009) populations. In juxtaposition, however, combatants’ trajectory towards

### 1.3 Enjoying Violence: The Role of Appetitive Aggression

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PTSD diverges from that of civilians, like due to their experience of violence perpetration. For example, former child soldiers reported low levels of trauma symptomology (Bayer et al., 2007; Pfeiffer & Elbert, 2011). Furthermore in studies with other combatants, while a correlation between PTSD symptom severity and traumatic experiences incurred during civilian life could be found, the same building block effect was not observed for their experiences during their stints as combatants (Elbert et al., 2010). Additionally, the more violence exposure both on and off the battlefield, the more types of violence perpetrated by child soldiers (Weierstall et al., 2012).

Combatants of various conflict areas have demonstrated extensive appetitive aggression that is strongly associated with violent perpetration (e.g., Weierstall et al., 2013; Weierstall, Schalinski, Crombach, Hecker, & Elbert, 2012). For example, some veterans from the Vietnam War described the desire for continued combat as resembling addiction. They explained that “combat high” is like an “injection of morphine – you float around, laughing, joking, having a great time, totally oblivious to the dangers around you” and that it “surely will get you killed” because “like any addict you will get desperate and will do anything to get your fix” (Grossman, 1995, p. 243). Combatants were specifically trained to employ violence during conflict, often with dehumanization (Staub, 2006) and initiation rites that sometimes include killing relatives (Amone-P’Olak, 2004). The process of both unlearning the training and healing from the violence experienced and perpetrated remain formidable challenges for combatants transitioning back to civilian status at the conclusion of the conflict.

In juxtaposition to the “survival mode” associated with PTSD (Chemtob et al., 1997; Chemtob et al., 1988), there is an “aggressor mode” associated with appetitive aggression (Elbert et al., 2010). Ideally, aggressor mode is turned off upon the return to civilian life. However it is possible that even everyday salient cues can reactivate the positive emotions tied to the perpetration of violence and can lead to an unintended return to aggressor mode. The resulting aggressive outbursts are unsuitable for civilian life, leading some combatants to actively seek out opportunities for violence. Following disarmament and demobilization, countries often attempt to re-stabilize their communities by implementing integration programs of ex-combatants and child soldiers into civil society (Annan, Brier, & Aryemo, 2009; Kingma, 1997; McMullin, 2004). Reintegration programs face numerous challenges related to mental health and aggression (Annan et al., 2009). Difficulties concentrating, flashbacks, sleep problems, hyperarousal and other PTSD symptoms manifesting during reintegration efforts result in impaired functioning that lead to an increased drop-out rate (Betancourt, Simmons, Borisova, & Brewer, 2008; Mogapi, 2004). Similarly, aggressive behavior fueling interpersonal problems has been associated with reintegration program discontinuation (Boyden, 2003), which in turn places former combatants at higher risk for subsequent violent and delinquent behavior (Stott, 2009). Another element possibly contributing to program drop-out is related to the lack of

therapeutic interventions specifically targeting the appetitive aggression experienced by many of the combatants (Weierstall & Elbert, 2011). Current reintegration programs need to address both mental health and aggression (Hill & Langholtz, 2003) in order to provide closure and assist the transition in self-image from combatant to civilian (Boyden, 2003; Williamson, 2006).

### **The Combat Context in the Region of Burundi**

There are countless crisis regions in the world, and the research in this dissertation specifically investigated combatants, veterans and civilians in Burundi. Burundi is located in the Great Lakes region of Central Africa, an area that has endured numerous waves of extreme violence. Burundi is neighbored by Rwanda, Uganda and the Democratic Republic of the Congo (DRC), and together these countries provide a bloody backdrop serving as the historic and cultural context for all the local inhabitants.

Rwanda saw 80,000 individuals murdered in 3 months- one of the swiftest genocides in human history (Hatzfeld, 2004; Zimbardo, 2008). One study in Rwanda demonstrated that genocide perpetrators found the violence itself to be rewarding (Weierstall et al., 2011), findings that support hypotheses that, in the absence of societally imposed moral pressures or legal regulations, humans can enjoy cruelty (Nell, 2006). This study, the first empirical evidence of perpetrators specifically enjoying the violent cue of a victim's struggle, also demonstrated that the more violence perpetrated, the higher levels of appetitive aggression observed. These crucially groundbreaking results were later replicated in former combatants in Colombia (Weierstall, Bueno Castellanos, Neuner, & Elbert, 2013). Studies with former child soldiers and war affected youth in Uganda identified perpetrated violence as the best and only significant predictor of appetitive aggression in former child soldiers (Crombach et al., 2013; Weierstall et al., 2012), a finding later replicated in more than 1,600 former combatants and child soldiers around the world (Weierstall & Elbert, 2011). Later, also in Uganda, individually perpetrated violence was again closely associated with appetitive aggression, however this time with higher levels of appetitive aggression being associated with military rank (Crombach et al., 2013), which can also be viewed as the reward of higher social status for those demonstrating more cruelty and violence, particularly in communities functioning within a conflict zone. Concordantly, a study with former child soldiers in the DRC concluded that appetitive aggression seems to be advantageous for survival in a violent environment such as an armed group (Weierstall, Banholzer, Haer, & Elbert, in press). Furthermore, the study revealed that those former child soldiers who joined the armed group voluntarily and were not forcibly recruited, were more likely to report high levels of appetitive aggression. This supports the idea that humans, particularly men, have an innate appetite for aggression and violence (Elbert et al., 2010; Jones, 2008; Nell, 2006). In a violent environment of war and conflict this appetite may facilitate the voluntary enlistment to an armed group.

Burundi itself has a long history of civil war. Over 300,000 people, mostly civilians, were killed during ethnic conflicts between Tutsi armies and Hutu rebels in 1993 (Uvin, 2009). Burundi continues its attempt to recover from its bloody history, and this struggle is evident in current high rates of violence and political unrest (Human Rights Watch, 2002). These struggles are complicated by an attempted coup in 2015 that added yet more bloodshed to the already poor living conditions of Burundi's civilians (World Bank, 2015). The Burundian army and rebel forces typically consist of male fighters, however it is now clear that many females also served. Initially recruited for supporting responsibilities such as couriers and cooks, as well as for forced marriages and other sexual roles (Schauer & Elbert, 2010), many females went on to participate directly in the violence, sometimes even advancing in rank. Once having achieved sufficient rank, these female combatants experienced and perpetrated levels of violence on par with that of their male comrades. As mentioned, to date, not much research has focused on female combatants to clarify whether the research about the impact of extreme violence encompasses female soldiers in a manner similar to that of the males.

#### 1.3.3 The Context of Civil Society

Outside of combat and war, most societies discourage the use of direct forms of aggression. Typically, peaceful societies impose moral standards, social customs and laws to discourage violence (Elbert et al., 2010). Humans are biologically predisposed away from extreme violence due to control mechanisms in the frontal lobe that inhibit intra-species violence (Kelly, 2005); Nelson & Trainor, 2007). However, as mentioned above, violence is not limited to the battlefield but finds a mosaic of forms that impact individuals, families and communities. Due to many societies not condoning the use of violence, individuals and groups of individuals find more covert ways to express their aggression, whether it be limiting it to inside the home as is the case for much of interpersonal violence or utilizing indirect forms of aggression that are less obvious for detection. This dissertation explores the experience of appetitive aggression within the civilian context of sport, an area that has already been described as analogous to the context of combat (Gill, 1993).

The aggression of the battlefield as studied in clinical psychology is analogous to what is described as motivation on the sporting field. For example, higher performance level of athletes is associated with fewer thoughts experienced during a contest (Williams & Krane, 1998). Similar to the high described by soldiers, athletes also report feeling strong, sure of victory, like "a tiger" (Robazza, Bortoli, & Hanin, 2004; Ruiz & Hanin, 2004). Athletes also describe experiences of "flow" in which elements outside of the contest are blocked out (Kowal & Fortier, 1999; Jackson & Eklund, 2002), a state similar to the intense focus reported by combatants. Finally, individuals performing in armed groups share some similarities with individuals performing on competitive, high contact sports teams in their group cohesion (Kleinknecht, Kleinert & Ohlert, 2014). In direct comparison with

appetitive aggression, some athletes even report the desire of defeating the opponent being so great that they ignore fair or sanctioned play in order to display aggression (Kavussanu & Ntoumanis, 2003; Ryska, 2003). The final investigation in the present dissertation examines appetitive aggression, termed appetitive competition motivation (ACM) in the civilian sporting context, as experienced by high level, female athletes performing in the high-contact, team sport of football. ACM is then examined in the intersectional context of gender, specifically gender socialization and role modeling.

## 1.4 Rationale of the Present Dissertation

Aggression has a mosaic of forms with the particular manifestations and motivations for the varieties of aggression being diverse. Each individual's understanding and expression of their own aggression and that of others is highly intersectional, dependent on the context of their own environments, bodies and minds. The founding researchers of appetitive aggression have also recognized this intersectionality in their calls for numerous disciplines, such as social and political science as well as forensic and clinical psychology and psychiatry, to recognize the significant impact of appetitively aggressive behavior on individuals and society overall (Elbert, Weierstall & Schauer, 2010). This dissertation transitions from contexts of war and organized violence to sanctioned expressions of aggression in civil society while investigating one experience of aggression- the appetitive form- at the intersection of gender.

The goal of this dissertation is to disentangle the juxtaposition between perpetrators and victims by tackling the motivations for exhibiting proactive forms of aggression and simultaneously focusing on females, the half of the population less frequently investigated in aggression research. The cycle of violence will persist as long as a perpetrator-victim binary remains undisturbed. While this black and white model might be perceived as more manageable, this binary is an oversimplification of the ways in which individuals are exposed to, experience and process violence, neglecting the nuances fueling the cycle of violence. Furthermore similarly reductionistic operationalizations in other areas of aggression research such as sex differences are simultaneously applied: from perpetrators and victims to males and females, there is a desire to keep the categories neatly proactively violent versus proactively nonviolent. And in the same way that feminist social scientists aired their concerns that scientific sex difference conclusions often serve to further disadvantage females, perhaps inversely and in parallel, are perpetrators and victims respectively further disserved through the dismissal of their mosaic of aggressive experiences and expressions.

For example, the fear and hunting networks are not binary but rather constitute a dualistic system for processing violence, and a similarly dualistic model needs to be extended to individuals processing exposure to violence as means to explain what fuels the cycle of violence. Victimization is often dismissed as "bad luck" or "the wrong place at

## 1.4 Rationale of the Present Dissertation

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the wrong time.” These explanations seem more palatable than the complex responsibility involved in considering that, rather than a cycle of violence, it is a system of violence at work. Following this logic, if systems of violence are to blame, then there would be hierarchies of groups and individuals implementing such systems. These hierarchies would thereby require acknowledgment and confrontation- putting even observers at risk of also being swept up in the victimization machine, possibly accounting for a general reservation to holistically examine the system of violence in the first place. However, if the entities organizing and fueling the system of violence are targeted rather than the lower level perpetrators receiving the brunt of blame and punishment, a reduction in overall violence is more tangible than when solutions are left to chance.

While these systemic underpinnings of persistent violence serve only as conjecture at this point, they serve as theoretical framework behind the work involved in the present dissertation. By shining light on a tiny portion of the entire network of worldwide violence and aggression, hopefully are other researchers similarly encouraged to holistically investigate the roots of violence by second-guessing their own assumptions and investing time with populations previously overlooked. Overall, this work intends to add to the case that the “cycle of violence” will be eventually recognized as a misnomer representing a much more complicated and foreboding “system of violence.” The transition from the cycle to system is bridged by the suggestion offered in the present dissertation to a model of cycles of violence. (See Figure 1.4)

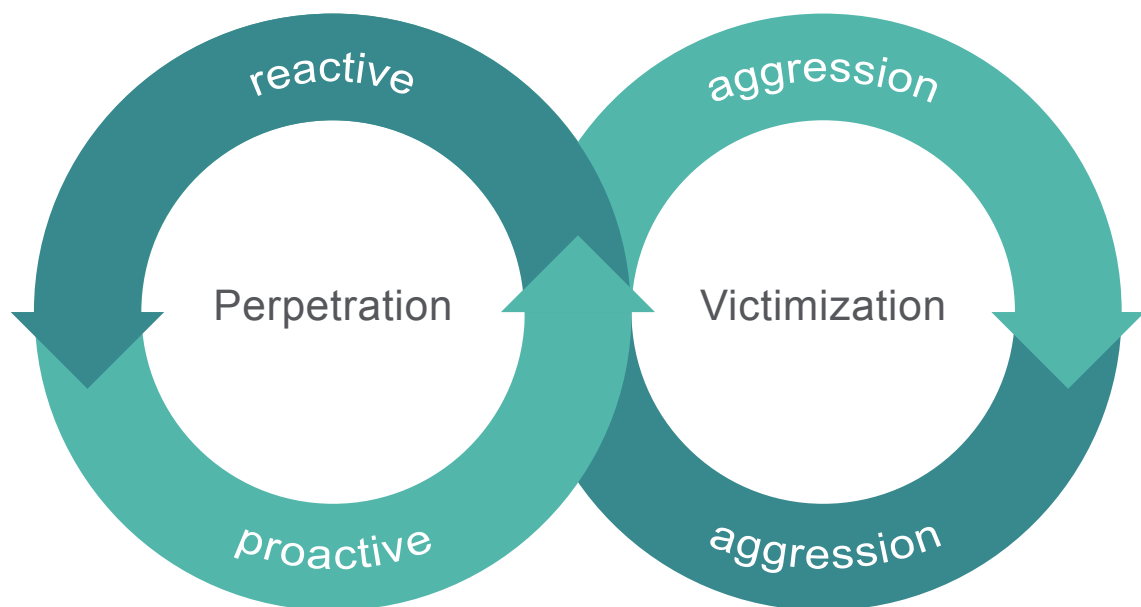


Figure 1.4: The Cycles of Violence. This model shifts the focus from violence to aggression, reflecting the model transition from outcomes to motivators. Here, perpetrators and victims are not binarily juxtaposed but rather two dualistic roles situated in a closely intertwined relationship functioning in a context of violence.

The articles and studies offered in this dissertation address the following research topics:

1. Deconstructing the binary: How is the perpetrator-victim binary conceptualized in the current “cycle of violence” model, and does this model hold up in light of current observations about the transmission of violence?
2. Investigating assumptions associated with the current perpetrator-victim binary model: Do males and females experience appetitive aggression differently, how does context impact individual relationships with proactive forms of aggression, and what do such findings suggest about the current model of the cycle of violence?

The first paper uses the topic of Torture as a first step to define the perpetrator/victim binary. The second paper examines this binary by comparing male and female combatants and civilians in Burundi and their experiences of appetitive aggression. The third paper begins to disentangle the perpetrator-victim binary by delving deeper into what factors play a role in the development of appetitive aggression in male and female combatants in Burundi, highlighting the intricately intertwined relationship many individuals have with violence. The fourth paper examines the same relationship between violence experienced and violence perpetrated while focusing exclusively in female combatants and civilians. The fifth and final paper transitions the investigation of appetitive aggression from the conflict region of Burundi to a civilian context in Germany and examines appetitive competition motivation in high level, high contact sports, simultaneously considering the effect gender-identity and other socialization factors. These investigations combine to provide evidence that the current perpetrator-victim binary narrative does not adequately address the reality of individuals involved in the system of violence. The case is made that not only should individuals having perpetrated violence be holistically evaluated with respect to their experiences as victims, but also that individuals who perpetrate violence should be examined in all of their diversity, regardless of where they lie on the biological sex and gender spectrums and in light of their own individual experiences with violence and aggression.



CHAPTER **2** 

**Torture and its Consequences,  
Psychology of.**

## 2.1 Abstract

Torture is utilized around the world to intimidate and punish individuals. The psychological damage created by torture has far-reaching effects on both the victim and the perpetrator. The extreme trauma leads to numerous mental health and behavioral complications, such as post-traumatic stress disorder, complex post-traumatic stress disorder, depression, anxiety, and addiction. Some individuals even report being fascinated by the violence, exhibiting appetitively aggressive behavior. Narrative exposure therapy and narrative exposure therapy for forensic offender rehabilitation are two mental health interventions designed to treat both torture victims and perpetrators, respectively, and assist in the reintegration process into society.

Key Words: Aggression, Appetitive Aggression, CPTSD, Narrative Exposure Therapy (NET), Narrative Exposure Therapy for Forensic Offender Rehabilitation (FORNET), Perpetrator, PTSD, Torture, Trauma, Victim

## 2.2 Introduction

Internationally, the currently utilized, institutional definition of torture provided by the United Nations Convention Against Torture delineates a top-down politicized act in which one person, under the acquiescence of governing authorities, intentionally inflicts severe pain or suffering on another with the objective of obtaining information, inflicting punishment or discriminating via intimidation. The definition concludes by emphasizing in Article 1, Section 1 that torture “does not include pain or suffering arising only from, inherent in or incidental to lawful sanctions” (United Nations, 1984). Specifically, demarcating torture as an event that occurs only outside of ‘lawful sanctions’ perilously politicizes the human experience of torture as an issue isolated to distant lands and cultures beyond the scope of Western legal standards. And when it does occur in the West, for instance, in prisons such as Guantanamo Bay, the torture practices utilized are neatly renamed interrogation techniques, and laws are shifted to redefine such practices within the requirements of legal sanction. In juxtaposition to popular thought, torture is far from being isolated to remote crisis regions or Western prisons detaining the terrorists stemming from those crisis regions. Torture is reported in numerous countries around the world (Amnesty International, 2013) and effectively establishes a feeling of fear, horror, and intimidation in the population at large.

Conceived in 1984, this outdated, sterilized definition is structured politically and omits the wide array of experiences and individual motivations of both the victim and the torturer. Unfortunately, torture is an event that is neither so simple nor so distant. From an educated, highly trained top-level government interrogator to an orphaned, hungry, child soldier in a rebel group to a gang member having caught a member from the rival gang,

the varieties in the purpose of torture and how it is administered go as far as the limits of human creativity. Torture is as ubiquitous as people and as complex as the labyrinth of physiological and psychological mechanisms that constitute the human experience. A more comprehensive understanding of torture involves investigating both the neurological and the mental health underpinnings at the individual level of both the victim and perpetrator.

### **2.3 The Torture Victim: Experience and Consequences**

A victim of torture can be forced to endure a wide array of terrifyingly painful physical and mental suffering. From extreme isolation, sleep deprivation, and highly uncomfortable sitting and standing positions to starvation, waterboarding, electric shock, limb removal, and fake executions, the victim never knows when the current treatment will end or what to expect next. Unable to escape, the victim reacts to the threatening stress of torture with a series of functionally distinct psychophysiological responses that operate as a defense cascade. This defense cascade follows the order of freeze-flight-fight-fright-flag-faint (see Figure 2.1; Schauer and Elbert, 2010). Initially freezing, the individual senses a threat, stops moving in an attempt to remain undetected, and increases attention. If the threat increases, the individual moves into flight or fight mode to protect oneself. Fight or flight mode increases sympathetic activation, thus enabling physiological reactions, such as tachycardia and peripheral vasoconstriction to minimize bleeding. Fear, but also anger and rage, enable the individual to fight back. The final stages of the defense cascade function to cope with situations in which the threat is overwhelming, fighting is useless, and the organism can only minimize damage. The individual becomes motionless, with motor paralysis, sensory deafferentation, and dissociative psychological conditions that range all the way up to a complete shutdown (Schauer and Elbert, 2010; Bracha, 2004; Bovin et al., 2008; Fusé et al., 2007). In trauma situations involving physical fighting and self-defense, the earlier phases of the defense cascade may be activated, while in situations in which the victim is overpowered, such as with torture or rape, the later phases are activated.

Typically, for non-traumatic memories, the initial sensory, emotional, physiological, and cognitive concomitants of an event, the ‘hot memories,’ gradually become integrated into declarative or ‘cold’ memory temporal context, can be recalled consciously and consequently are perceived as memories (Brewin et al., 1996, 2010; Brewin, 2011; Elbert and Schauer, 2002; Schauer et al., 2011). For example, when an adult recalls happily holding a puppy, the individual simultaneously remembers that the puppy was a gift, it was summer time, and family members except for the unborn younger brother were present, and thereby it occurred at the person’s fifth birthday party.

Traumatic memories, however, function differently. The hot memories of traumatic events are so overwhelming that they do not consolidate with the cold memory temporal and spatial context (Brewin et al., 2010; Brewin, 2011). These experiences remain

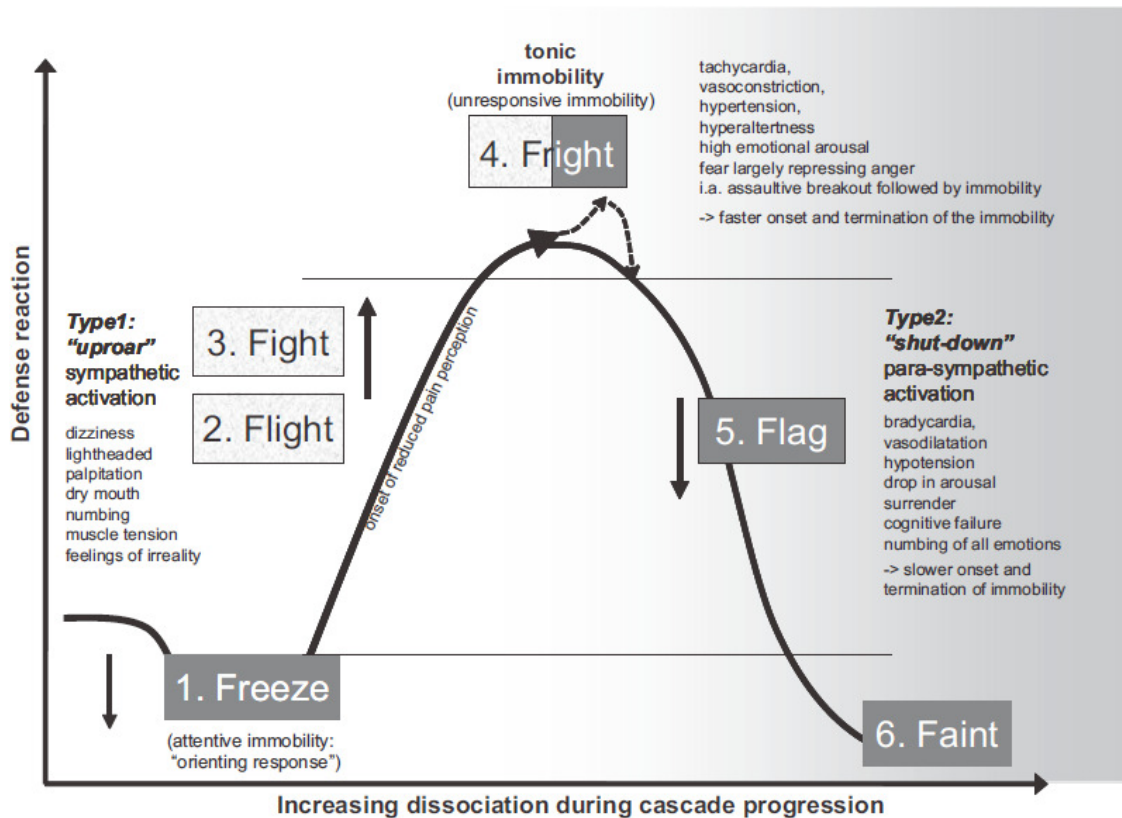


Figure 2.1: Schematic illustration of the defense cascade as it progresses along the 6-F course of action. The “uproar” sympathetic arousal reaches a maximum at the fright stage, eventually superseded by the onset of dissociative “shutdown” (gray area). From Schauer & Elbert, 2010.

separate from autobiographical memory but still manifest themselves as vivid intrusions and nightmares. They seem to be lurking in the mind, and on the cue of the slightest, perhaps even unrecognizable, reminder of the trauma, they spring to the surface of the survivor’s awareness. The sight of an officer’s uniform, the sound of extremely loud heavy metal music, or the sensation of being under water at a swimming pool can reactivate the chain of connected associations that compose the hot memory, and the person perceives that he or she is once again in the torture situation. In such situations, although the survivor physically is located in the present, he or she remains mentally and psychologically situated in the past, in a network of experiences that never have been assigned the proper place and time (Brewin, 2011; Schauer et al., 2011). The most characteristic symptom of trauma disorders is this intense reliving of these experiences as though they currently are happening, rather than being a part of a memory from the past (see Figure 2.2). When the torture survivor is suddenly in a situation with hot memory cues and the body begins to react as though the traumatic event is occurring in that moment, panic, horror, or dissociative responses set in (Elbert et al., 2011). At the initial stages of the defense

cascade, the events are vividly present in all their components: sensory (smell of blood), physiological (heart racing, shortness of breath), emotional (terror), and cognitions ('I'm going to die') (Schauer et al., 2011). The cold memory historical context placing the prior traumatic events in the correct time and space is missing, rendering the survivor seemingly defenseless to the physiological reactions to the perceived stress (see Figure 2.2). Torture survivors may have learned to rather rapidly switch to the later stages of the defense cascade, where dissociation sets in and current sensory information is gated and perceived as distant and unreal. Intrusions therefore can be understood as repetitive displays of parts or fragments of the event, which then elicit a corresponding combination of hyperarousal and dissociation, depending on the dominant physiological responding during the torture situations. Subsequent trauma-related disorders, such as post-traumatic stress disorder (PTSD) and other forms of disorders of extreme stress, represent the chronic reactivation of these defense cascade reactions (Elbert et al., 2011).

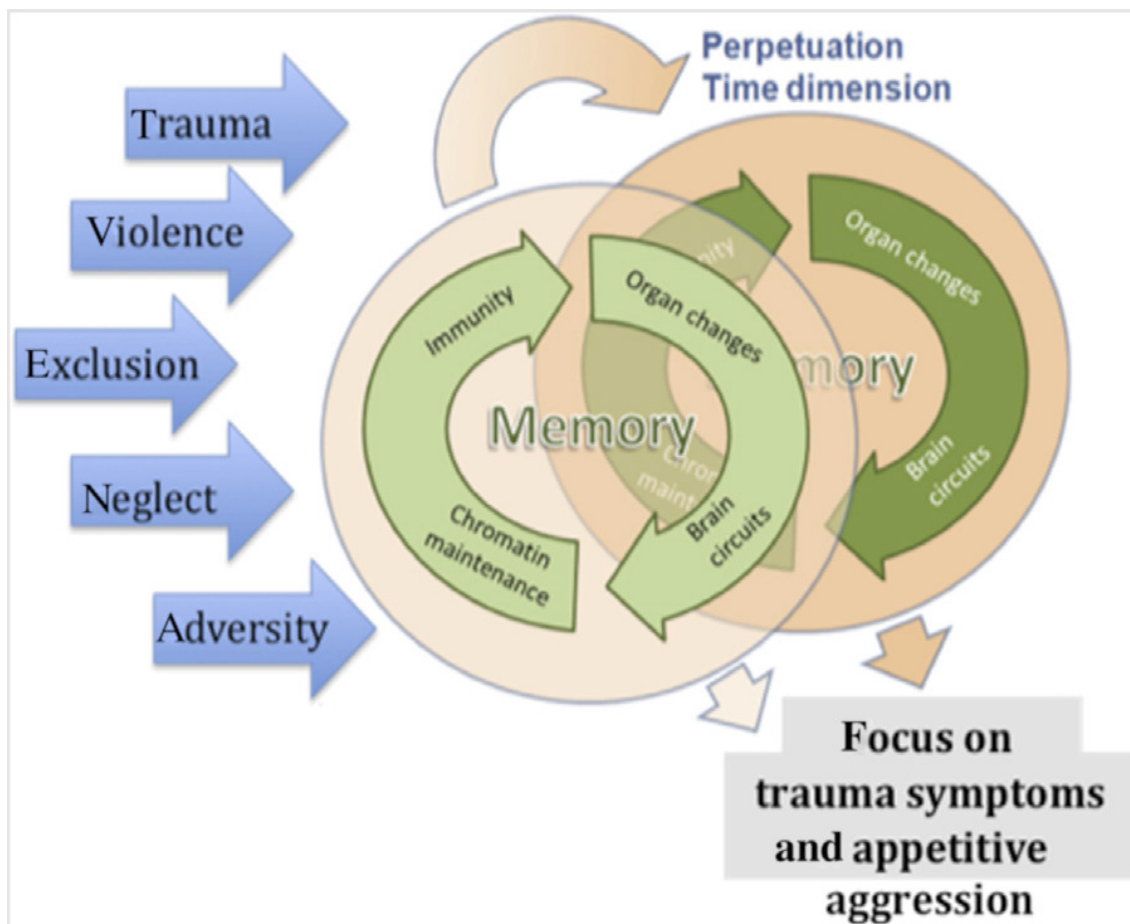


Figure 2.2: Multiple adversities affect a dynamic, self-organizing system that may continue to change, i.e., driven to a different system attractor with altered processing dynamics.

PTSD is the most frequently reported consequence of trauma, especially in cases of atrocities perpetrated by human beings (De Jong et al., 2001). PTSD is correlated linearly with traumatic experiences and outlines a type of building block effect for trauma in which each additional traumatic experience is accompanied by an increased likelihood that the individual eventually will develop PTSD (Neuner et al., 2004). It is a condition that occurs when an individual experiences an event that threatened survival or physical integrity. PTSD involves recurrent, disjointed, fragmental memories of the traumatic event, often in the form of flashbacks, that the sufferer strives to avoid, resulting in a hyper-aroused, easily irritated, distracted state. It persists over longer periods of time and can be extremely debilitating in many areas of social and occupational functioning (American Psychiatric Association (DSM-V), 2013). The devastating effects of PTSD dramatically affect the transition of many torture survivors to their homes, and the individuals are markedly different upon return than when they left. Because of coverage by the mainstream media, the public acknowledges that many returning soldiers might contend with PTSD. Research is now beginning to acknowledge that soldiers, especially if they were taken as prisoners, might be dealing with trauma symptomology that affects the very sense of self with an altered personality. The changes are related to macroscopically altered brain function in torture survivors (Elbert et al., 2006, 2011; Ray et al., 2006) and structure (Eckart et al., 2011). Lateral prefrontal, parietal, and posterior midline structures have been implicated in the pathophysiology inflicted by torture (Eckart et al., 2011). As these regions are involved specifically in episodic memory, emotional processing, and executive control, this might have important implications for the understanding of the trauma-related symptoms. Long-term effects on the immune system (Sommershof et al., 2009) and overall physical health also have been noted in those individuals exposed to torture-related stress. Recent work with torture survivors has demonstrated that prolonged adulthood trauma also can result in complex post-traumatic stress disorder (CPTSD) symptoms (McDonnell et al., 2013). CPTSD encompasses all of the symptoms of PTSD and also incorporates the severe personality disorganization that can occur in some individuals following long periods of threat stress (Kolb, 1989). Conventionally, CPTSD has been associated with childhood trauma, however, researchers have shown that repeated and multiple traumatic events during adulthood lead to the breakdown of self-regulatory abilities – even in the absence of childhood trauma (Cloitre et al., 2009). Moreover, CPTSD symptoms are more closely related to the nature of the traumatic event rather than to the developmental stage of the individual at the time of the event (McDonnell et al., 2013). Perhaps the direct link of why CPTSD can occur in adults without childhood abuse owes to the captive nature of torture. Unable to fight or flee, the dissociative states associated with the latter half of the defense cascade, such as voluntary thought suppression, minimization, and denial, engage. These protective mechanisms can result in dissociation, depersonalization, and even changed identity as associated with CPTSD (Hárdi and Kroó, 2011). These responses,

over a prolonged period of time and under various levels of static duress, can manifest in three disorders that are not part of PTSD diagnostic criteria: dissociative identity disorder, borderline personality disorder, and somatization disorder (Herman, 1992). Continued research with survivors of torture demonstrates that we have only begun to recognize the vast array of mental health complications with which torture survivors will have to contend.

Alongside PTSD and CPTSD, numerous comorbid conditions abound. Major Depression, Dysthymia, Phobias, Alcohol and Drug Abuse, and Conduct Disorder are among the most frequently observed disorders comorbid with PTSD (Kessler et al., 1995). Although it is possible for comorbid disorders to occur independently from the traumatic event, the comorbid conditions often are extensions of the PTSD symptomology (Schauer et al., 2011). For example, a torture survivor may just want to avoid thinking about past events by avoiding friends and family and drinking, behaviors possibly leading to a clinical depression or substance abuse diagnosis. Such an individual battling a trauma disorder, depression, and addiction among the various other socioeconomic and political obstacles involved with reintegrating into society would require specific, comprehensive treatment if reintegration to normal life is to be even remotely successful.

## **2.4 The Torture Victim: Narrative Exposure Therapy as a Treatment Option**

Numerous treatment modalities are involved in treating trauma disorders, but few interventions are developed specifically to address the diverse complications of the trauma involved in torture. Narrative exposure therapy (NET) is an evidence-based treatment approach designed to treat survivors of organized violence who have endured multiple or continuous traumatic stressors (Schauer et al., 2011) and has proven effectiveness in torture survivors (Hensel-Dittmann et al., 2011; Neuner et al., 2010) (see Figure 2.3). NET addresses both the personal consequences and the political aspects of organized violence and torture. First, to reduce trauma symptoms, NET utilizes exposure therapy. Patients are confronted with their hot memories of traumatic events as means to connect their current emotional responses to the appropriate place in time from which they originate. Second, in an attempt to organize the fragmented, inconsistent autobiographical cold memories, the patient and therapist work together to reconstruct a consistent narrative of the survivor.

The end goal is stabilized trauma symptomology, improved overall functioning, and a narrative that provides both an autobiographical structure for the survivor and testimonies that prove instrumental in human rights legislation. Evaluations by outside researchers demonstrate that NET is a promising, evidence-based intervention ideal for war-related trauma disorders (Robjant and Fazel, 2010; Crumlish and O'Rourke, 2010; McPherson, 2012). Moreover, NET is a low-cost, relatively short-term intervention and is designed to be

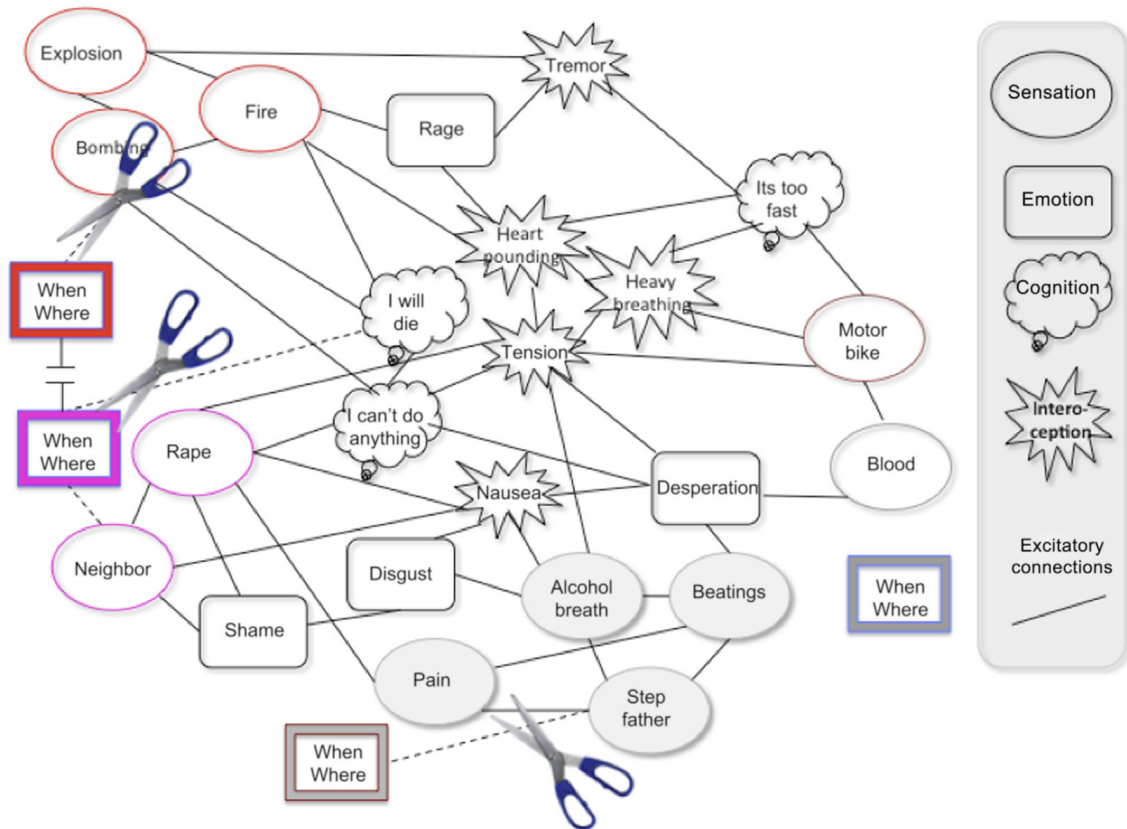


Figure 2.3: A fear/trauma network results from multiple fearful experiences: the representation of a single event may well connect to the context and episode. If, however, the perception cues an already existing trauma network, the context is lost while sensory, cognitive, emotional, and physiological representations interconnect with increasingly mutual excitatory power. The codes of “where” and “when,” however, are not consistently co-activated as the brain’s architecture does not support the simultaneous activation of two different places coded in the hippocampus. Thus the fear/ trauma network becomes disconnected (symbolized by the scissors) from time and place, and the fear generalizes, giving rise to feelings of impending threat. Narrative Exposure Therapy is thought to reverse this process by contextualizing the trauma network. Adapted from Schauer, M., Elbert, T., 2010. Dissociation following traumatic stress. *Zeitschrift für Psychologie/Journal of Psychology* 218 (2), 109–127.

taught to local counselors, making its implementation feasible in most settings, regardless of infrastructure and access to resources (Jacob et al., in press).

***Restructuring traumatic memories: Narrative Exposure Therapy (NET)*** Based on the model presented in Figure 3, Schauer, Neuner and Elbert have developed the psychotherapy NET (2<sup>nd</sup> edition of the manual Schauer, Neuner & Elbert, 2011).

In NET, the patient, with the assistance of the therapist, constructs a chronological narrative of her/his life story with a focus on the traumatic experiences. Fragmented reports of the traumatic experiences will be transformed into a coherent narrative. Empathic understanding, active listening, congruency and unconditional positive regard are key components of the therapist's behavior. For traumatic stress experiences the therapist asks in detail for emotions, cognitions, sensory information and physiological responses and probes for respective observations. The patient is encouraged to relive these experiences while narrating without losing the connection to the "here and now." Using permanent reminders that the feelings and physiological responses result from memories, the therapist links these memories to episodic facts, i.e., time and place. The imagined exposure to the traumatic memories is not terminated until the related fear presented by the patient demonstrably reduces. In this way, the therapist is supportive yet directive in the elicitation of the narrative in order to counter avoidance and recover the full implicit information of the trauma. At the end of treatment the recorded autobiography may be used for human rights advocacy.

NET has several advantages compared to other treatment approaches. Although the duration of the treatment is short (variants between four and 12 sessions have been tested), the method of narrating the entire life story does not require the patient to select a single traumatic event from their trauma history. Additionally, the fact that the survivor receives a written biography as a result of the treatment has turned out to be a major incentive especially for victims of human rights violations to complete treatment.

Figure 2.4: The therapeutic agents of NET: (1) active chronological reconstruction of all important events of the autobiographic/episodic memory - 'life line approach'; (2) prolonged exposure to the 'hot spots' and full activation of the fear memory in order to modify the emotional network; (3) meaningful linkage and integration of psycho-physiological and somato-sensory responses to the time-, space-, and life-context; (4) the cognitive reevaluation of behavior and patterns, as well as reinterpretation of the meaning-content through reprocessing of negative, fearful, and traumatic events; (5) regaining of survivor's dignity and satisfaction of the need for acknowledgment. Explicit human rights orientation of 'testifying.' Schauer, M., Neuner, F., Elbert, T., 2011. Narrative Exposure Therapy, second ed. Hogrefe & Huber, Göttingen.

After considering the mental health implications and suitable treatment options for the victim of torture, the journey to alleviate the consequences of and even to prevent torture is far from over. To prevent torture, we need to better understand not only the systems behind it but also the individuals perpetrating torture (i.e., their motivations, mental health, and rehabilitation options). Most research on torture largely focuses on understanding and treating the victim, all the while neglecting the mental health needs and rehabilitation of the perpetrator. Unfortunately, there is very little quantitative research on torturers themselves. Because all torturers are humans with brains and minds, and many are combatants with the specific task of torturing captives, combatant research and general neurological studies are the primary available data sources from which to draw.

## 2.5 The Torturer: Motivation

What motivates an individual to participate in torture? Perhaps some of the most informative clues about what motivates individuals lie in the overarching systems of torture training and implementation. One source of such training is in military organizations. Governments and militaries bear the burden of maintaining some semblance of transparency and accountability for their actions – for example, when a regime is accused of crimes against humanity, such as torture, they are required to provide a defense or explanation for such actions. One of the most prevailing rationales motivating the perpetration of torture is based on the belief system that torture yields accurate intelligence.

As mentioned, the United Nations publically lists the obtaining of information or confessions as a goal of torture. However, the objective of gathering intelligence using advanced interrogation techniques, that is, torture, raises red flags due to its stark inconsistency with current neurological research on memory function. O’Mara (2011) asserts that there is a popular belief that extreme stress or torture is an effective way to elicit intentionally withheld information and memories. There is little to no public research on the accuracy of the information that results from torture. If anything, interrogation techniques that involve extreme, consistent, and prolonged stress will achieve compromises in both the memory function and executive function (O’Mara, 2009). In other words, not only is the factual content of the desired intelligence contaminated but also the intention to withhold information is confounded. If stress is to be understood as the foreboding perception that present or future events will be very unpleasant and uncontrollable, and this perception results in heightened excitability in the brain and body (Kim and Diamond, 2002), torture can be categorized as an ultimate form of stress – both in intensity (consistent and overwhelming life threat) and duration (often 6 months or longer (O’Mara, 2011)).

The ultimate form of stress involved in torture has a significant neurological impact. The hippocampus and prefrontal cortex are the signature regions of the brain essential for normal memory function, and when they function improperly, as when under extreme stress, memory can be impaired (see Figure 2.4). When the stress condition persists over a prolonged period of time, normal physiological functioning of the brain regions governing memory is disrupted and can lead to tissue loss (Arnsten, 2009; O’Mara, 2011; Ulrich-Lai and Herman, 2009). For example, the prefrontal cortex becomes hyporesponsive, showing signs of tissue loss, while the hippocampus loses volume and slows in neurogenesis (Roosendaal et al., 2009). These reductive changes in brain structure and function result in conditions less than ideal for an interrogation. Furthermore, a common consequence of frontal lobe disorders like the ones listed earlier is confabulation, the pathological production of false memories (Turner et al., 2007). Confabulation likely would be one of the least desired effects for advanced interrogation sessions as the torturer tries to navigate

around intentional misinformation (lies) and unintentional mistruths (confabulation) to uncover the intentionally withheld truths.

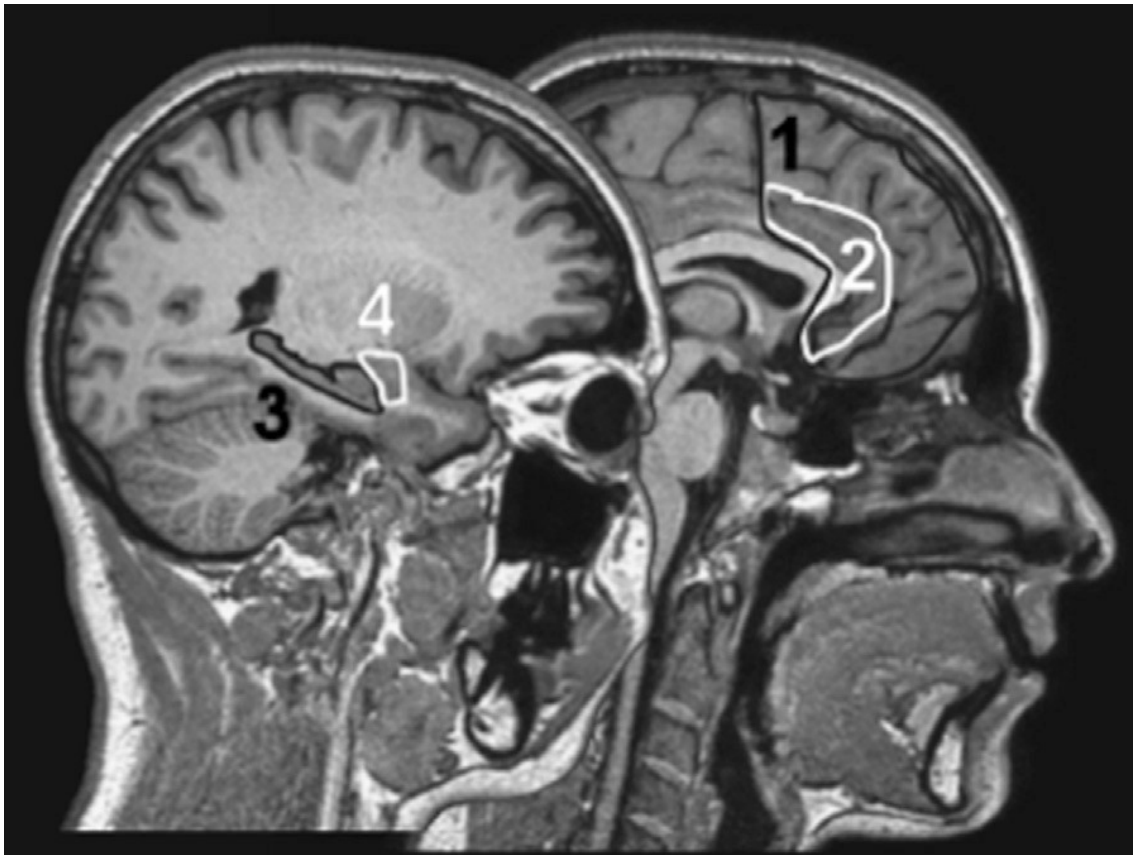


Figure 2.5: Major brain regions associated with PTSD: (1) prefrontal cortex; (2) including the anterior cingulate cortex; (3) hippocampus; (4) amygdala (from Kolassa, I., Elbert, T., 2007. Structural and functional neuroplasticity in relation to traumatic stress. *Current Directions in Psychological Science* 16 (6), 321–325).

In summary, the notion that torture productively elicits accurate information unravels in the face of research on the neurological anomalies that result from prolonged stress. These anomalies evince that prolonged stress would counter-productively yield an indiscernible mix of accurate and inaccurate information. As there is no evidence that torture elicits significant amounts of accurate information and that the extreme stress involved in torture actually could produce false memories and misinformation, torture must persist for reasons other than collecting intelligence. Perhaps the motivation behind the practice of torture is simple: power and control. The obtainment and maintenance of power and control more clearly pertain to the overarching authorities typically seeking to induce horror and intimidation in certain populations like ethnic or religious minorities. At the individual level, the mechanisms behind the transformation of a seemingly average civilian into a

torturer can extend beyond exerting power and control over others so far as to develop a fascination in violent or aggressive behavior.

## 2.6 The Trained Torturer: Experience and Consequences

During a conflict, one group wants to dominate the enemy group, and torture is a clear way to demonstrate power and exert control by instilling fear. The torturer, however, is not a generic embodiment of groupthink. The torturer is a human being, very likely composed of all the same emotions and desires for fulfillment and survival as anyone else. In the same way that the victim adapts to the conditioning involved with torture, most torturers (excluding those who might be considered psychopaths and are not acting as part of a group) are similarly conditioned (Elbert et al., 2010). The individuals who torture others during conflicts most often are not renegade soldiers fulfilling their own malicious desires. The torture they commit is part of the broader goal of the group they represent, that is, a goal to dominate and intimidate. These individuals are carefully selected and trained. They often are given specific orders of what to do and how to do it. They are punished if they do not follow orders. They are cut off from their families and communities, made dependent on their superiors, and given promises of reward and honor. Some combatants who engaged in torture reported being physically abused by their commanders and witnessed public displays of horrifying acts of brutality and cruelty. Others were abused as children and adolescents. The terror of these experiences evolved into submission and desensitization, and cruelty became a passing, trivial act. The elaborate training process of torturers involves deliberately desensitizing the individuals to violence, diminishing the revulsion associated with gruesome acts through violent chants and songs to build camaraderie, and dehumanizing the target through group-specific language to make it easier to maim and kill the enemy (Gibson and Haritos-Fatouros, 1986). These combatants often are not in a position to easily escape their commitments to the group without fear of a fatal reprisal. One of the most terrifying reported developments of some combatants is the gradual shift from violence as not only normal and acceptable but also exciting and a signal of skill (Maclure and Denov, 2006). They are swept up in a cycle of violence in which they have no alternative other than to continue participating in even more atrocities. Trapped, they have to choose between death and a brutal existence in which they will undoubtedly experience a change of their own personality.

The torturer is often a combatant, sometimes with the same general warfare tasks as other soldiers and sometimes with the unique role of torturing captives. Sometimes torture is part of the role for all combatants in a group. For example, combatants from Sierra Leone reported fighting at the frontline, looting, burning villages, and the deliberate killing, maiming, and torturing of civilians (Maclure and Denov, 2006). In the chaos of armed conflict, combatants are often simultaneously both perpetrators and victims of violence

(Betancourt et al., 2010; Maclure and Denov, 2006; Medeiros, 2007; Schauer and Elbert, 2010) and, as a result, can be left to contend with various mental health complications. Substance abuse commonly is documented among torturers (Rayfield, 2007). Additionally, perpetrators are vulnerable to developing PTSD, whether it be due to the traumatic experiences of being a victim (Annan et al., 2009; Elbert et al., 2006) or possibly stemming from the act of killing (MacNair, 2002). In addition to substance abuse and the broad spectrum of complications related to PTSD, combatants also are confronted with new attitudes about violence that could lead to aggressive, antisocial behavior (Elbert et al., 2006; Weierstall and Elbert, 2011).

As mentioned, former combatants report not only acclimating to perpetrating violence but also beginning to perceive violence as fascinating and appealing (Elbert et al., 2010; Maclure and Denov, 2006). They develop the fascination of a hunter— a human hunter (see Figure 2.5). This fascination to violence and aggressive behavior without the benefit of any immediate reward, appetitive aggression, is related to higher rates of perpetrated violence and demonstrates functioning as a buffer against PTSD under certain conditions (Elbert et al., 2010; Hecker et al., 2012; Weierstall et al., 2011, 2012). Although they initially might have been motivated to torture others to fulfill their duties or to preserve their own lives, some torturers have now grown to relish the violence and crave to repeat it for purely hedonistic purposes. The combination of the instability of substance abuse and trauma symptomatology with the relishing of violence in highly trained and experienced combatants sets up an ominous scenario for the communities to which these perpetrators return. Regardless of any public opinion denouncing combatants and torturers as mere animals who had a moral choice and chose wrongly, these individuals are in dire need of mental health rehabilitation and reintegration assistance. How do we untrain the trained torturer?

## **2.7 Untraining the Trained Torturer: FORNET as a Treatment Option**

Following a conflict, perpetrators face numerous challenges to successful reintegration. Effective programs typically offer formal education and vocational training and try to instill hope for the future (Mädl et al., 2010). Unfortunately, trauma symptoms and aggressive behavior can thwart successful attendance, participation, and completion of even the most comprehensive reintegration programs. The effectiveness of NET is not limited to rehabilitating the victims of organized violence. We thus are developing NET for forensic offender rehabilitation (Elbert et al., 2012) that aims to reduce both PTSD symptoms and appetitive aggressive behavior by recalling the experiences, as both victim and perpetrator, through narrative exposure. It helps the former combatant to anchor not only fearful and traumatic experiences but also positive feelings that might have been linked to various

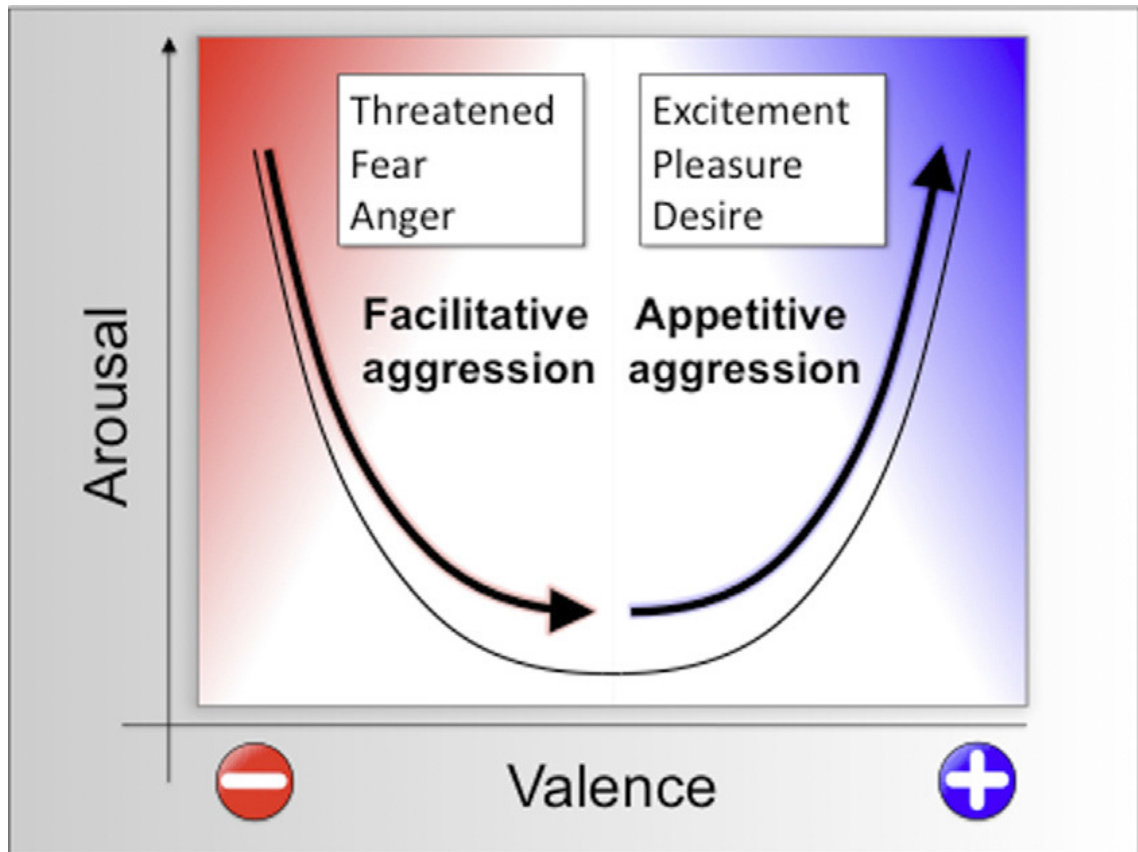


Figure 2.6: Facilitative aggression (reactive) usually associated with anger, encompasses any form of behavior that is directed to fighting another person and intends harm in order to reduce threat and fear, thus reducing the aversive arousing state. Appetitive aggression (predatory) also aims at harming others, however, the goal is to achieve a rewarding state which can result from the gains, but also simply from a 'desire' to hunt (from Weierstall, R., Elbert, T., 2011. The appetitive aggression scale. *European Journal of Psychotraumatology* 2, 8430. <http://dx.doi.org/10.3402/ejpt.v2i0.8430>).

forms of aggressive behavior in the past. The role change from a combatant to a civilian is addressed specifically and reinforced. Additionally, visions for the future are developed to foster successful integration into society. Although there are early FORNET pilot trials (Hermenau et al., 2013), future studies need to focus on whether survivors on both sides of this cycle of violence can profit from evidence-based methods.

## 2.8 Conclusion and Future Directions

The concept of torture needs to be updated continually by neurological and psychological research and broadened to encompass the myriad of motivations and consequences of torture for all affected parties – victim and perpetrator alike. Torture utilizes tactics on a wide spectrum of violence: from directly aggressive techniques, such as beatings, limb removal, and waterboarding, to more indirect forms of aggression, including threatening or kidnapping family members and extreme periods of isolation. Regardless of the technique utilized, neurocognitively speaking, pain is pain, whether it is physical or social pain (Eisenberger et al., 2003).

One common, current justification for subjecting individuals to such pain involves the reasoning that accurate intelligence is procured through torture. Further neurological and psychological empirical investigations will help to expose the sinister and hedonistic motivations behind why torture persists: motivations that likely have little to do with gathering intelligence and a great deal to do with punishment and intimidation. Using research to inform and update international standards is a solid and necessary means of generating human right's improvements on the topic of torture. Furthermore, expanding the understanding of tyranny of torture beyond an event situationally and geographically specific to soldiers and prisoners in military conflicts tucked away in war-torn regions will acknowledge the needs of countless individuals coming off of less obvious battlefields. The sooner there is more widespread, official recognition of the intricate mosaic of factors that both motivate and result from torture, the sooner clinical treatment can be further empirically researched, funded, and implemented.



CHAPTER **3**

**Appetitive Aggression in Women:  
Comparing Male and Female War  
Combatants**

### **3.1 Abstract**

Appetitive aggression refers to positive feelings being associated with the perpetration of violent behavior and has been shown to provide resilience against the development of PTSD in combatants returning from the battlefield. Until this point, appetitive aggression has been primarily researched in males. This study investigates appetitive aggression in females. Female and male combatants and civilians from Burundi were assessed for levels of appetitive aggression. In contrast to non-combatants, no sex difference in appetitive aggression could be detected for combatants. Furthermore, each of the female and male combatant groups displayed substantially higher levels of appetitive aggression than each of the male and female civilian control groups. This study demonstrates that in violent contexts, such as armed conflict, in which individuals perpetrate numerous aggressive acts against others, the likelihood for an experience of appetitive aggression increases- regardless of whether the individuals are male or female.

Keywords: appetitive aggression, sex differences, female combatants, armed conflicts, Burundi, female perpetrators, female aggression, combat stress

### **3.2 Introduction**

Following armed conflict and war, each affected society faces a myriad of challenges to efforts at healing and rebuilding. Considering the psychological well-being of the individuals impacted by war, the participating combatants were often directly and repeatedly affected by the violence due to their participation on the front lines. Combatants have a complex experience of war that simultaneously incorporates surviving and attacking. In each individual occurrence of violence, combatants must juggle the roles between operating as perpetrators and survivors (Schauer and Elbert, 2010; Meyer-Parlapanis and Elbert, 2015). As survivors, combatants must navigate both the battlefield and the mosaic of other possible threats that exist during wartime (i.e., limited food or water, natural disasters, violence from compatriots, etc.). These numerous experiences in which their own lives, their loved ones and resources are threatened can induce negative emotions and be potentially traumatizing. When a combatant predominantly experiences negative emotions associated with the violence of combat, the likelihood for the development of Post-Traumatic Stress Disorder (PTSD) increases (Neuner et al., 2004; Hecker et al., 2013a). PTSD is also often accompanied by comorbid disorders, such as Major Depression, Dysthymia, Phobias, Alcohol and Drug Abuse, and Conduct Disorder (Kessler et al., 1995), further affecting the mental health of many returning combatants. However, the challenges for former combatants returning from the battlefield are not limited to the mental health complications stemming from their experiences as survivors.

Albeit not currently as clear as the relationship between experiencing numerous potentially traumatic events and PTSD, the experience of perpetrating violence is being shown to play an additional and significant role in the well-being of combatants following war (Köbach et al., 2014). Aggressive behavior during combat usually is a mixture of reactive aggression (an impulsive, affective and uncontrolled violent behavior provoked by a perceived or real threat) and appetitive aggression motivated by intrinsic reward, describing the human potential to perceive perpetrated violence as fascinating and exciting (Elbert et al., 2010). The current understanding of appetitive aggression is based on the testimonies of thousands of combatants reporting feelings of excitement and fascination at committing violent acts (MacNair, 2006; Weierstall and Elbert, 2011; Weierstall et al., 2011, 2013; Crombach et al., 2013). Several studies indicate that appetitive aggression might be an adaptation to cruel and violent environments, such as battlefields. Apparently, combatants who developed high levels of appetitive aggression remain more functional in such settings, gain an elevated social status within armed forces and adapt better to their violent tasks thereby increasing their ability to prevail (Crombach et al., 2013). These particular impacts of appetitive aggression are not isolated to the battlefield. Combatants reporting positive emotions in association with violent combat, appetitive aggression, have also been found to be at lower risk for the development of PTSD (Weierstall et al., 2011, 2012a,b; Hecker et al., 2013b). The different quality of appetitive aggression as opposed to reactive aggression has also been validated by a difference in associated neural systems (Moran et al., 2014). The experience of appetitive aggression can complicate the transition of former combatants back to civilian life. For example, some individuals may feel the need to perpetrate further violence in an effort to replicate the rewarding experience, i.e., higher levels of appetitive aggression have been related to higher rates of reenlistment (Hermenau et al., 2013a). More research on the experience of appetitive aggression is needed to better understand the mental health state and trajectory of combatants following armed conflict.

Investigating appetitive aggression assists in identifying at-risk individuals, sheds light on the complex experience of being a combatant and provides insight for treatment options (Hermenau et al., 2013b; Crombach and Elbert, 2015). Such steps forward in research hopefully translate into a direct increase in mental health knowledge and resources for all combatants returning from the numerous, ongoing armed conflicts around the globe. However, there is a portion of combatants that have often been overlooked. Despite the importance of researching appetitive aggression in former combatants, a literature search revealed no current studies assessing the psychological consequences of perpetrating high levels of violence that include a focus on the female experience.

This oversight is not new. Studies on human aggressive behavior have frequently neglected to include females in the same ratios as males or have failed to include females altogether (Frodi et al., 1977). Moreover, appetitive aggression investigations “have focused almost exclusively on male populations heavily involved in the perpetration of violence”

(Crombach and Elbert, 2014, p.1042). This oversight is possibly due to a general assumption that females are less aggressive than males (Richardson, 2005; Stockley and Campbell, 2013). This assumption is likely grounded in evolutionary theory considering males as more likely to implement aggressive strategies in the competition for social status, wealth, and sexual partners (Wilson et al., 2002). However, this assumption only holds true under certain conditions (Archer, 2004; Campbell, 2006) and neglects the wide variety of aggressive strategies. For example, Campbell (2013) argues that, due to their evolutionary higher involvement in raising children and in an effort not to jeopardize reproductive success, females prefer strategies with lower risk of injury, such as indirect forms of aggression. More studies investigating female expressions of aggression, especially appetitive aggression, are needed because the current, limited number of studies yield inconsistent results. In a sample of Rwandan genocide perpetrators, females reported lower levels of appetitive aggression than males (Weierstall et al., 2011). In contrast, no gender effect in the prediction of appetitive aggression was revealed in a sample of Columbian ex-combatants (Weierstall et al., 2013). This is highly problematic for female combatants dealing with the fallout of psychological complications following war.

In designing a project to best investigate appetitive aggression in male and female combatants, scenarios involving the sensorial elements that can motivate appetitive aggression offer an ideal opportunity. The sights and smells of blood and sweat, the sounds of the battlefield, and the physical sensation of a weapon hitting a target are all sensorial elements that play a vital role in our understanding of the neurological reward systems that assist in the pleasurable sensation involved in appetitive aggression (for details, see e.g., Elbert et al., 2010; Moran et al., 2014; Crombach and Elbert, 2015). Taking these elements into account, Burundi was identified as a country that has endured the type of violence most applicable for this investigation of appetitive aggression in combatants.

Situated in Eastern Africa, Burundi is a country that has endured extreme violence over the last several decades. Ethnic violence between Hutu and Tutsi factions, escalating for more than 40 years, culminated in a civil war in 1993. This war has left more than 300,000 dead, 500,000 refugees, and 800,000 internally displaced Burundians (Uvin, 2009). The fighting style utilized in the war has not employed distant, abstract forms of violence, like programming drones or throwing bombs from an airplane. Rather there were most often battlefronts of two opposing armed groups exchanging fire at mid or close range. In many cases fighting scenarios included close, hand-to-hand assault and torture that produced multi-sensory feedback. Combatants often saw with the naked eye their targets' bodies hit by bullets, felt the impact of their knives and sticks on their targets' bodies, saw the blood pour out of wounds, smelled the sweat and blood of their victims and heard their cries of pain and pleas for mercy, the sensorial elements required for investigating appetitive aggression.

Furthermore, both male and female combatants participated in the violence. Although male combatants predominantly constituted both government and rebel forces, females were also involved in armed forces. Many of the females were originally recruited for such roles as cooks, porters, and messengers and also for sexual purposes or forced marriage (Schauer and Elbert, 2010). However, some females additionally participated in combat and other forms of direct violence, gradually advancing in the military hierarchy of their respective groups. Once having achieved the ranks applicable for fighting on the front lines, the violence experienced and perpetrated during fighting was similar for all combatants on the battlefield, both male and female.

The current investigation explores the experience of appetitive aggression in female and male combatants in Burundi. Acknowledging both the survivor and perpetrator aspects of performing as a combatant in armed conflict, we investigated self-experienced and witnessed traumatic events alongside the aggressive acts perpetrated against others during armed conflict. Particular attention was paid to the current perception of perpetrated acts, distinguishing between acts committed with neutral or negative emotions and those committed with pleasure. Thereby, we investigated whether, like the male combatants from the aforementioned investigations, female combatants can experience aggressive behavior as a fascinating or satisfying endeavor.

### **3.3 Methods**

#### **3.3.1 Participants**

For the overarching investigation, 429 participants (412 males, 17 females) were recruited from a military and a rebel veteran's organization in Bujumbura, Burundi. Of the 17 female participants, 2 participants were excluded due to discrepancies in the provided information, leaving 15 female former combatants. Taken from the larger male sample, 15 male former combatants were matched to the 15 female former combatants on the criteria of age, cumulative exposure to traumatic stressors as measured by the number of experienced traumatic event types, offense load as measured by the number of perpetrated event types and current PTSD symptom severity. For a control population, 20 male and 20 female non-combatants were recruited as a random sample from the community and interviewed using the same materials as the combatant group. Equal distribution between the experimental and control groups would have been preferred, however there was greater accessibility to males than to females. Thereby, the decision was made to include as many females as were available rather than artificially limiting the number of participants in their respective groups in an effort to achieve equal distribution.

### 3.3.2 Recruitment

The interviews took place on the Université Lumière Bujumbura campus from July to September 2012 and at the Red Cross Burundi in Gatumba in January 2013. Five psychologists (3 male, 2 female) from the University of Konstanz, with the assistance of local interpreters (all male), conducted the assessments. One local female psychologist from Université Lumière also conducted interviews in Kirundi. To guarantee precise translation, different interpreters translated and back translated all instruments from validated English versions to Kirundi. The translated instruments were discussed in detail with the interpreters before the beginning of data collection. Furthermore, topic sensitivity and participant safety were covered at length amongst the interviewers before the assessment period began. The interpreters were provided sensitivity training for assisting in interviews with female participants. Such training covered topics related to maximizing the female participants' sense of safety in the interview (e.g., seating arrangements, non-intimidating bodily posturing, averted eye contact, avoiding all physical contact). Additionally, the interpreters had been trained in the relevant concepts of mental disorders and translated between Kirundi, French and English. The interviews averaged 2.5 h in length. The Ethical Review Boards at the University of Konstanz and the Université Lumière approved the study, and the Université Lumière supported the project by providing workspace in which the interviews could be performed. Participation in the study was voluntary and all participants provided informed consent via signature prior to the interview. Options for verbal informed consent and/or acceptance of the participant's personal symbol were given in cases of illiteracy. All participants gave informed consent and received 10,000 fbu (approximately 5e) as compensation for participation in the study. Participants were recruited through the use of a local recruiter associated with the Veteran's Association in Burundi. With the upmost respect to the vulnerability of the population, secure data encryption via electronic participant coding and password protected storage ensured anonymity and confidentiality.

## 3.4 Measures

### 3.4.1 Traumatic Event Types

Participants were assessed for 19 potentially traumatic, life threatening, event types, both witnessed and self-experienced, stemming from war and non-war related events. The checklist was an adapted version of a checklist that has been used previously with populations affected by violent conflicts (Neuner et al., 2004; Nandi et al., 2015), which incorporated all events from the Posttraumatic Stress Diagnostic Scale (Foa et al., 1997) and was adapted to the Burundian cultural context. The frequency of potentially traumatic events was not assessed, due to the lack of reliability associated with memory biases (Kolassa

et al., 2010; Wilker et al., 2015). The items were coded dichotomously, with “1” and “0” respectively representing having and not having experienced the event in reference. The sum number of experienced, potentially traumatic event types represents the trauma load.

### 3.4.2 Perpetrated Event Types

To measure self-committed violence, we systematically assessed 14 different types of perpetrated violence (e.g., mutilation, rape, or killing) with a checklist that has already been utilized in multiple combatant populations (Weierstall and Elbert, 2011). The items were coded dichotomously in the same manner as the traumatic event types and also summed up to represent a self-committed violence sum score. The traumatic and perpetrated event type items can be found in the appendix.

### 3.4.3 PTSD Symptom Severity

PTSD symptom severity was assessed using the PTSD Symptom Scale-Interview (PSS-I; Foa and Tolin, 2000). The PSS-I is a semi-structured interview based on the 17 DSM-IV (American Psychiatric Association, 2000) symptom criteria for PTSD and measures symptom intensity during the previous month. The PSS-I has established validity in comparable East-African samples (Ertl et al., 2010). PTSD severity was calculated by totaling symptom scores (scores range from 0 to 51). Internal consistency for the PSS-I in the current investigation is appropriate (Cronbach’s  $\alpha = 0.88$ ).

### 3.4.4 Appetitive Aggression

Appetitive aggression was assessed using the Appetitive Aggression Scale (AAS; Weierstall and Elbert, 2011). The AAS has been successfully implemented (Hecker et al., 2012; Weierstall et al., 2012b) and validated (Weierstall and Elbert, 2011) in comparable East African samples. The AAS consists of 15 items, which are rated by responses on a five-point scale ranging from 0 (I totally disagree) to 4 (I totally agree). The items gather information about participants’ perception of violence (e.g., “Is it exciting for if you make an opponent really suffer?”; “Once fighting has started, do you get carried away by the violence?”). The AAS score is calculated by adding the scores of the 15 items (scores range from 0 to 60). Psychometric property measures indicated excellent internal consistency (Cronbach’s  $\alpha = 0.94$  in the current study).

## 3.5 Data Analysis

In order to investigate potential sex differences in AAS, the 15 female combatant participants were matched to 15 of the 412 male combatant participants prior to comparing AAS sum scores between the sexes. The matches were performed based on violent acts has been shown

to contribute to appetitive aggression (Nandi et al., 2015), further supporting the decision to control for both traumatic event types and perpetrated event types. In an effort to reduce error variance, the match method was selected. The pair-wise comparison was completed using the MATCH command-line program created by the Cognitive and Brain Sciences Unit (van Casteren and Davis, 2007). The program performs an optimized, near-exhaustive search through the  $9.88 \times 10^{26}$  possible sets of 15 male combatant participants from the initial set of 412 such that: (1) each female combatant participant was paired with a single male combatant participant that closely matched in age, experienced events types, perpetrated event types and PSS-I scores, (2) each of the 15 male combatant participants was only paired with one female combatant participant, and (3) the summed discrepancy (normalized Euclidean distance) between the pairs of male and female combatant participants on the four critical factors was minimized. A full description of the operation of the program can be found in van Casteren and Davis (2007). Table 3.1 includes an overview of the aforementioned variables in the matched participant data. We then assessed the potential group differences between male and female combatants and non-combatants by conducting a Two-way analysis of variance (ANOVA) with the AAS sum score as the dependent variable. The statistical analysis was carried out using SPSS 21 (IBM Corp. Released, 2012).

## 3.6 Results

Table 3.1 gives a demographic overview of participant age, year of successful school education and the number of children for female and male combatants and non-combatants. Additionally, the number of traumatic events types, perpetrated event types and PTSD symptom severity are presented. Respective statistical tests confirmed that females had more children than males and that male non-combatants had a higher degree of education (all  $p \leq 0.015$ ). The load of traumatic event types and PTSD symptom severity was high, even within the non-combatants. Moreover, they did not differ significantly from the combatants regarding the two variables. Overall, the non-combatants perpetrated fewer event types than the combatants ( $p = 0.001$ ). The matched male combatants were found to be on average with the rest of the male combatant population. There was no significant difference in appetitive aggression ( $AAS_{\text{matched}}$ : mean = 34.1, SE = 3.7;  $AAS_{\text{non-matched}}$ : mean = 28.4, SE = 0.7;  $p = 0.13$ ), PTSD symptom severity ( $p = 0.18$ ), the load of traumatic ( $p = 0.08$ ), and perpetrated event types ( $p = 0.56$ ). Normality of the distribution of the AAS scale in each group was verified using Kolmogorov-Smirnov-Tests (all  $p > 0.05$ ) (see Table 3.2). A Brown–Forsythe robust Levene test of homogeneity of variances based on deviation from the median was calculated (Brown and Forsythe, 1974) and revealed a rejection of the hypothesis of homogeneity of variance [ $F(3, 66) = 5.00, p = 0.003$ ]. Comparisons of variances between pairs of groups showed that this effect could be

traced back to the variance differences between the two civilian and the two combatant groups [ $F(1, 66) = 14.18; p < 0.001$ ], with combatants showing much higher variances. The inequality of the variances across the groups and the relatively small sample size prevented an assumption of robustness of parametric testing. We ensured the robustness of the analyses using non-parametric tests when the data did not match the criteria for parametric testing (Bortz, 2005). Thus, a Kruskal-Wallis test was performed on the AAS scores and revealed statistically significant group differences at  $p < 0.001$  ( $H = 38.84, df = 3$ ) (see Figure 3.1). Multiple comparisons between the four groups were conducted by independent sample t-tests for comparisons between females and males from the combatant as well as the civilian groups and by Mann-Whitney U-tests for comparisons between combatant and civilian groups. The critical p-value was Bonferroni adjusted to 0.008. While there was no statistically significant group difference between female and male combatants [ $t(28) = 0.1, p = 0.96, d = 0.02$ ], male civilians showed statistically significant higher AAS scores than female civilians [ $t(31, 32) = 3.03, p = 0.005, d = 0.96$ ]. Comparisons between combatants and civilians revealed that both female and male combatants had higher AAS scores than any of the civilian group (all Mann-Whitney U-tests  $< 0.001$ ).

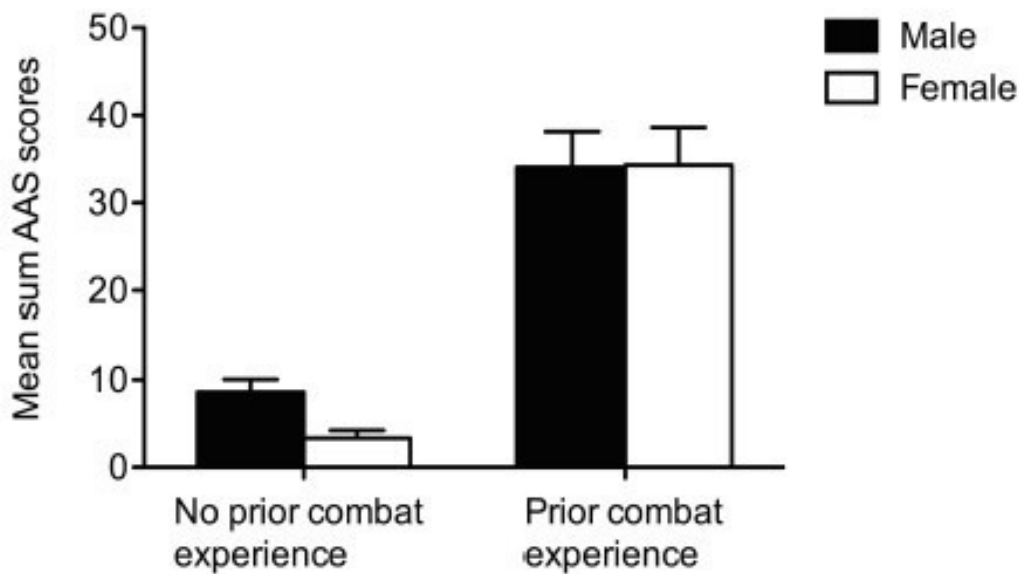


Figure 3.1: Mean AAS Sum Scores in Males and Females with and without Combat Experience. Note: Bars represent standard error.

### 3.6 Results

|                             | Combatants               |                          | Non-combatants           |                          |
|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                             | Female<br>(n = 15)       | Male<br>(n = 15)         | Female<br>(n = 20)       | Male<br>(n = 20)         |
| Age, years                  | 27.1<br>(1.0)<br>[20-32] | 27.6<br>(1.2)<br>[21-35] | 25.5<br>(1.0)<br>[19-33] | 26.0<br>(1.2)<br>[18-38] |
| Education level             | 5.8<br>(0.9)<br>[0-12]   | 5.3<br>(1.0)<br>[0-12]   | 5.1<br>(0.5)<br>[0-9]    | 9.9<br>(0.6)<br>[5-13]   |
| Number of children          | 2.1<br>(0.4)<br>[0-6]    | 0.5<br>(0.3)<br>[0-3]    | 2.1<br>(3.3)<br>[0-4]    | 0.7<br>(0.2)<br>[0-3]    |
| Sum traumatic event types   | 14.3<br>(0.7)<br>[8-18]  | 14.6<br>(0.4)<br>[11-17] | 10.8<br>(0.6)<br>[6-17]  | 12.1<br>(0.7)<br>[7-17]  |
| Sum perpetrated event types | 9.7<br>(1.2)<br>[0-15]   | 9.9<br>(1.0)<br>[3-14]   | 1.8<br>(0.4)<br>[0-6]    | 2.9<br>(0.5)<br>[0-8]    |
| PTSD symptom severity       | 18.3<br>(2.7)<br>[2-32]  | 17.6<br>(2.7)<br>[0-33]  | 16.2<br>(2.0)<br>[0-37]  | 10.8<br>(2.0)<br>[0-36]  |

Mean values of participant data presented. SE appear in parenthesis. Ranges appear in brackets.

Table 3.1: Participant demographics and results.

## Chapter 3. Appetitive Aggression in Women: Comparing Male and Female War Combatants

TABLE 2 | Summary of statistics performed on AAS scale.

|  | Non-combatants |              | Combatants     |               | Test                                    | Comparison   | t/Z/F  | p                                    |
|--|----------------|--------------|----------------|---------------|---|--|--|--------------------------------------|
|  | Female (n =20) | Male (n =20) | Female (n =20) | Male (n =20)  |   |  |  |                                      |
| AAS score, mean (SD)                         | 3.35 (4.02)    | 8.60 (6.62)  | 34.33 (16.56)  | 34.07 (15.85) | t-test <sup>b</sup>                     | NC female vs. NC male<br>C female vs. C male   | $t_{(31, 32)} = 3.03$<br>$t_{(28)} = 0.1$                | 0.005<br>0.96                        |
|  |                |              |                |               | Mann-Whitney U <sup>b</sup>             | NC female vs. C female<br>NC female vs. C male<br>NC male vs. C female<br>NC male vs. C male | $Z = -4.43$<br>$Z = -4.45$<br>$Z = -3.97$<br>$Z = -4.02$ | <0.001<br><0.001<br><0.001<br><0.001 |
| AAS score, skewness (SE)                     | 1.22 (0.51)    | 0.21 (0.51)  | -0.54 (0.58)   | -0.89 (0.58)  | Brown-Forsythe Levene test <sup>c</sup> | Sex  | $F_{(1, 66)} = 0.37$                                     | 0.545                                |
| AAS score, kurtosis (SE)                     | 0.91 (0.99)    | -1.22 (0.99) | 0.15 (1.12)    | -0.18 (1.12)  |   | Previous combat experience   | $F_{(1, 66)} = 14.18$                                    | <0.001                               |
| Kolmogorov-Smirnov test <sup>d</sup> , Z (p) | 0.99 (0.28)    | 0.56 (0.92)  | 0.78 (0.58)    | 0.93 (0.35)   |   |  |  |                                      |

<sup>a</sup>testing the normality of the distribution of the AAS score.

<sup>b</sup>Bonferroni corrected, critical p-value < 0.008.

<sup>c</sup>testing homogeneity of variances.

NC, Non-combatants; C, Combatants.

Table 3.2: Summary of Statistics Performed on AAS Scale.

We would like to qualitatively expound on the result that female combatants can be motivated by pleasure or enjoyment to perpetrate violence in a manner similar to male combatants by presenting a few quotations from the interviews. It should be noted that the following descriptions, while often consistent with international definitions of war crimes, are not inherently out of the ordinary when working in conflict settings. One of the female combatants reported: “When I tortured someone, I liked to do it slowly. Using my bare hands, I would scratch and pull off the penis. Sometimes it would take more than an hour.” Another shared: “I enjoyed most to burn civilians. I told them they would be safe in the building. But then I locked them in and set it on fire. I watched them through the window. I still get wet thinking about it.” And another reported: “I kept my prisoners in a hole outside, and I told them every night before I went to bed that I would kill them the next day. I did this for a year. That was the most fun.” Furthermore, many combatants asserted the perception that female combatants were more dangerous and cruel than males and that they would thereby, in the case of being taken prisoner, prefer male to female captors.

### 3.7 Discussion

In this investigation, we interviewed male and female combatants and civilians in order to assess their perceptions of violent and aggressive behavior as quantified by AAS sum scores. There was no difference between male and female combatants in appetitive aggression, demonstrating that, in a context in which it is situationally appropriate to directly perpetrate violence against others and when males and females have perpetrated similar types of violent acts, both males and females are capable of experiencing aggression as fascinating or pleasurable. Furthermore, the significant difference in AAS sum scores between individuals with combat experience and those without further supports the conclusion that the development of appetitive aggression is related to the perpetration of violent acts. This finding highlights the dynamic nature of appetitive aggression that cannot be simply reduced to sex differences.

**Strengths and Limitations** As mentioned above, at the time of the study, there was greater accessibility to former male combatants than female combatants because they were affiliated with separate organizations. The disparity in the numbers in the former combatant and control groups was caused by the fact that we were not yet well-connected to the former female combatant organization and therefore did not have as much access as originally hoped. While equal group sizes would have been preferred, we decided against artificially excluding participants. Amongst the female combatants with whom we talked, we found on average high degrees of appetitive aggression. Selection effects presumably contribute to this phenomenon. The very process of acquiring a weapon to attain fighter status and then having subsequent success to be able to survive on the battlefield is a very challenging undertaking and signals high levels of toughness and determination. Due to obstacles established by cultural norms and a constant threat of abuse by both enemies and allies, presumably all female combatants have to adapt to a perilous environment in order to first be accepted by their comrades. This impression that the female combatants faced formidable obstacles from the very onset of joining armed forces was substantiated by numerous, unofficial participant reports that the initial training of female combatants usually included more life threatening situations and lasted longer in duration than that for the males. To subsequently be designated as fighters and then survive active combat are feats that likely require even higher levels of grit and tenacity. Furthermore, while we cannot ignore that sex differences in genetic predispositions may contribute to diverging appetitive aggression patterns in male and female populations, the finding that female combatants are even capable of experiencing similar levels of appetitive aggression as male combatants is nevertheless vital for updating current research efforts on the manifestation of appetitive aggression. Previous studies focused on male populations had findings that might also play a role in the development of appetitive aggression in females. For example a study with male combatants and former combatants in Burundi found that childhood maltreatment fosters appetitive aggression (Nandi et al., 2015). Another study identified appetitive aggression as a risk factor for current violent behavior (Crombach and Elbert, 2014) and several studies confirmed that appetitive aggression might be as protective factor against the development of PTSD in male combatants (Weierstall et al., 2011, 2012a).

**Directions for Future Research** In an effort to confirm the results of our present study and in light of the additional findings from other projects, we have already implemented an investigation with a larger sample of female combatants in Burundi exploring other factors potentially influencing appetitive aggression, such as bonding experiences and maltreatment during childhood. Moreover, we are interested to see how appetitive aggression might influence current risk behavior, the readiness to use violence in parenting and the successful reintegration of combatants into civilian life.

### **3.8 Conclusion**

Appetitive aggression is not an experience unique to males. In a context such as combat, both males and females are capable of experiencing the perception of aggressive acts as appealing and pleasurable, suggesting that the experience of appetitive aggression and even “combat high” is likely more related to the levels of violence perpetrated than to sex differences. Further research is needed to specify the female experience of appetitive aggression and provide further insight into the overall development and manifestation of appetitive aggression.



CHAPTER **4** 

**Succumbing to the Call of  
Violence Sex-linked Development  
of Appetitive Aggression in  
Relation to Familial and  
Organized Violence**

## 4.1 Abstract

Appetitive aggression is the attraction to violent behavior, which can peak in the experience of a combat high. In various war and conflict scenarios, members of armed groups have reported developing a desire to hunt and even kill humans. More recently, we reported that the phenomenon has also been observed in female ex-combatants with varying participation in warfare. Despite recent investigations on risk factors for appetitive aggression, sex specific pathways in the development of appetitive aggression have not yet been delineated. This study investigated moderation effects of sex on previously identified risk factors for appetitive aggression by means of regression analyses in a sample of individuals with varying degrees of warfare participation (overall sample,  $n = 602$ ). First examining a sample characterized by backgrounds heterogeneous in both sociodemographic data and war experiences, the analysis was then replicated in a subsample of fighters active during the civil war (combatant sample,  $n = 109$ ). In both samples, regression analyses revealed significant moderation effects of sex. Childhood maltreatment and traumatic events had positive associations on the development of appetitive aggression for males but a negative (childhood maltreatment) or no (traumatic events) association for females. Perpetrated events were more strongly correlated with appetitive aggression for females than for males. This pattern was pronounced for the combatant sample. These results are in favor of sex-linked pathways. In both sexes, appetitive aggression may have evolved as a biologically prepared response to cruel environments but might develop along different trajectories. The current study highlights the need for addressing appetitive aggression in order to support peace-building processes and emphasizes sex specific starting-points.

Keywords: Appetitive aggression, civil war, armed groups, combat, sex differences, gender, child abuse, child maltreatment

## 4.2 Introduction

As of 2014 and at the exception of the genocide in Rwanda, the worldwide number of fatalities due to armed conflict has peaked since the end of the Cold War (Melander, 2015; Pettersson and Wallensteen, 2015). These violent conflicts span years and decades and often spiral into multiple, overlapping cycles of violence (World Bank, 2011). In the presence of ongoing conflict, individuals living amidst those insecure conditions are likely to develop an inclination towards aggression stemming from the potentially appealing aspects of violent behavior (Elbert et al., 2010; Weierstall and Elbert, 2011; Elbert et al., 2017). In contrast to reactive types of aggression, i.e. a response to a perceived threat, appetitive aggression is intrinsically rewarding and associated with positively evaluated emotions such as excitement. For further distinction from other types of aggression, see Elbert et al. (2017). The phenomenon of appetitive aggression has been reported by multiple

combatant populations throughout the world, even years after the official conclusion of the armed conflicts (e.g., Hecker et al., 2012; Hermenau et al., 2013; Weierstall et al., 2013) and, to a lesser extent, in members of armed groups carrying out supportive, non-military tasks (Augsburger et al., 2015). While initially the attraction to violence was considered a potentially predominantly male phenomenon (Nell, 2006; Elbert et al., 2010), recent studies have revealed the occurrence of similar levels of appetitive aggression in both sexes involved in post-conflict regions (Augsburger et al., 2015; Meyer-Parlapanis et al., 2016). Appetitive aggression is likely to contribute to an elevated risk of rejoining an armed force after demobilization or a gang after a prison sentence (Maedl et al., 2010). Accordingly, the identification of risk factors for high traits in appetitive aggression is essential in order to understand waves of instability in conflict regions.

Concerning the etiology of aggressive behavior and violent crime, researchers have focused on the role of adverse childhood experiences. Over two decades ago, Widom (1989) demonstrated that a history of child abuse manifests itself in one's own perpetration of violence on subsequent generations, known as the cycle of violence. Several studies support this view (for a review see Maas et al., 2008). Additionally, exposure to lifetime traumatic events and subsequent symptoms of posttraumatic stress disorder increased the appeal of aggressive acts in military veterans (MacManus et al., 2013) and civilians (Reijneveld et al., 2003; Taft et al., 2010; Rasche et al., 2016). With respect to research in former conflict regions in Eastern Africa, maltreatment experienced by parents during their childhoods was a significant predictor of violence they later perpetrated against their own children (Crombach and Bambonye, 2015). War-affected individuals are especially vulnerable to passing experiences of maltreatment on to their own offspring (Catani, 2010). Some researchers assumed sex-specific pathways in the transition from self-experienced childhood abuse towards aggressive behavior and crime. For instance, Cullerton-Sen et al. (2008) reported a greater risk of physical aggression after experiences of maltreatment for boys than for girls. Accordingly, in a longitudinal study both physical and emotional child maltreatment predicted adult crime but through different pathways for males and females (Lee et al., 2015). In addition, externalizing behaviors during childhood in response to child abuse were related to later crime commission for males only, whereas internalizing behaviors predicted female crime (Jung et al., 2015). In contrast, other studies found a direct association between exposure to family violence and subsequent proactive aggression only for adolescent females (Calvete and Orue, 2013). Accordingly, child sexual abuse was related to increased frequency of aggressive acts in women but not in men (Trabold et al., 2015). Moreover, others reported no sex differences for the relation between child abuse and adolescent delinquency or adult crime (Arata et al., 2007; Topitzes et al., 2012). Regarding appetitive aggression specifically, there is evidence that combatants are drawn into a cycle of violence due to the intrinsically rewarding perpetration of aggression (Hecker et al., 2012; Weierstall et al., 2012). With respect to the impact of childhood

maltreatment and traumatic events were tested in a study with male Burundian former combatants and active soldiers. Childhood maltreatment strengthened the association between self-perpetrated violence and appetitive aggression. Lifetime traumatic events additionally predicted appetitive aggression (Nandi et al., 2015). Moreover, positive associations between appetitive aggression and former exposure to violence were evident in South African male adolescents (Hinsberger et al., 2016; Sommer et al., 2017). Beyond, the identification of further risk factors for appetitive aggression has remained challenging and so far only been investigated in males. To date the hypothesis of sex-specific risk factors for the development of appetitive aggression has not been investigated. Accordingly, the purpose of the current study was to assess associations between risk factors in the development of appetitively aggressive behavior in males and females. We aimed to answer this question by testing moderation effects of sex on the prediction of appetitive aggression by previously identified risk factors, as moderation allows specifying conditions under which predictor and outcome are related (Hayes, 2013). More specifically, we investigated if sex moderated the association between appetitive aggression and perpetrated events, lifetime traumatic events, and childhood maltreatment respectively in a Burundian sample comprising of males and females with varying levels of adverse childhood experiences and war exposure and combat participation. For this reason, we chose to include civilians as well as combatants to reflect this wide array of diverse life experiences incurred during the civil war in Burundi. Accordingly, our analysis procedure was two-folded: In a first step, a mixed sample of Burundian male and female former members of armed groups and civilians were analyzed (overall sample). In a second step these results were validated in a sample comprising only of male and female former combatants having had similar experiences during fighting (combatant sample). Burundi is a small country and located in the African Great Lakes region. Similar to its neighbor Rwanda, Burundi's past is characterized by ethnic conflicts between Hutus and Tutsis, resulting in the death of over 300,000 civilians and a long-lasting civil war being waged until its formal termination in 2006 (Uvin, 2009). Despite the last official demobilizations of armed group members having taken place in 2009 (World Bank, 2009), the country continues to struggle with reinstating stability and security in the face of persistent outbreaks of violence (United States Department of State - Bureau of Democracy, 2013). Burundi was targeted for data collection due to its violent history and present and persistent instability. Moreover, the known existence of a considerable number of female members of armed groups proved this country ideal for this investigation.

## 4.3 Material and Methods

### 4.3.1 Procedure

This cross-sectional study combines data from two assessment periods in 2012 and 2014. Initially, research was undertaken with an almost exclusively male sample in 2012. At that time, the existence of female combatants was rather unknown, resulting in a limited number of female participants. In 2014 data collection was extended towards an entire group of female participants. Additionally, some of the most-affected male participants from the 2012 investigation could be interviewed a second time. A team of experienced clinical psychologists from the University of Konstanz, Germany and advanced psychology students from the University Lumière in Burundi collected the data. Participation in the study was voluntary; all participants provided informed consent. They received financial compensation equivalent to 5€ (2012, 2014) and a refund of transportation costs (2014). Ethical review boards of the University Lumière de Bujumbura, Burundi, and of the University of Konstanz, Germany, approved the project. Sample sizes were determined according to the feasibility of data collection in post-conflict regions. See the online supportive material for more detailed information about procedures.

### 4.3.2 Participants

All individuals invited agreed to participate. In total semi-structured interviews were conducted with 605 Burundian participants. Three female combatants were excluded prior to data analysis due to discrepancies in the information provided. The overall sample in the first analysis consisted of 453 former combatants (387 males, 66 females) who had been demobilized after the end of the civil war and 149 participants without combat experience (25 males, 124 females). The latter were either civilians or former members of armed groups having performed non-military tasks. In the second analysis all combatants assessed in 2014 were included, namely 53 female combatants and 56 male combatants who had been reassessed in 2014. Figure 1 of the online supportive material provides an overview of details regarding the assessment periods and the composition of the samples.

### 4.3.3 Measures

Questionnaires used for semi-structured interviews were translated from validated English or French versions to Kirundi and blindly back translated. Potential divergences in meaning were discussed with all parties until consensus was reached. In addition to socio-demographic data and combat experience (yes/no), the following measures were applied:

**Traumatic events** To measure lifetime traumatic load, self-experienced (e.g. having survived a natural disaster) and witnessed (e.g. witnessed killing of someone) event types were assessed by means of a dichotomously coded event list with 19 items (response options: yes/no). Events included specific, war-related incidents and events of the Posttraumatic Diagnostic Scale (Foa et al., 1997). The event list has been applied in various war-affected populations in Africa (e.g., Neuner et al., 2004). Items were summed up to indicate the number of different experienced event types, ranging between 0 and 19. This checklist was applied in 2012 and 2014.

**Perpetrated events** Lifetime self-committed violence was assessed in the same manner as the traumatic load with a checklist previously used in combatant samples (Weierstall and Elbert, 2011). We assessed the lifetime perpetration of 14 different types of violence (e.g., physical assault, sexual assault, homicide). This checklist was applied in 2012 and 2014.

**Childhood maltreatment I** In both 2012 and 2014 abuse experienced before the age of 18 was assessed via 4 items covering the major domains of possible abuse (Teicher et al., 2006): sexual abuse, neglect, physical abuse, and frequent verbal abuse. As before, items were coded dichotomously, confirming occurrence during childhood, and summed up, ranging between 0-4. This checklist was applied in 2012 and 2014.

**Childhood maltreatment II** In order to further analyze the role of child maltreatment, a detailed checklist of 30 items was implemented in 2014. The checklist was derived from the domestic and community violence checklist, which had already been used with various samples of children in East Africa (Hermenau et al., 2011; Crombach and Elbert, 2014). It covers adverse childhood experiences from different domains including verbal, physical, and sexual abuse and neglect, and additionally assesses different degrees of intensity (e.g. being slapped, being hit with an object, being punched). The items refer to the first 18 years of the participant's life. Answers were coded dichotomously (yes/no) and summed up to reach a total score ranging between 0-30. This checklist was applied to the participants in 2014 only.

**Appetitive Aggression** A positive and exhilarating perception of violence was assessed using the 15-items Appetitive Aggression Scale (AAS). The AAS has been validated on 1,632 participants from war-affected regions. It presents good psychometric properties regarding validity and reliability. Factor analysis revealed one single factor, suggesting that it assesses a distinct construct of human aggression (Weierstall and Elbert, 2011). The AAS has been successfully applied in various post-crisis settings. Ratings were made on a five-point Likert scale from total disagreement (0) to total agreement (4) and summed up,

reaching a sum score between 0-60. Cronbach  $\alpha$  coefficient was .92 for the overall sample and .89 for the combatant sample. This checklist was applied in 2012 and 2014.

#### 4.3.4 Data analysis

Using R, robust multiple linear regression analyses were applied to predict appetitive aggression (Rousseeuw et al., 2015). This approach allows dealing with the presence of non-normal and heteroscedastic data. In order to facilitate interpretation, continuous predictors were mean centered before entering into the regression equation (Hayes, 2013). Categorical variables (sex, combat experience) were dummy-coded with males and no combat experience as reference groups. In a first step, previously identified risk factors (combat experience, child maltreatment, perpetrated event types, traumatic event types) and respective interactions between these variables and sex were entered into the regression model. Additionally, age and its interaction with sex were included as covariates. Subsequently, non-significant predictors and interactions except sex were removed from the model. Robust adjusted r squared was used as fit index. Robust Wald test with pseudo degrees of freedom was applied for model comparison.

## 4.4 Results

In the overall sample ( $n = 412$  males,  $n = 190$  females), males were older (mean years 35.6,  $SD = 8.7$  versus 30.4,  $SD = 7.9$ ,  $p < .001$ ), better educated (mean years = 6.6 ( $SD = 3.2$ ), versus mean = 5.6 ( $SD = 3.9$ ),  $p < .001$ ), had fewer children (mean = 2.11 ( $SD = 2.1$ ) versus mean = 2.8 ( $SD = 2.1$ ),  $p < .001$ ), had experienced more traumatic event types (mean = 13.6 ( $SD = 2.5$ ) versus mean = 12.3, ( $SD = 3.8$ ),  $p < .001$ ) and had perpetrated more violent acts than females (mean = 8.1 ( $SD = 3.6$ ), versus mean = 3.7 ( $SD = 4.3$ ),  $p < .001$ ). Males also reported higher levels of appetitive aggression (mean = 27.4 ( $SD = 22.5$ ), versus mean = 13 ( $SD = 13.6$ ),  $p < .001$ ). Experienced maltreatment during childhood did not differ between the sexes (mean .9 ( $SD = 1.0$ ) versus mean = 1.1 ( $SD = 1.2$ ),  $p = .27$ ). In the combatant sample ( $n = 56$  males,  $n = 53$  females), the sexes only differed in age and traumatic event types. Males were older than females (mean = 39.8 ( $SD = 10.03$ ), versus mean = 31.0 ( $SD = 7.4$ ),  $p < .001$ ) and had experienced fewer traumatic event types (mean = 14.2 ( $SD = 2.3$ ) versus mean = 15.9 ( $SD = 2.8$ ),  $p < .001$ ). They had comparable levels of education (mean years males = 7.0 ( $SD = 2.8$ ), mean years females = 6.5 ( $SD = 3.7$ ),  $p = .52$ ), and numbers of children (mean males = 3.1 ( $SD = 2.3$ ), mean females = 2.6 ( $SD = 2.0$ ),  $p = .26$ ). Experienced childhood maltreatment assessed with the more detailed questionnaire was similar (mean males = 14.8 ( $SD = 5.9$ ), mean females = 15.5 ( $SD = 5.8$ ),  $p = .73$ ). Also perpetrated events (mean males = 6.3 ( $SD = 3.3$ ), mean females = 7.0 ( $SD = 4.1$ ),  $p = .34$ ) and appetitive aggression (mean males = 21.1 ( $SD =$

## 4.4 Results

9.1), mean females = 21.25 (SD = 11.7),  $p = .77$ ) did not differ between the sexes in the combatant sample. Correlations between the variables are shown in Table 4.1.

|  | Age           | CM I <sup>a</sup> /II <sup>b</sup> | Traumatic events | Perpetrated events | AAS Sum Score   |
|--|---------------|------------------------------------|------------------|--------------------|-----------------|
| A. Overall sample (male/female)            |               |                                    |                  |                    |                 |
| Combat                                     | 0.21***/-0.04 | 0.07/0.23**                        | 0.18***/0.44***  | 0.37***/0.63***    | 0.32***/0.62*** |
| Age  | -             | -0.12*/-0.13                       | -0.12*/0.11      | -0.15**/0.02       | -0.18***/0.04   |
| Child maltreatment I (CM I) <sup>a</sup>   | -             | -                                  | 0.21***/0.34***  | 0.23***/0.29***    | 0.25***/0.19**  |
| Traumatic events                           | -             | -                                  | -                | 0.51***/0.65***    | 0.43***/0.57*** |
| Perpetrated events                         | -             | -                                  | -                | -                  | 0.62***/0.76*** |
| B. Combatant Sample (male/female)          |               |                                    |                  |                    |                 |
| Age  | -             | -0.69***/-0.35*                    | -0.45***/-0.21   | -0.67***/-0.21     | -0.61***/-0.15  |
| Child maltreatment II (CM II) <sup>b</sup> | -             | -                                  | 0.42**/0.65***   | 0.58***/0.34*      | 0.63***/0.13    |
| Traumatic events                           | -             | -                                  | -                | 0.35**/0.4**       | 0.35**/0.29*    |
| Perpetrated events                         | -             | -                                  | -                | -                  | 0.5***/0.75***  |

Table 4.1: Correlation matrix grouped by sex for the overall sample (A) and the combatant sample (B). Note. Spearman's Rho rank correlations were calculated for continuous variables, point-biserial correlation for relations with the dichotomous variable (combat) in the overall sample. a) refers to the 4-item questionnaire of child abuse used in the total sample during the assessments in both 2012 and 2014; b) refers to the more detailed assessment during 2014 only. Asterisks indicate level of significance, with \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

### 4.4.1 Regression Analyses

Regarding the overall sample, all predictors and interactions except sex were significant (child maltreatment I and sex x perpetrated events only marginally). The covariate age and its interaction with sex also reached significance. Adjusted R squared was .63 (SE = 9.34), the model was superior to the null model with  $F(576,11)=1358.3$ ,  $p < .001$ . Results were similar for the combatant sample from the 2014 study that utilized the more detailed child maltreatment questionnaire. However, neither age nor traumatic events nor their interactions had any impact on the prediction of appetitive aggression and consequently were removed from the model. Coefficients for child maltreatment II as well as the interaction perpetrated events x sex reached significance in the combatant sample. All other variables showed the same pattern as in the overall sample. Adjusted R squared was .52 (SE = .54), with  $F(103,5)=161.03$ ,  $p < .001$ . The regression models for both samples are shown in Table 4.2.

Chapter 4. Succumbing to the Call of Violence Sex-linked Development of Appetitive Aggression in Relation to Familial and Organized Violence

|   | (A) Overall sample (n = 602) |                 |      |       | (B) Combatants (n = 109) |                |      |       |
|---|------------------------------|-----------------|------|-------|--------------------------|----------------|------|-------|
|   | B                            | 95% CI          | SE   | t     | B                        | 95% CI         | SE   | t     |
| Age                                     | <b>-0.26***</b>              | [-0.41, -0.11]  | 0.08 | -3.94 |                          |                |      |       |
| Sex                                     | <b>2.60</b>                  | [-1.20, 6.41]   | 1.94 | 1.34  | <b>-0.70</b>             | [-3.64, 2.24]  | 1.48 | -0.47 |
| Combat                                  | <b>9.90***</b>               | [6.44, 13.36]   | 1.76 | 5.62  |                          | /              | /    | /     |
| Child maltreatment <sup>a,b</sup>       | <b>1.30<sup>c</sup></b>      | [-0.02, 2.62]   | 0.67 | 1.94  | <b>0.71***</b>           | [0.46, 0.97]   | 0.13 | 5.56  |
| Perpetrated events                      | <b>1.81***</b>               | [1.403, 2.21]   | 0.20 | 8.84  | <b>0.68*</b>             | [0.12, 1.24]   | 0.28 | 2.42  |
| Traumatic events                        | <b>1.24***</b>               | [0.69, 1.79]    | 0.28 | 4.4   |                          |                |      |       |
| Sex * combat                            | <b>-5.69*</b>                | [-10.63, -0.75] | 2.51 | -2.26 |                          | /              | /    | /     |
| Sex * child maltreatment <sup>a,b</sup> | <b>-1.72*</b>                | [-3.36, -0.07]  | 0.84 | -2.05 | <b>-1.06***</b>          | [-1.49, -0.62] | 0.22 | -4.82 |
| Sex * perpetrated events                | <b>0.54<sup>c</sup></b>      | [-.07, 1.15]    | 0.31 | 1.75  | <b>1.66***</b>           | [0.92, 2.40]   | 0.37 | 4.46  |
| Sex * traumatic events                  | <b>-1.20***</b>              | [-1.84, -0.56]  | 0.33 | -3.67 |                          |                |      |       |
| Sex * age                               | <b>0.28**</b>                | [0.09, 0.47]    | 0.10 | 2.90  |                          |                |      |       |

Table 4.2: Final regression models predicting appetitive aggression from a sex-linked pathway perspective for the overall sample (pattern A, left side) and the combatant sample (pattern B, right side). Note. The intercept was removed due to better readability. Unstandardized b-coefficients of the centered model with 95% confidence intervals, standard errors (SE) and t-values are shown. a) refers to the 4-item questionnaire of child abuse used in the total sample (child maltreatment I); b) refers to the more detailed assessment during 2014 (child maltreatment II). Asterisks indicate level of significance, with <sup>o</sup> p < .08, \* p < .05, \*\* p < .01, \*\*\* p < .001. Significant coefficients are shown in boldface.

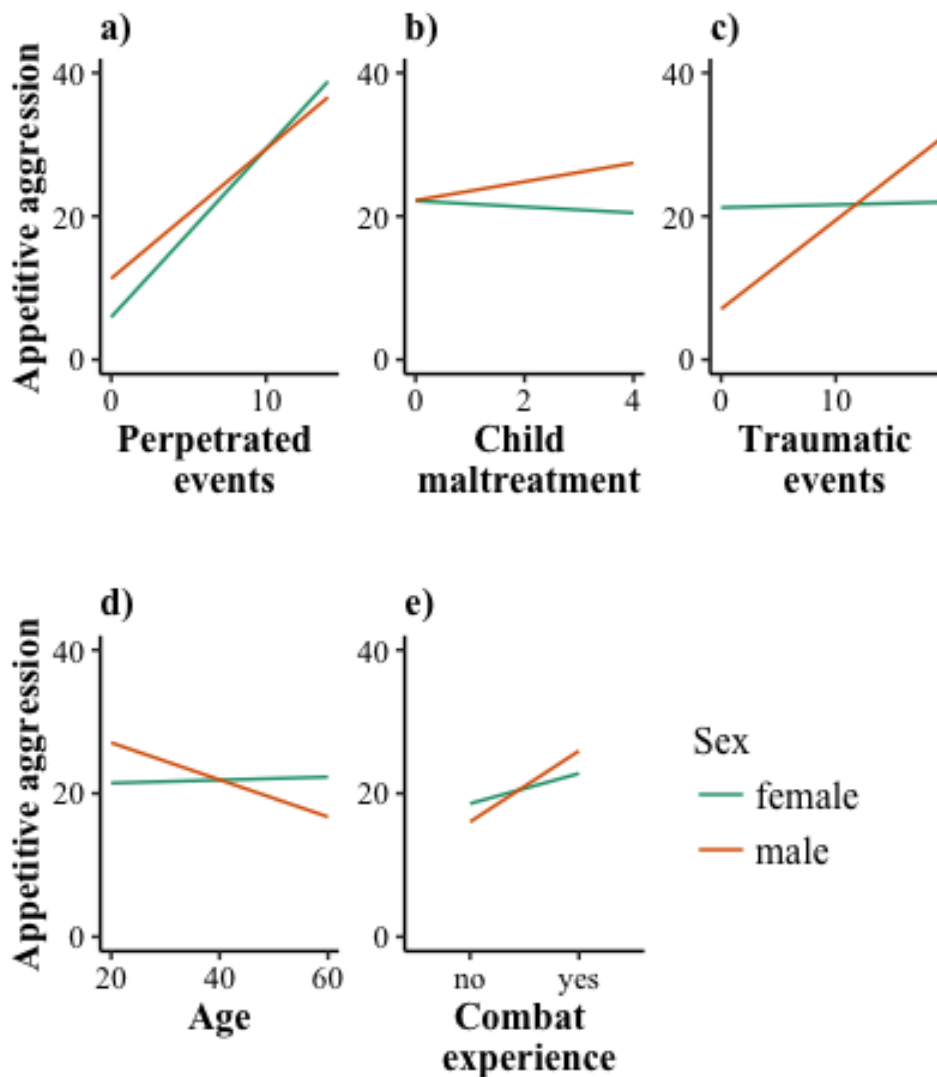


Figure 4.1: Two-way interactions in the overall sample between sex and perpetrated events (a), child maltreatment (b), traumatic events (c), age (d), combat experience (e), respectively. Only four items were available for the overall sample to indicate childhood maltreatment. The figure demonstrates that, for females (green line), only self-perpetrated events and combat experience were associated with an increase in appetitive aggression, whereas for males, child maltreatment as well as traumatic events had an impact.

From Figure 4.1 it can be derived that in the overall sample for females the association between perpetrated events and appetitive aggression was stronger than for males. There was a reverse effect for combat experience, with a stronger association existing for males. Moreover, traumatic events were correlated with appetitive aggression for males but not females. The same applied to the age of the participants, which was negatively related

among males. Lastly, child maltreatment was only positively associated with appetitive aggression for males.

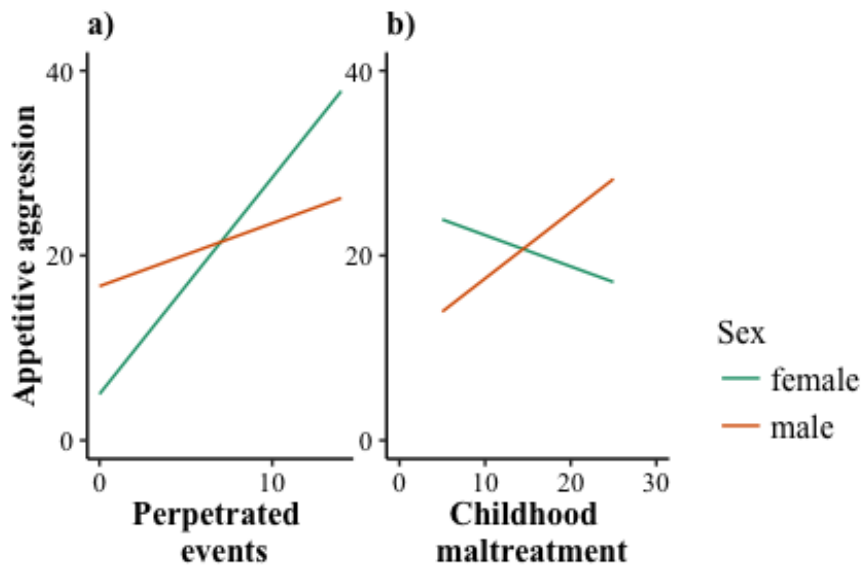


Figure 4.2: Two-way interaction in the combatant sample between sex and perpetrated events (a), and sex and childhood maltreatment (panel b). In this sample, childhood maltreatment was assessed with a detailed 30 item checklist. The figure shows that the pattern in the overall sample (see figure 1) can be replicated in the combatant sample and with a different measurement regarding childhood maltreatment: For females, perpetrated events are even more strongly associated with appetitive aggression, whereas the reversed pattern illustrates that the association with childhood maltreatment is negative. Exposure to traumatic events was not relevant in this sample and removed from the figure.

Interaction effects of the combatant sample are visually displayed in Figure 4.2. They indicate that the interaction effect between perpetrated events and sex was even more pronounced in combatants. Additionally, traumatic events in the combatant sample were negatively associated with female appetitive aggression.

## 4.5 Discussion

The aim of the current study was to investigate whether sex moderated relations between risk factors and appetitive aggression. To date, there has not yet been a study that has assessed appetitive aggression in a sample of war-affected individuals, including both civilians and combatants on active duty during the civil war.

Our results are in line with the assumption of sex-specific pathways: Both adverse childhood experiences and lifetime traumatic events had a positive association with appeti-

tive aggression – but only for males. For females, there was no significant relation between appetitive aggression and traumatic events and a reversed relation between childhood maltreatment and appetitive aggression. This is concordant with previous studies showing positive associations between physical aggression and childhood abuse for males only (Cullerton-Sen et al., 2008). Moreover, our findings are supported by two longitudinal studies that demonstrate different trajectories for males and females in the transmission from child abuse to adult crime (Jung et al., 2015; Lee et al., 2015). However, our results also stand in contrast to a number of studies presenting a stronger positive association between adverse childhood experiences and aggression for females than for males (Calvete and Orue, 2013; Trabold et al., 2015) and with studies who did not find evidence for sex-specific pathways (Arata et al., 2007; Topitzes et al., 2012). These inconsistent findings with respect to sex-specific pathways in the development of aggression are likely to arise from several methodological and conceptual differences between the studies: In most retrospective studies, participants had been selected because of their involvement in the criminal justice system based on official documents, such as court records (Topitzes et al., 2012; Trabold et al., 2015). Accordingly, participants in those studies were limited to criminal offenders. In the single longitudinal study that did not find sex differences, participants were recruited from an institutional child welfare residence due to prior familial abuse experiences (Calvete and Orue, 2013). Accordingly, all of these studies were characterized by highly selective samples. In the current study, participants with a broad background of experiences were included, both civilians (who had also witnessed the Burundian civil war) and former members of armed groups, representing a less selective population. In addition, the majority of studies with a correlational design were with adolescent samples (Arata et al., 2007; Cullerton-Sen et al., 2008; Calvete and Orue, 2013). In the current study, participants were all adults. Consequently, pathways regarding adult aggression might be different.

Moreover, aggression-related outcome variables varied between the studies ranging from different types of aggressive behavior to crime or violent offending. Studies directly measuring criminal behavior such as specifically intimate partner violence (Trabold et al., 2015), acts of delinquency (Arata et al., 2007) or using official court records as outcome variable (Topitzes et al., 2012) were those that did not find evidence for sex-specific pathways. However, there is one exception: Lee et al. (2015) assessed different types of law-violating behavior over the year prior to the study and found sex-specific trajectories. Studies confirming findings about sex-specific pathways did not assess involvement in criminal activities but rather focused on externalizing behavior or aggressive acts (Cullerton-Sen et al., 2008; Jung et al., 2015), except for Calvete and Orue (2013), who did not support sex-specific pathways when assessing proactive aggression. Taken together, each of the studies differently conceptualized aggression or aggressive behavior. However, none specifically took into account appetitive aggression. Since this type of aggression seems to be an

adaptation to violent environments (Crombach and Elbert, 2014) and develops under continuous threat (Hinsberger et al., 2016), its development is likely to differ from other types of aggression.

In summary, these conceptual variations between studies are likely to account for differences in findings and heterogenous results. Also, none of the previous studies were conducted in a post-crisis region such as Burundi with high rates of daily violence but rather in civilian Western European or North American settings. This fact might also contribute to differences in results. It is assumed that sex-specific trajectories might develop based on what type of aggressive behavior is measured in which setting. Regarding sex effects in appetitive aggression, it is likely to develop as an adaptation strategy under conditions of extreme stress and threat (Crombach and Elbert, 2014). From this point of view, sex-specific trajectories in long-term stress reactions and adaptation are advantageous. In explaining sex differences in general aggression, Campbell (2013) argues from an evolutionary perspective that males and females are thought to have participated differently in raising offspring. Accordingly, the survival of descendants may have relied to a greater extent on the mothers' rather than the fathers' survival. Thereby it is beneficial for mothers to be at a reduced risk for injury. Since lower levels of appetitive aggression reduce the overall inclination toward aggression and also subsequent risk of injury due to fighting (Augsburger et al., 2015), they increase the chances for reproductive success. Accordingly, from this evolutionary perspective, reducing females' risk for developing appetitive aggression might be beneficial. As a consequence, behavioral changes in response to adverse childhood experiences or traumatic events may be associated with reduced risk for appetitively aggressive behavior in females but not in males. This interpretation also fits with previous research showing that females tend to employ less risky forms of aggressiveness more often, such as relational aggression (Archer, 2004; Cullerton-Sen et al., 2008). Furthermore, the risk of injury is reduced because relational aggression or indirect types of aggression do not typically involve high-risk physical forms of aggression. However when it is necessary to immediately protect one's own offspring against a perceived threat, females are willing to risk high levels of injury – i.e., they demonstrate strong reactive aggressive reactions similar to those of males (Campbell, 2013). When the life threat persists, as is the case in post-conflict regions, we assume that there is a threshold shift in the perception of violence in which reactive aggression transitions to appetitive aggression in females. This interpretation aligns with our results, as lifetime perpetrated acts are more positively associated with appetitive aggression for females than for males. First, the perpetration of violent acts serve as the groundwork for the development of appetitive aggression to a greater extent in females. Thus, females can be carried away by the violence in a manner similar to males (Meyer-Parlapanis et al., 2016), but, in contrast to males, initial barriers for onset may be higher. Thus, it is not sex per se that compromises the ability to develop appetitive aggression but rather the interaction with specific experiences in order to enhance the

probability of survival. Originating from these sex-specific behavioral reactions as suggested by Campbell (2013), we argue that in the context of ongoing threat high levels of appetitive aggression are also beneficial for females in order to maintain an approach-motivation to encounter the threat.

Regarding the interaction between age and sex in the overall sample, potential confounding variables such as the combat intensity associated with growing up during certain periods of the civil war are likely to be a reason for the moderation effects of sex. Furthermore, some female former members of armed groups performed non-military tasks during their service, complicating comparisons with the male, non-combatant group. To account for this potential confound, the overall model was proven in an exclusive sample of male and female former combatants assessed during the same time period (combatant sample). Despite the male former combatant group consisting of participants who had been interviewed again in 2014 due to high posttraumatic stress disorder related impairment and elevated levels of appetitive aggression, they did not significantly differ from female combatants in the aforementioned event types, indicating similar experiences shared overall between male and female combatants. This replication of the main results found in the overall sample in the combatant sample demonstrates robust sex linked effects in the development of appetitive aggression. Additionally, the more detailed assessment of childhood maltreatment with a different questionnaire in this second analysis adds even more weight to the stability of our findings.

**Limitations of the study** Owing to the correlational nature of our research design, it is not possible to determine a cause-and-effect relationship. Moreover, effects might be underestimated due to the retrospective design with memory effects having affected the results. Also, our interpretation of the findings is suggestive in nature and needs further research in order to be verified. Additionally, types of traumatic events such as experiences of sexual violence are known to differ between the sexes and may thus be one of the drivers of the sex-specific trajectories, particularly in war-affected regions. This could not be taken into account in the analyses. Also, the assessment of child maltreatment with a more detailed questionnaire being utilized only in 2014 made it impossible to compare the effects of a different questionnaire in the overall sample. Lastly, numbers of female combatants ( $n = 66$ ) in relation to male combatants ( $n = 387$ ) in the overall analysis was very small, compromising generalizability of our findings.

## 4.6 Conclusion

Our study substantially differs from other approaches regarding study design, specific sample, and setting. Whilst other studies took place in Western settings, we have focused on individuals in Burundi who have all faced war and crisis but each to very different

extents (ranging from active participation within armed groups to witnessing the civil war as a civilian). Accordingly, the current sample was very heterogeneous, also with respect to potential sex-specific experiences during the civil war. Nevertheless, this initial investigation of sex-linked pathways in the development of aggression points to the possibility that appetitive aggression is fostered in conflict regions but along different trajectories for both sexes. Since appetitive aggression hinders the transition into a civilian society (Maedl et al., 2010), high traits should be addressed not only when targeting risk factors in demobilization and reintegration programs but also when providing general services for the civilian population within humanitarian settings in former crisis regions. Hereby, a sex-specific approach is strongly suggested. Moreover, future longitudinal studies should investigate sex-specific mechanisms in the development of appetitive aggression.

Interaction effects of the combatant sample are visually displayed in Figure 4.1. They indicate that the interaction effect between perpetrated events and sex was even more pronounced in combatants. Additionally, traumatic events in the combatant sample were negatively associated with female appetitive aggression.



CHAPTER **5** 

**Appetitive Aggression and  
Adverse Childhood Experiences  
Shape Violent Behavior in Females  
Formerly Associated with Combat**

## 5.1 Abstract

This study investigated the impact of violent experiences during childhood, posttraumatic stress disorder (PTSD) and appetitive aggression on everyday violent behavior in Burundian females with varying participation in war. Moreover, group differences in trauma-related and aggression variables were expected. Appetitive aggression describes the perception of violence perpetration as fascinating and appealing and is a common phenomenon in former combatants. Semi-structured interviews were conducted with 158 females, either former combatants, supporters of armed forces or civilians during the civil war in Burundi. The PTSD Symptom Scale Interview was used to assess PTSD symptom severity, the Appetitive Aggression Scale to measure appetitive aggression and the Domestic and Community Violence Checklist to assess both childhood maltreatment and recent aggressive behavior. Former combatants had experienced more traumatic events, perpetrated more violence and reported higher levels of appetitive aggression than supporters and civilians. They also suffered more severely from PTSD symptoms than civilians but not than supporters. The groups did not differ regarding childhood maltreatment. Both appetitive aggression and childhood violence predicted ongoing aggressive behavior, whereas the latter outperformed PTSD symptom severity. These findings support current research showing that adverse childhood experiences and a positive attitude toward aggression serve as the basis for aggressive behavior and promote an ongoing cycle of violence in post-conflict regions. Female members of armed groups are in need of demobilization procedures including trauma-related care and interventions addressing appetitive aggression.

Keywords: posttraumatic stress disorder (PTSD), trauma, childhood maltreatment, violence, aggression, female combatant, Burundi, post-conflict country

## 5.2 Introduction

Even several years after the establishment of peace, the inhabitants in post-conflict regions still struggle with the aftermath of war. Poverty, poor health, lack of security, and high rates of violence pose major challenges to both the individual and the overarching society (Saile et al., 2014). War-affected individuals often contend with significant mental health complications. In line with the building block effect, i.e., mental ill-health due to cumulative exposure to traumatic stressors (Neuner et al., 2004), prevalence rates of posttraumatic stress disorder (PTSD) in war-affected populations are severely elevated (e.g., Steel et al., 2002; Karunakara et al., 2004; Nandi et al., 2015). In addition, a growing body of research demonstrates a link between traumatization and enhanced aggressive behavior in military personnel that continues after deployment (Byrne and Riggs, 1996; Morland et al., 2012; MacManus et al., 2013). For some individuals returning from combat, PTSD symptoms,

such as hyperarousal and angry outbursts, are exhibited in violent behavior (Galovski and Lyons, 2004; Orth and Wieland, 2006).

Though high rates of PTSD are present among former combatants, hyperarousal cannot fully account for the high prevalence of violence observed in post-war societies. In fact, Elbert et al. (2010) postulated that active combatants and child soldiers might perceive the perpetration of brutal aggressive acts as appealing and intrinsically rewarding. This perception of violence as exciting, i.e., appetitive aggression, has been reported by a variety of combatants in different post-conflict regions. Several studies suggest that appetitive aggression helps combatants maintain functionality and cope with trauma-related mental health symptoms in life threatening and violent environments (e.g., Hecker et al., 2012; Weierstall et al., 2013a,b). While developing appetitive aggression in such adverse environments seems to be beneficial in order to regain feelings of power and control, it most likely also enhances the likelihood of violent behavior (Crombach and Elbert, 2015). Moreover, high levels of appetitive aggression impede the successful reintegration of former combatants (Maedl et al., 2010).

Beyond the impact of PTSD and appetitive aggression in explaining ongoing violence in post-conflict regions, research has also focused on the effect of childhood maltreatment. According to the cycle of violence hypothesis (Widom, 1989), adverse childhood experiences culminate in aggressive behavior toward one's own children – thus producing an ongoing climate of violence in families. This trans-generational effect of childhood maltreatment was also observed in Sub-Saharan African post- conflict regions. Rwandan parents with histories of childhood abuse had an elevated risk of perpetrating violence against their own children (Rieder and Elbert, 2013; Roth et al., 2014). However, the impact of childhood maltreatment and trauma- related disorders on abusive child-rearing practices is not yet fully understood (Pears and Capaldi, 2001; Catani, 2010).

The majority of studies focusing on the relationship between combat exposure and ongoing violence in post-conflict regions almost exclusively focused on male combatants or soldiers (McKay and Mazurana, 2004; Coulter et al., 2008; Herrmann and Palmieri, 2010). However, studies indicate that females in conflict regions are also active agents of warfare and make up a proportion to 30% of members of armed groups (Brett, 2002; Mazurana, 2004). Girl soldiers were part of fighting forces in 55 countries, 38 of these were involved in internal wars between 1990 and 2003 (McKay and Mazurana, 2004). Females cover a variety of tasks, ranging from supportive, caretaking roles (e.g., cooking or washing) to performing as armed combatants (Mazurana and Carlson, 2004; Coulter et al., 2008; Annan et al., 2009). Some also hold central commanding roles, having achieved high-ranking military positions and authority (Mazurana, 2004; Coulter et al., 2008). For many, membership in an armed group is accompanied by an expansion of traditional gender roles and thereby new possibilities (Coulter et al., 2008).

Though the number of quantitative studies about women or girls at war has been increasing, little is known about the challenges with which female, former members of armed groups contend post-war. Only a minority have been formally included in disarmament, demobilization, and reintegration processes (Schauer and Elbert, 2010). In a review of US soldiers, female active-duty service members were found to be at the same risk for developing PTSD as their male counterparts (Chaumba and Bride, 2010). In a survey about youth in Uganda, girls abducted by Lord's Resistance Army (LRA) reported 20% higher rates of psychological distress compared to female non-abductees, even years after their return home (Annan et al., 2011).

In probably all cultures, females are assumed to be less aggressive than males (Richardson, 2005; Stockley and Campbell, 2013). However, sex differences vary depending on the social context and different forms of aggression (Archer, 2004; Campbell, 2006). From an evolutionary point of view, it has been argued that males have been more involved in competition regarding social status, wealth, and sexual partners, and that for them aggressive behavior might be a promising strategy (Wilson et al., 2002). Campbell (2013) argues, due to their evolutionary higher involvement in raising children females prefer strategies with lower risk to get injured such as indirect forms of aggression in order to not jeopardize reproductive success. In contrast, Richardson and Hammock (2007) emphasize the impact of gender role expectations, as the traditional role model of femininity is inconsistent with aggressive acts. Concerning appetitive aggression in females, studies are limited and inconsistent. In a sample of Rwandan genocide perpetrators, females reported lower levels than males (Weierstall et al., 2011). In contrast, no gender effect in the prediction of appetitive aggression was revealed in a sample of Columbian ex-combatants (Weierstall et al., 2013a). Meyer-Parlapanis et al. (submitted) found that females when having experienced similar combat-related events can develop levels comparable to males. Aiming to further strengthen the knowledge about the challenges female ex-combatants face post-war, particularly in Sub-Saharan African post-conflict regions, the present study was conducted.

Burundi was selected for data collection owing to its continued struggle in the aftermath of a long-lasting civil war. It is a small but densely populated state in the African Great Lakes Region that has suffered a long history of ethnic violent conflicts. In 1993 the conflict escalated into a civil war between the Tutsi-dominated army and armed Hutu rebel groups (United States Institute of Peace, 2002). Throughout this conflict over 300,000 people, mostly civilians, were killed. The war ended in 2006 (Uvin, 2009), and the last demobilizations of rebel members officially took place in 2009 (World Bank, 2009). Today, the country continues to grapple with high levels of violence. The recent violent outbursts in response to political elections exemplify the sustained fragility of peace in Burundi (United Nations, 2015).

With the present study it was aimed to assess how females in settings like Burundi cope with adverse experiences made throughout their lives. Female, former members of armed groups were compared to civilians who had never been active agents in the civil war. Former rebels were further allocated to two groups: combatants having participated in active fighting or supporters having been only involved in supportive, non-military tasks.

We investigated differences in exposure to childhood violence and traumatic events, as well as the perpetration of violent acts and their consequences for mental health in terms of PTSD and appetitive aggression. Moreover, we assessed predictors of low- threshold daily aggressive behavior to gain insight into the cycle of violence. The highest levels of exposure to both traumatic and perpetrated events were expected within former members of armed groups as well as high levels of appetitive aggression in former combatants due to their combat experience. A similar pattern was assumed to hold true for PTSD symptoms because of the building block effect. finally, threshold changes in aggressive behavior were expected between the groups. It was hypothesized that high levels of appetitive aggression and PTSD contribute to perpetrating more recent aggressive acts. Furthermore, the impact of experienced childhood maltreatment on the assumed relationships between PTSD, appetitive aggression and violent behavior was of interest.

## 5.3 Methods

### 5.3.1 Participants

Semi-structured diagnostic interviews were conducted with 158 women in Burundi who had either been former combatants ( $n = 54$ ), supporters of armed groups without involvement in fighting ( $n = 50$ ), or civilians (serving as control group,  $n = 54$ ). One former combatant was excluded prior to data analysis due to discrepancies in the information provided. Demographics of the three groups are shown in Table 5.1.

|  | Fighter ( $n = 53$ ) | Supporter ( $n = 50$ ) | Control ( $n = 54$ ) |
|--|----------------------|------------------------|----------------------|
| Demographics                                   |                      |                        |                      |
| Age, years, $M$ ( $SD$ ) [range]               | 30.83 (7.18) [20-55] | 32.94 (9.55) [18-58]   | 30.45 (7.76) [19-58] |
| Education, years, $M$ ( $SD$ ) [range]         | 6.62 (3.78) [0-13]   | 4.78 (3.58) [0-13]     | 5.35 (4.74) [0-16]   |
| Children, No., $M$ ( $SD$ ) [range]            | 2.51 (2.03) [0-7]    | 3.02 (2.36) [0-10]     | 3.15 (2.2) [0-8]     |
| Variables regarding membership in armed groups |                      |                        |                      |
| Child soldier, No., (%)                        | 31 (59)              | 26 (52)                | NA                   |
| Joined by force, No., (%)                      | 18 (34)              | 16 (33)                | NA                   |
| Duration, years, $M$ ( $SD$ ) [range]          | 4.77 (2.23) [2-11]   | 4.76 (3.00) [1-15]     | NA                   |

*M, mean; SD, standard deviation, No., number, NA, not applicable.*

Table 5.1: Participant demographics and military involvement.

Respective statistical tests indicated no significant differences between the groups in age, number of children, education, and working situation (all  $p \geq 0.07$ ). Former combatants and supporters did not differ regarding military variables (all  $p \geq 0.37$ ).

### 5.3.2 Procedure

Data collection was carried out in fall 2014 in Bujumbura, Burundi. Former armed group members were invited to the study with the help of a local contact person from an official national veteran association. Female civilians inhabiting the same neighborhoods as the former members of armed groups were invited to participate as controls. A mixed team of experienced clinical psychologists from the University of Konstanz and trained local psychology students conducted the interviews. The latter either worked as translators (English/French – Kirundi) or performed interviews on their own following intensive training. They had gathered extensive experience in previous projects and were closely supervised to guarantee high interviewer reliability. Each interview lasted about 2–3 h and took place in either the rooms of the Centre for Mental Health (Centre Akabanga) or at a military training compound (Camp Muha) in Bujumbura, both provided by the Burundian army. Interviewers ensured that the interviews were conducted privately. Participants received 10,000 BIF (approximately 5€) for compensation and a refund of transport costs. In addition, respondents were offered to participate in another study (not reported here). The Ethical Review Boards of both the University of Konstanz and the University Lumière of Bujumbura approved the study. All participants provided informed consent.

## 5.4 Measures

All instruments were translated and blindly back translated from a validated English or French version into Kirundi. Differences in meaning were discussed with both translators and a team of local psychologists until a consensus was reached. Socio-demographics and Military Involvement Participants were asked for age, level of education, working situation, and number of children. When applicable, details about participation in the rebel movement were asked (year of and age at entry, forced or voluntary joining, duration spent in the armed group).

**Traumatic Event Types** A 20-item event list that has been applied in different contexts with populations affected by violent conflicts (Neuner et al., 2004; Nandi et al., 2015) was used to assess lifetime traumatic load. Events from the Posttraumatic Diagnostic Scale (Foa et al., 1997) were incorporated as well as different war-related witnessed and self-experienced events (e.g., being attacked). It was asked whether or not certain events had been experienced. Thus, items were coded dichotomously with 0 (no) or 1 (yes). Event types were summed up to measure the total traumatic load.

**Perpetrated Event Types** To assess lifetime self-committed violence, 15 different types of perpetrated violence (e.g., committed assaults, mutilation) were assessed. The checklist

has been applied in different combatant samples (Weierstall and Elbert, 2011). Coding of items was the same as for traumatic event types.

**Childhood Violence** Exposure to violence during childhood was assessed with a 30-item culturally adapted version of the Domestic and Community Violence Checklist (DCVC, for details see Hermenau et al., 2011; Crombach and Elbert, 2014). It incorporates different experiences of maltreatment from various dimensions (psychological, physical, sexual violence, neglect) ranging from small (e.g., being pinched) to very severe events (e.g., sexual abuse). Again, all items were coded dichotomously and summed up. The sum score represents the number of experiences, ranging from 0 to 30.

**Current Aggressive Behavior** In order to measure the level of perpetration of violence, questions from the DCVC were also asked from a perpetrator's perspective (e.g., have you pinched someone) during the period of the last 3 months. Three items were added to assess reactive components of current aggression (e.g., Have you fought back, because you were attacked), whereas one item was removed (having witnessed sexual abuse), as this was not transformable into a perpetrator's perspective. Items were coded in the same manner and summed up as above, reaching a sum score from 0 to 32.

**Appetitive Aggression** To assess the extent of propensity toward appetitive aggression the Appetitive Aggression Scale (AAS) was used (Weierstall and Elbert, 2011). It contains 15 items about the positive and exhilarating perception of violence related to a combatant setting (e.g., "Is it exciting for you if you make an opponent really suffer?") and were rated on a five-point Likert scale ranging from 0 (I totally disagree) to 4 (I totally agree). Items were summed up to create a sum score between 0 and 60. Internal consistency was very high in the current study (Cronbach's  $\alpha = 0.95$ ).

**PTSD Symptom Severity** The PTSD Symptom Scale-Interview (PSS-I, Foa et al., 1993; Foa and Tolin, 2000) was used to assess the frequency of PTSD symptoms. It is comprised of 17 items, each referring to one of the symptoms for PTSD according to DSM-IV (American Psychiatric Association [APA], 2000). Answers are scored on a four-point Likert scale ranging from 0 (not at all) to 3 (five or more times per week/almost always). Items are summed up to a sum score ranging between 0 and 51. The PSS-I has proven validity in comparable samples (Ertl et al., 2010) and good psychometric properties (Foa and Tolin, 2000). Internal consistency in the current study was high (Cronbach's  $\alpha = 0.94$ ).

## 5.5 Data Analysis

SPSS 21.0 was used for statistical analysis. A MANOVA, followed by alpha-adjusted univariate F-tests, was calculated to assess group differences regarding childhood violence, traumatic events, perpetrated event types, PTSD symptom severity, and appetitive aggression. Post hoc tests were conducted using Games-Howell. To assess predictors of current aggressive behavior hierarchical multiple linear regression analyses were conducted. Group membership was dummy-coded with combatants as reference group. No univariate or multivariate outliers were found. Skewness and kurtosis of variables as well as homogeneity of variances among groups gave no rise for concern. Pillai's criterion was used in the MANOVA due to its robustness against violations of homogeneity of covariance. The residuals of the regression analysis were normally distributed and independent, assumptions of homoscedasticity and linearity met. Multicollinearity was of no concern. All analyses were two-tailed and based on  $\alpha = 0.05$  level of significance.

## 5.6 Results

**Group Differences in Outcomes Related to Trauma and Aggression** Using Pillai's trace, MANOVA showed a significant multivariate effect of group membership,  $V = 0.54$ ,  $F(8,298) = 13.86$ ,  $p < 0.001$ . Univariate F-tests revealed significant group differences with large effect sizes in traumatic event types,  $F(2,152) = 46.92$ ,  $p < 0.001$ ,  $\eta^2_p = 0.38$ , perpetrated event types,  $F(2,152) = 59.01$ ,  $p < 0.001$ ,  $\eta^2_p = 0.44$  and appetitive aggression,  $F(2,152) = 41.17$ ,  $p < 0.001$ ,  $\eta^2_p = 0.35$ . Former combatants had significantly higher rates compared to both former supporters and controls. A group difference with moderate effect size was found for PTSD symptom severity,  $F(2,152) = 5.96$ ,  $p < 0.01$ ,  $\eta^2_p = 0.07$ . Combatants suffered more severely from PTSD symptoms than controls, but did not differ from supporters. Groups did not differ regarding childhood violence,  $F(2,152) = 2.38$ ,  $p = 0.1$ . The results of post hoc comparisons are illustrated in Figure 5.1.

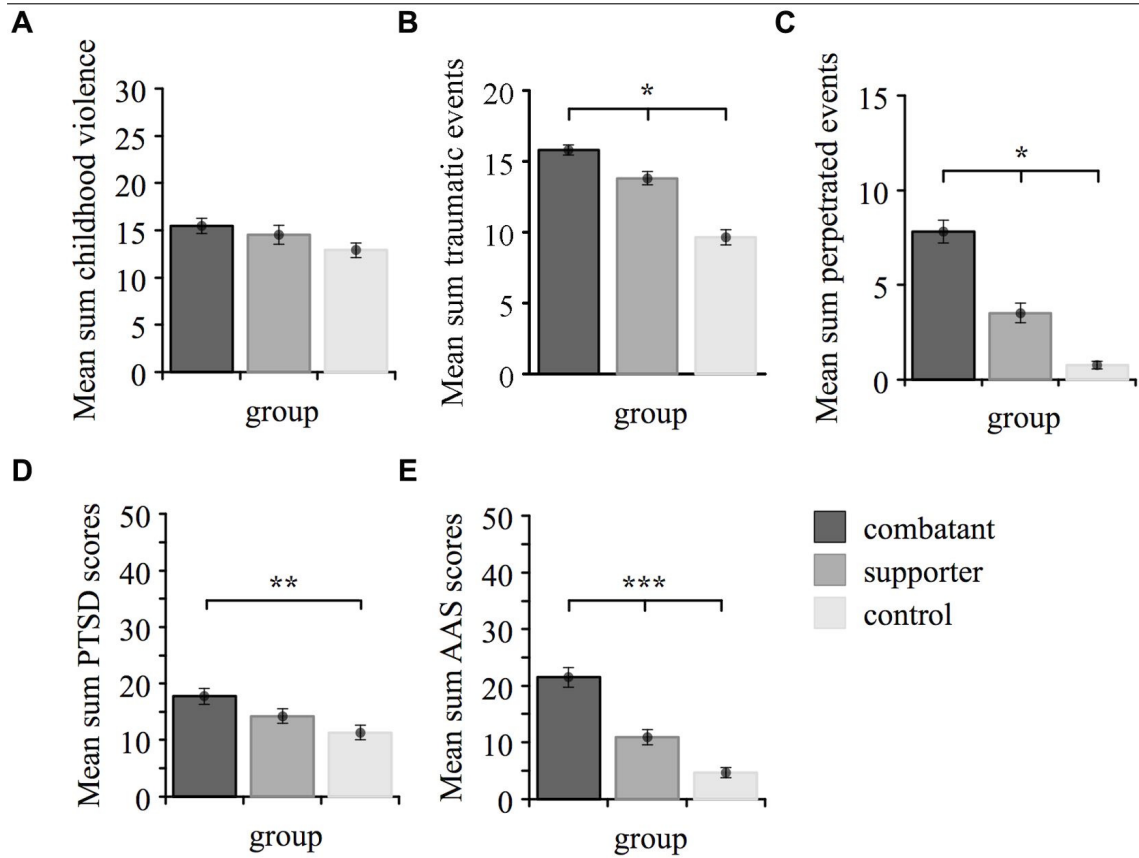


Figure 5.1: Differences between the three groups regarding (A) childhood violence, (B) traumatic event types, (C) perpetrated event types, (D) posttraumatic stress disorder (PTSD) symptom severity and (E) appetitive aggression. Mean sum scores are plotted on the ordinate, whereas each bar refers to a group. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

### 5.6.1 Prediction of Current Violent Behavior

As illustrated in Table 5.2, trauma-related variables (traumatic event types, childhood violence, PTSD symptom severity) were moderately associated. Appetitive aggression and perpetrated event types showed a strong association. Overall, trauma- and aggression-related variables correlated with moderate to high size.

## 5.6 Results

| Variable                    | Childhood violence | Traumatic event types | Perpetrated event types | Posttraumatic stress disorder (PTSD) symptom severity | Appetitive aggression | Current aggressive behavior |
|-----------------------------|--------------------|-----------------------|-------------------------|---|-----------------------|-----------------------------|
| Childhood violence          | 1                  |                       |                         |   |                       |                             |
| Traumatic event types       | 0.48***            | 1                     |                         |   |                       |                             |
| Perpetrated event types     | 0.36***            | 0.64***               | 1                       |   |                       |                             |
| PTSD symptom severity       | 0.47***            | 0.54***               | 0.45***                 | 1   |                       |                             |
| Appetitive aggression       | 0.19*              | 0.53***               | 0.81***                 | 0.4***  | 1                     |                             |
| Current aggressive behavior | 0.51***            | 0.41***               | 0.49***                 | 0.34***   | 0.44***               | 1                           |

\* $p < 0.05$ , \*\*\* $p < 0.001$ .

Table 5.2: Correlations between outcome variables.

To assess predictors for current aggressive behavior, in a first step the two dummy-coded variables of group membership variables were entered [ $F(2,152) = 3.77$ ,  $p = 0.025$ ,  $R^2_{adjusted} = 0.04$ ]. Belonging to the group of controls ( $p < 0.01$ ) or supporters ( $p = 0.09$ ) was associated with lower levels of current aggressive behavior compared to combatants. After adding appetitive aggression and PTSD symptom severity as predictors in the second step, there was a significant model improvement [ $F(2,150) = 18.01$ ,  $p < 0.001$ ,  $R^2_{adjusted} = 0.21$ ].

As illustrated in Table 5.3, both, PTSD symptom severity and appetitive aggression were positively related to current aggressive behavior. Group membership proved insignificant. After including childhood violence, the model substantially improved in terms of variance explained [ $F(1,149) = 40.03$ ,  $p < 0.001$ ,  $R^2_{adjusted} = 0.37$ ]. Higher levels of both appetitive aggression and childhood violence were significantly related to current aggressive behavior. However, PTSD symptom severity now failed to reach significance. Adding interaction terms did not improve the model in terms of higher variance explained, nor did they reach significance.

|                       | <i>b</i> | SE B | $\beta$ | <i>t</i> |
|-----------------------|----------|------|---------|----------|
| <b>Step 2</b>         |          |      |         |          |
| Dummy control         | 0.94     | 1.03 | 0.09    | 0.91     |
| Dummy supporter       | 0.52     | 0.94 | 0.05    | 0.55     |
| Appetitive aggression | 0.17     | 0.04 | 0.41    | 4.43***  |
| PTSD symptom severity | 0.10     | 0.04 | 0.20    | 2.51*    |
| <b>Step 3</b>         |          |      |         |          |
| Dummy control         | 1.29     | 0.92 | 0.13    | -1.4     |
| Dummy supporter       | 0.5      | 0.84 | 0.05    | 0.6      |
| Appetitive aggression | 0.17     | 0.03 | 0.43    | 5.16***  |
| PTSD symptom severity | -0.01    | 0.04 | -0.02   | -0.25    |
| Childhood violence    | 0.36     | 0.06 | 0.46    | 6.33***  |

*N* = 155; *SE*, standard error; combatants were used as reference group. The constant is not shown due to better readability; \**p* < 0.05, \*\*\**p* < 0.001.

Table 5.3: Multiple regression analysis for the prediction of current aggressive behavior.

## 5.7 Discussion

In the present study former combatants reported higher exposure to traumatic events and greater involvement in lifetime perpetration of aggressive acts compared to both former supporters and civilians. In accordance with the building block effect, symptoms of PTSD were also highest among former combatants. Being an active agent of warfare resulted in greater damage of trauma-related mental health in comparison to those who had witnessed war-related actions or were victims of the civil war. These results coincide with previously published studies on former male combatants presenting high impairment due to PTSD (e.g., Weierstall et al., 2013a; Nandi et al., 2015) and on psychological problems in former girl soldiers (Annan et al., 2011).

Severe physical punishment as well as high rates of sexual abuse are typical experiences for girls when growing up in armed groups (McKay and Mazurana, 2004). As more than 50% joined the armed groups when they were younger than 18, they were at particular risk for exposure to high levels of violence during childhood. However, the individuals in the three groups did not differ regarding their exposure to adverse experiences during childhood. A possible explanation could be that domestic violence and corporal punishment are a widespread phenomenon within the Burundian society. Thus, all females are likely to have experienced severe forms of childhood maltreatment. Moreover, due to the civil war and irrespectively of their own involvement many girls grew up in disrupted families and adverse conditions.

Regarding appetitive aggression, the highest levels were present among former female combatants even several years after the end of the civil war. Compared to civilians, elevated levels of appetitive aggression were also found in supporters. A recent study on Burundian former male combatants and active soldiers identified both exposure to traumatic events and lifetime involvement in violent offenses as principal risk factors for appetitive aggression (Nandi et al., 2015). These factors might also account for differences in appetitive aggression between former female supporters and civilians, as the former reported greater exposure to traumatic events and perpetration of violent acts. Moreover, as self-committed violence is known to be strongly correlated with appetitive aggression (e.g., Hecker et al., 2012; Weierstall et al., 2013b) previously found differences between males and females (Weierstall et al., 2011) are likely to originate from a substantial gender difference in exposure to warfare. In all war scenarios, male combatants are exposed to combat more frequently and for a longer period of time, resulting in a higher probability to be shaped by these environments. In favor of this interpretation are the results of Meyer-Parlapanis et al. (2016) with matched samples and thus comparable levels of both exposure to traumatic events and perpetration of violence. However, it may well be possible that men are more easily attracted to participate in armed conflicts whereas this may be true only for a selection of women. Our results demonstrate, that those women who are exposed to fighting and combat, develop levels of appetitive aggression similar to their male counterparts (Weierstall et al., 2013a; Meyer-Parlapanis et al., 2016) which can be considered as stable and long-term adaptation to adverse and insecure environments (Crombach and Elbert, 2014).

Furthermore, evidence was provided that appetitive aggression, PTSD symptoms and violence experienced during childhood are important factors explaining the perpetration of everyday violence. Consistent to previous research, appetitive aggression appears to be crucial in thriving, ongoing violent behavior in post-conflict regions (Crombach and Elbert, 2014), highlighting the importance to focus on in demobilization processes of former combatants. In contrast to appetitive aggression, PTSD and violence experienced during childhood seem to influence aggressive behavior via the same mechanism, indicated by the fact that the former lost its predictive value as soon as the latter was included in the regression model. Research has found PTSD symptoms of hyperarousal to be associated with deficits in self-regulatory competences (Galovski and Lyons, 2004; Orth and Wieland, 2006; Tull et al., 2007). Also a history of childhood abuse is related to a lack of the development of behavioral control strategies (Brodsky et al., 2001; Roy, 2005). On a neurobiological level, both are linked to altered neurobiological brain circuitries (Elbert et al., 2006; Kolassa and Elbert, 2007; Braquehais et al., 2010), which partially overlap with neurobiological changes found in persons with low behavioral control strategies (Braquehais et al., 2010). These alterations in the neural circuitry due to impeded regulatory competences predispose individuals to react aggressively (Davidson, 2000; DeWall et al., 2007) and are likely to be

the underlying mechanism of childhood maltreatment outperforming PTSD in predicting current aggressive behavior. Hereby, primarily anger-driven reactive forms of aggression are affected, whereas appetitive aggression presents a distinct brain pattern (Moran et al., 2014). Thus, appetitive aggression and childhood maltreatment independently contribute to different forms of aggression resulting in an overall enhanced level of aggressive acts further promoting the cycle of violence.

The current study has some limitations. Relying on self-report, memory effects and social desirability might have biased reporting appetitive aggression and aggressive acts, possibly underestimating their impact. Furthermore, the context in which violent acts occurred was not assessed. In a traditional patriarchal society such as Burundi it is likely that the females perpetrated a significant part of violence against their own children, promoting a trans-generational cycle of violence (Roth et al., 2014; Crombach and Bambonyé, 2015). However, females reported both domestic and community violence, hence posing a threat to the overall development of a peaceful society. A more detailed assessment of the context might have yielded information about who is affected most by enhanced female aggressiveness.

The retrospective cohort-design limits interpretations regarding causality and direction of the reported effects. Only the chronological restrictions of the variables within the aggression model render the determined relationships between cause-and-effect plausible. Furthermore, selective dropout might have influenced the results. Severely affected women with high rates of PTSD might not have been able to participate in the interviews. Lastly, buffering effects of the community were not targeted in the current study. It is unclear, if social rejection of former fighters, who might have violated traditional gender roles, also occurred in the Burundian context. Moreover, the impact of social support, which can serve as a protective factor especially among females (Chaumba and Bride, 2010), has not been approached at all.

## 5.8 Conclusion

The present study demonstrates that in order to disrupt the cycle of violence in post-conflict regions and to help promote and sustain long lasting peace building processes, it is essential to address adverse childhood experiences, appetitive aggression and trauma-related ill-health in females formerly associated with combat. Moreover, neglecting to provide adequate resources to females in demobilization processes (Schauer and Elbert, 2010) leaves them vulnerable in the challenges related to their victimhood. Living in societies in which women are typically charged with the role of homemaking, these untreated female members of armed groups often transition directly into the roles as caregivers for their children. For those suffering from PTSD symptomology and other mental health complications, trading in guns for cooking spoons invariably places their children at risk

## 5.8 Conclusion

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for being the next victims in the cycle of violence. Hence prospective studies should be aimed at implementing therapeutic interventions in this particular population, comprising perspectives of both perpetrator and victim. Moreover, the evaluation of their effectiveness in terms of decreasing future aggressive acts and improving mental health is a meaningful next step. Lastly, in order to further disentangle the cycle of violence precedents and risk factors of appetitive aggression should be identified with a focus on potential differences in its development between males and females.

CHAPTER **6** 

**More Than the Win: The Relation  
between Appetitive Competition  
Motivation, Socialization, and  
Gender Role Orientation in  
Women's Football**

## 6.1 Abstract

The ability to produce peak performance plays a decisive role in the success of athletes in competitive contest situations. Levels of appetitive competition motivation (ACM), i.e., the desire to defeat an opponent independent of secondary reinforcing factors, were assessed in professional female football/soccer players in the premier and regional leagues, using club level as the measurement of sport success. Furthermore, the influence of social environments predominantly encouraging masculine and competitive play behavior and the players' perceptions of their own gender role orientations were investigated. Ninety female football players from the German premier league (44) and regional leagues (46) participated (age:  $M = 24$ ,  $SD = 5$  years). Questionnaires ascertaining ACM and self-perceptions of gender via gender-role stereotypes, childhood play behavior and style of upbringing were utilized. Premier league athletes showed a significantly greater inclination toward direct sporting confrontations. Almost 50% of the variance in ACM between the premier and regional league athletes was determined by modern upbringing style and the development of gender roles not corresponding to classic female gender stereotypes. The results emphasize the significance of ACM as an important facet in competitive sports and illustrate the influence of socialization on athletic performance.

Keywords: appetitive competition motivation, socialization, gender role orientation, upbringing style, women's football, motivation, gender

## 6.2 Introduction

The factors yielding peak performance in competitive sports have consistently been a focal point of sports psychology. Motivation, identified as one such factor, has eluded a commonly agreed upon definition (Ford, 1992) due to its complex, multifactorial interactions between biological, psychological, environmental and social dimensions (Hareli and Weiner, 2002). In line with this multidimensional understanding of motivation and the general concession that behavioral aims and their corresponding cognitions and affects drive commitment and performance levels (Gould et al., 2002), the following study examined the impact of appetitive competition motivation (ACM), i.e., the positive valence processing of direct competition with an opponent, on sports performance as well as its relation to social developmental factors. This was carried out by means of a survey of female football players from the premier league and regional leagues that examined social influences and gender role orientation.

**Motivation in the Sporting Context** The overarching framework of motivation utilized in this study is separated into intrinsic and extrinsic forms of motivation and how those forms interact with one another. The intrinsic form involves the motivation to know,

to accomplish things and to experience stimulation (see Vallerand et al., 1989, 1992). In this study, we evaluate the desire to experience stimulation element as expressed in ACM in the premier and regional league athletes and then investigate its interaction with extrinsic motivators related to upbringing style and gender socialization.

Extrinsic motivation has been broken down into four forms that exist on a self-determination continuum, ranging from high (integrated regulations, i.e., motivation stemming from external values an individual has internalized as their own), medium high (identified regulation, i.e., motivation stemming from external values an individual identifies as important), medium low (introjected regulation, i.e., motivation stemming from values to which an individual simply adheres) and low (external regulation; i.e., motivation based on rewards) (see Deci and Ryan, 1985; Ryan and Deci, 2000). The current study assessed to which extent upbringing style and gender socialization functioned as extrinsic motivators in female athletes engaged in high-level football teams. External regulators, such as financial compensation, fame and increased social status etc., arguably strong extrinsic motivators especially when comparing premier league and regional league athletes, were not included in the present study due to questionnaire length constraints.

**Appetitive Aggression and Appetitive Competition Motivation** The present study has its origins in research on appetitive aggression in the area of clinical psychology (Elbert et al., 2010). Working with several thousands of combatants from former crisis areas, this research demonstrated that a majority of individuals involved in long-term combat developed a fascination with and enthusiasm for direct confrontation with the opponent independent of overriding aims such as resource acquisition, dominance, or the causes of the conflict. The act of hunting and defeating the opponent generates an intrinsic motivation that is associated with positive valence and can override self-control and inhibition mechanisms. This phenomenon contains a decisively functional component: combatants who process violence and confrontation with stressful or even traumatic events in an appetitive manner exhibit resilience to post-traumatic stress disorders. This resilience stems from the experience that, at the time of and even in retrospect of the confrontation, extreme wartime experiences were perceived as less stressful, disturbing and traumatic (Weierstall et al., 2011). Aggression research in a clinical setting overlaps with investigations on motivation in a sport context. Sporting contest, with an interest in direct competition and the aim of defeating the opponent in the sport context, has already been described as analogous to our aforementioned research findings (Gill, 1993). Comparable characteristics were revealed: in studies on the emotional experience of the most successful moments in sports, athletes often report that they felt strong, sure of victory or (symbolically) like “a tiger” (Robazza et al., 2004; Ruiz and Hanin, 2004a). Activity in a sport context can also result in an experience of “flow,” in which the athlete completely blocks out external factors in the contest (Kowal and Fortier, 1999; Jackson and Eklund, 2002). Above all, group

cohesion in the team sport context (Kleinknecht et al., 2014) operates analogously to the populations investigated. The desire to defeat the opponent can even cause athletes to ignore fair or sanctioned play and demonstrate aggressive tendencies (Kavussanu and Ntoumanis, 2003; Ryska, 2003). The fewer thoughts experienced by the players during the competition, the higher the associated level of performance (Williams and Krane, 2001). The construct of ACM is grounded in a combination of social-cognitive and emotionally focused theoretical frameworks. First, the social-cognitive perspective (see Duda, 2001), focuses on an athlete's subjective evaluation of a situation and their perceived probability of achieving a particular aim given the circumstances and available resources. The studies— some in the context of football (Van-Yperen and Duda, 1999; Miller et al., 2004)—demonstrated that the pursuit of success and superiority in competition generates motivation for sports performance (Elliot and Conroy, 2005). Secondly, emotionally focused approaches distinguish between approach aims (positive valence) and avoidance aims (negative valence) (Elliot, 1999). They often focus on the “optimal” level of arousal. Performance ability is dependent on an appropriate level of arousal, and this arousal, in connection with the competition, can lead directly to the mobilization of physical resources and strengthen concentration and commitment. Negative states, such as fear of defeat (Bray et al., 2000), and positive states, such as victory in competition (Lane et al., 1995; Cerin et al., 2000), have activating effects. Over- and under- stimulation alike can cause a performance capacity decline, for example when concern about defeat turns into acute fear (Ruiz and Hanin, 2004a,b) or if concentration wanes as a result of insufficient challenge (Fredrickson and Branigan, 2005; McCarthy, 2011). Both social-cognitive and emotionally focused approaches suggest that victory or the anticipation of victory in competition represents a significant motivational factor. However, to our knowledge there has been no systematic research to date which investigates the positive valence processing and motivational significance of high contact, direct opponent confrontation in a sport context and examines whether motivation is solely determined by the competition itself. Therefore, when a phenomenon analogous to appetitive aggression exists in the sports context, sports psychology research stands to benefit not only from the associated positive valence intrinsic motivation but also from the identification and prevention of mental health and behavioral complications potentially produced in the context of competition. Hereby, ACM is investigated in the context of professional female football players. The term motivation was selected because, while unsanctioned aggressive behavior also occurs in sport, there is no direct connection to the classical definitions of aggression that involve an intention to cause harm (Anderson and Bushman, 2002).

**Sports, Socialization and Gender Role Orientation** In the context of sports, socialization factors such as the sports environment and leaders such as coaches or trainers have emerged as significant influencing factors for the development of performance (Bloom

et al., 2003; Côté and Sedgwick, 2003). Furthermore, studies on children and adolescents indicate that play behavior, and thereby peer interaction, has a predominant influence on performance in a sporting context, highlighting manners in which socializing influences extend far beyond the club setting (Côté et al., 2003; Griffin and Butler, 2005; Ericsson, 2007). In investigations on gender effects in sport contexts, however, there is often a continued reliance on outdated research findings that exclusively represent biological or genetic determinism and neglect such socialization influences (Gildemeister, 2008; Nestvogel, 2008; Reidy et al., 2009). Despite the widely held perception that the physical performance of females often does not match that of males in sports (Åstrand et al., 2003), recent studies nonetheless indicate that sex differences become less significant under consistent training conditions (Hodges et al., 2004). A particularly decisive variable here is access to training opportunities (Musch and Grondin, 2001) and the encouragement of behavior and characteristics associated with strong sports performance. We therefore postulate that, just as socialization influences sport performance even outside the sport context, stereotypical gender roles (cf. e.g., Richardson and Hammock, 2007) can also have an influence on sport performance. This presumably has particular significance for women's football, especially in light of the ban on women's football in Germany until 31st October 1970. Femininity is stereotypically understood to consist of expressive qualities such as caring, selflessness, emotionality and empathy (cf. Abele, 2003), each of which seemingly contradict the assertive, competitive orientation considered to be integral in the context of football. Moreover, since the beginning of the nineteenth century, the opinion has persisted that women who are active in this type of sport context acquire typically masculine characteristics and thereby upset the natural hierarchy of society (Eagly and Koenig, 2006). As female athletes in male domains are often confronted with the label of androgyny and are subjected to sexual discrimination (Krane, 2001), socialization effects likely play a vital role in the evaluation of performance level and commitment in women's football.

**Objectives** Using club level as the measurement of sport success, ACM levels in female football players in the premier and regional leagues were assessed. Furthermore, we investigated the influence of social environments predominantly encouraging masculine and competitive play behavior and the players' perceptions of their own gender role orientations.

## 6.3 Method

### 6.3.1 Sample

The participants were recruited by letters sent to 12 premier league and 17 regional league clubs. Out of these, 4 premier league clubs and 12 regional league clubs agreed to participate. One premier league club declined to participate. The other clubs did not reply.

## 6.3 Method

The club names will not be published in accordance with the promised anonymity of the survey and at the request of the participating clubs. The study was implemented using a questionnaire format with an a-priori sample size calculation to detect differences across the two leagues and the sampling was concluded a sufficient number of questionnaires had been received. In a first period of data collection, questionnaires were sent to the clubs together with general information, declarations of consent and procedural notes on filling out the questionnaires. The completed questionnaires were collected together with the declarations of consent. The questionnaires were collected separately in unmarked envelopes in order to guarantee the players' anonymity. In a second period of data collection, to increase user-friendliness and improve confidentiality, an online version of the questionnaire was created using "online survey" software (umfrageonline.com) and an email was sent to the participants with a link to the survey. The processing time was between 20 and 30 min. Out of a total of 90 participants (age:  $M = 24$ ,  $SD = 5$  years), 44 played in the premier league and 46 in the regional league. As shown in Table 6.1, the two groups do not differ in any football-specific or potentially confounding variables.

All participants were informed of the aims of the study and gave their written consent to participate. Participation in the study was voluntary, and there was no financial compensation. The Ethical Review Board at the University of Konstanz approved this study.

| Variable                                       | Premier league players | Regional league players | Test statistic             |
|--|------------------------|-------------------------|----------------------------|
| Age  | $M = 23, SD = 4$       | $M = 25, SD = 5$        | $t_{88} = 1.46, p = 0.147$ |
| <b>PLAYER POSITION [NUMBER (%)]</b>            |                        |                         |                            |
| Goal   | 5 (11)                 | 1 (2)                   | $\chi^2 = 6.74, p = 0.081$ |
| Defense  | 13 (30)                | 23 (50)                 |                            |
| Midfield                                       | 21 (48)                | 15 (33)                 |                            |
| Attack   | 5 (11)                 | 7 (15)                  |                            |
| Number of games played in the last season      | $M = 19, SD = 7$       | $M = 16, SD = 9$        |                            |
| Average playing time in the last season (min.) | $M = 72, SD = 29$      | $M = 73, SD = 29$       | $t_{88} = 0.19, p = 0.848$ |

Table 6.1: Demographic data for premier and regional league players.

### 6.3.2 Design

A quasi-experimental design was selected with the group factor Club Level to investigate group differences between players from the premier and regional leagues. The Club Level variable was coded as "1" (premier league players) and "0" (regional league players) and was also used as a dummy variable in the evaluation. Dependent variables used were the variables Appetitive Competition Motivation, Masculine Socialization, Masculine Role Model, and Modern Upbringing.

### 6.3.3 Material

**Questionnaire to Ascertain Appetitive Competition Motivation** An adapted version of the Appetitive Aggression Scale (AAS, Weierstall and Elbert, 2011) was used for the questionnaire to ascertain ACM. The AAS, comprising 15 items, is available as semi-structured clinical interview as well as a self-rating tool to measure appetitive aggression and, to date, has been successfully validated with several thousand participants with different levels of aggression. It demonstrates both a satisfactory factorial and criterion validity and sufficient psychometric features (including Cronbach's Alpha = 0.85). Proven to be a valid and reliable questionnaire, it has already been implemented in its original form with female combatants and civilians (e.g., Augsburgers et al., 2015; Meyer-Parlapanis et al., 2016) and as a modified self-assessment instrument in civilian populations (e.g., Weierstall et al., 2014). In the current study, the existing items on the AAS were reformulated and adapted to the competitive elements in the sporting context (for example: original item: "Does the challenge of defeating a strong opponent make the fight more pleasurable for you in comparison to the defeat of a weak opponent?" → competitive item: "Does the challenge of winning against a particularly strong team make the game more exciting in comparison with winning against a weak team?"; original item: "When you fight, do you stop caring about whether you could be killed?" → competitive item: "During the game, do you fear that you might be injured or at least give this some thought?"). The item on sexual arousal related to competition from the combatant version was not included. The answers to each item were coded with the values "0" to "4" on a 5-point Likert scale, with high values indicating a strong competitive motivation. To make it easier to answer the items and to increase the validity of the answers, descriptions of the respective response levels for the items were given, which were based on the AAS manual. The variable Appetitive Competition Motivation was calculated for each person by calculating the average item score. Cronbach's Alpha gave a value of 0.87. A principal axis factoring analysis was calculated to determine the factorial validity and revealed that all the items loaded onto a main factor, accounting for 38% of the questionnaire's variance.

**Masculine Socialization** Visual analog scales (VAS), when carefully constructed, have proven effective at representing subjective assessments (Wewers and Lowe, 1990). Thereby, for the remaining three variables, 10 cm-long VAS were employed with verbal anchors at the poles (values between 0 and 100). Although questionnaires such as the Bem Sex Role Inventory (Bem, 1981) exist for the construct of gender role orientation, VAS were used for reasons of efficiency and practicality. The variable Masculine Socialization was operationalized by "boyish activities and toys in childhood and adolescence" and ascertained according to the participants' self-perception. The poles were labeled with the anchors not at all and very. A high value on this scale therefore indicated a tendency to perceive one's socialization as masculine.

**Modern Upbringing** To ascertain a modern upbringing, a “traditional or modern upbringing” scale was provided and labeled with the anchors traditional and modern. In order to validate self-perception with regard to measurement of the underlying construct, the participants were also asked to provide adjectives they associated with the two terms. The qualitative evaluation of the adjectives revealed that the evaluation of stereotypically traditional and modern upbringings corresponded to the attributes of descriptions given in the relevant psychological literature (cf. introduction) (for example: traditional: “home-loving,” “familial,” “conservative,” or “classical role allocation”; modern: “cosmopolitan,” “tolerant,” “liberal,” or “daring”). High values for these variables indicate a predominantly modern upbringing. Masculine role orientation To capture the participants’ self-perception of their own role orientations, they were asked whether they perceived themselves as orientated toward a more feminine or masculine role. The attributes feminine and masculine were set as anchors. High values on this scale indicate a tendency toward a masculine role orientation. Qualitative interviews were able to validate the association of a stereotypically masculine role model with adjectives such as “performance-orientated,” “assertive,” and “independent.”

**Implementation** The study was implemented using a questionnaire format. In a first period of data collection, questionnaires were sent to the clubs together with general information, declarations of consent and procedural notes on filling out the questionnaires. The completed questionnaires were collected together with the declarations of consent, which were filled out separately in order to guarantee the players’ anonymity. In a second period of data collection, to increase user-friendliness, an online version of the questionnaire was created using “online survey” software (umfrageonline.com) and an E-mail was sent to the participants with a link to the survey. The processing time was between 20 and 30 min.

**Data Evaluation** The data was evaluated using the program R-Statistics, Version 3.1.1 for Mac OS X 10.9. The significance level was set at Alpha = 5%. Effect sizes were calculated using the program  $g^*$  power 3.1 (Faul et al., 2007).

## 6.4 Results

**Group Differences between Players in the Premier and Regional Leagues** Table 6.2 shows the intercorrelation matrix for the four main dependent variables, shown separately for the premier league and the regional league players. The first step was to determine group differences in the dependent variables between premier league players and regional league players. With the exception of the masculine role model ( $M_{\text{premier league}} = 62$ ,  $SD_{\text{premier league}} = 24$ ,  $M_{\text{regional league}} = 63$ ,  $SD_{\text{regional league}} = 26$ ,  $t_{88} = 0.16$ ,  $p = 0.871$ ,  $d = 0.04$ ), there were significant group differences in the three remaining variables: players

Chapter 6. More Than the Win: The Relation between Appetitive Competition Motivation, Socialization, and Gender Role Orientation in Women’s Football

in the premier league not only reported a more modern upbringing ( $M_{\text{premier league}} = 59$ ,  $SD_{\text{premier league}} = 23$ ,  $M_{\text{regional league}} = 44$ ,  $SD_{\text{regional league}} = 23$ ,  $t_{88} = 2.99$ ,  $p = 0.004$ ,  $d = 0.66$ ) and a more masculine socialization ( $M_{\text{premier league}} = 79$ ,  $SD_{\text{premier league}} = 13$ ,  $M_{\text{regional league}} = 60$ ,  $SD_{\text{regional league}} = 26$ ,  $t_{68.847} = 4.387$ ,  $p < 0.001$ ,  $d = 1.30$ ), but above all the premier league players exhibited higher values for ACM ( $M_{\text{premier league}} = 2.45$ ,  $SD_{\text{premier league}} = 0.56$ ,  $M_{\text{regional league}} = 1.72$ ,  $SD_{\text{regional league}} = 0.47$ ,  $t_{88} = 6.70$ ,  $p < 0.001$ ,  $d = 1.41$ ). The large effect sizes indicated large differences in the dependent variables.

| Club level      | Variable                | Masculine socialization | Masculine role model  | Appetitive competition motivation |
|-----------------|-------------------------|-------------------------|-----------------------|-----------------------------------|
| Regional league | Modern upbringing       | $r = 0.27, p = 0.069$   | $r = 0.06, p = 0.683$ | $r = 0.27, p = 0.071$             |
|                 | Masculine socialization |                         | $r = 0.58, p < 0.001$ | $r = 0.12, p = 0.414$             |
|                 | Masculine role model    |                         |                       | $r = -0.03, p = 0.865$            |
| Premier league  | Modern upbringing       | $r = 0.07, p = 0.672$   | $r = 0.25, p = 0.110$ | $r = 0.51, p < 0.001$             |
|                 | Masculine socialization |                         | $r = 0.46, p = 0.002$ | $r = 0.47, p = 0.001$             |
|                 | Masculine role model    |                         |                       | $r = 0.51, p < 0.001$             |

Significant coefficients are in bold.

Table 6.2: Intercorrelation matrix of the central dependent variables.

**Prediction of Appetitive Competition Motivation** The second step was to investigate the influences of Masculine Socialization, Modern Upbringing and Masculine Role Model on ACM on the basis of a multiple linear regression analysis. As no significant deviation from the normal distribution was ascertained for the ACM variable (Kolmogorov Smirnov Test  $p = 0.340$ ), no further distribution assumptions had to be taken into account. The variables Masculine Socialization, Modern Upbringing, Masculine Role Model, the dummy variable Club Level and all the possible double interactions were included in the complete model. The final model was selected according to the Akaike Information Criterion (AIC, Akaike, 1987). In order to reduce multicollinearity, the variables were centered to the average value before forming interactions (cf. Kleinbaum et al., 1998).

The model that was most suitable for predicting ACM according to the AIC included the variables Masculine Socialization, Modern Upbringing, Masculine Role Model and the two interaction terms between Club Level and Modern Upbringing and Masculine Role Model (Table 6.3). This model, which was able to account for over half of the total variance ( $R^2_{\text{adj}} = 0.52$ ), demonstrated not only a large effect size [ $F_{(6, 83)} = 17.318$ ,  $p < 0.001$ ,  $f^2 = 1.25$ ] but also sufficient statistical power [ $(1 - \beta) > 0.99$ ]. While socialization conditions had a significant influence on both groups insofar as a greater encouragement of stereotypically masculine activities was associated positively with the development of ACM, the other two variables only played a significant role in the group of premier league players. Both a modern upbringing and a tendency toward a masculine role model were associated with ACM in premier league players but not in regional league players. This connection is illustrated in Figure 6.1. In the bubble diagram, the four different bubble sizes represent

the quartiles in which the raw values for competitive motivation of the individual players lie in relation to the total group. As described above, competitive motivation values in the upper two quartiles are not only predominantly found in the group of premier league players; they are also predominantly clustered in the area of the premier league players who reported a modern upbringing and perception of a masculine role model. The residual diagnosis revealed no indications of either multicollinearity (maximum VIF value 1.87) or rogue results (maximum value for Cook's  $d = 0.14$ ). A comparison of the residual variances between the two groups also produced no indication of statistically significant differences (Levene Test,  $p = 0.529$ ). The model used therefore not only fulfilled all the requirements for the merit of regression models but also indicated robust results.

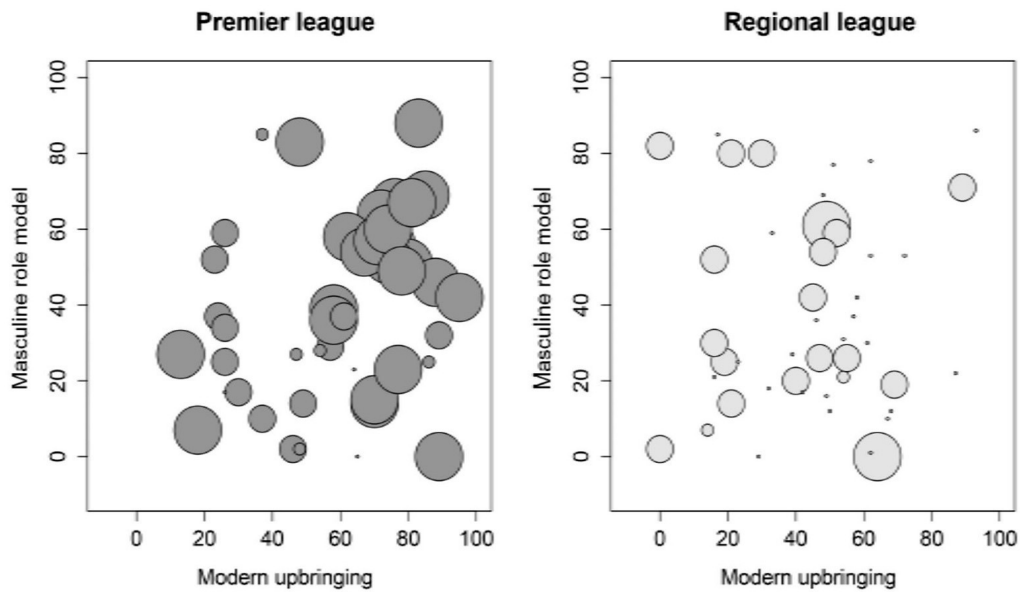


Figure 6.1: This diagram shows the relationship between the following variables: masculine role model, modern upbringing and appetitive competition motivation, with separate diagrams for premier and regional league players. The level of appetitive competition motivation is represented by the size of the bubbles, whereby raw values for appetitive competition motivation for the entire group were categorized into four quartiles. High values in the other two variables indicate a more modern upbringing or a tendency toward a more masculine role model.

The final step was to calculate two separate linear regression analyses, one for each group, which predicted ACM by means of the other three predictor variables in order to predict the amount of variance accounted for in each group (See Table 6.3. Of the 52.4% variance accounted for in the total model, only 6% was attributable to effects in the group of regional league players [ $F_{(3, 42)} = 1.96$ ,  $p = 0.135$ ,  $f^2 = 0.14$ ], while the remaining 46% of variance was explained by effects in the group of premier league players [ $F_{(3, 40)} = 13.34$ ,

$p < 1.1$ ,  $f^2 = 1.11$ ]. No influence of playing position on the level of ACM was ascertained [ $F_{(3, 86)} = 2.15$ ,  $p = 0.097$ ,  $\eta^2 = 0.07$ ].

|  | Appetitive competition motivation |                  |
|--|-----------------------------------|------------------|
|  | $\beta$                           | p                |
| Masculine socialization                  | <b>0.26</b>                       | <b>0.011</b>     |
| Masculine role model                     | -0.08                             | 0.340            |
| Modern upbringing                        | 0.05                              | 0.551            |
| Club level                               | <b>0.45</b>                       | <b>&lt;0.001</b> |
| Modern upbringing $\times$ Club level    | <b>0.32</b>                       | <b>&lt;0.001</b> |
| Masculine role model $\times$ Club level | <b>0.22</b>                       | <b>0.006</b>     |
| $R_{adj}^2$                              | <b>0.52</b>                       | <b>&lt;0.001</b> |

*Standardized regression coefficients are shown here. The regression model was selected according to the Akaike Information Criterion (AIC). Significant coefficients are in bold.*

Table 6.3: Regression model to predict appetitive competition motivation.

## 6.5 Discussion

The present study reveals a high degree of ACM among a majority of the athletes, which verifies that the competitive contest against an opponent in and of itself can be experienced as appetitive and positively reinforcing. This encompasses not only game preparation and fantasies about “crushing the opponent into the ground,” but also flow experiences during the game and potentially leads to less controlled play involving deliberate fouls to intimidate or humiliate the opponent and to less concern for personal injury. This form of ACM, which, borrowing from the original clinical research, can also be described as “fighting spirit,” seems therefore to be a significant intrinsic attraction goal during the contest. If the club level is taken as a measurement of sporting success, the more successful athletes exhibit greater fighting spirit and also greater pleasure in the football contest. When, analogous to the clinical research, this form of positive valence processing of sporting contests also causes athletes in an appetitive and victory-orientated mode to be less susceptible to distractions, fears and stressors during the contest (cf. Weierstall et al., 2011), targeted encouragement of ACM could considerably increase performance levels in the sporting context. Furthermore, it would be advisable to classify this in the overall context of motivational research by integrating this facet into existing social-cognitive or

emotionally focused approaches. A further significant result of this study is the connection between ACM and socialization factors. A motivational context that encourages a high level of self-efficacy and the belief that one is able to successfully manage situations are elements conducive to the ability to produce peak performance (Ntoumanis and Biddle, 1999; Parish and Treasure, 2003). Above all, frustration and stress often cause players to withdraw from competitive sports (Kleinert and Raven, 2011). The present study, however, demonstrates that the development of self-efficacy is formed far beyond the sporting context alone and that considerably greater attention should be paid to biographical and life history factors. It is also the case that professional athletes demonstrate a high level of performance commitment in the pursuit of goals even outside the sporting context (Durand-Bush and Salmela, 2002; Bull et al., 2005). This study therefore on the one hand emphasizes that success in sports is not only developed at a club level but is also closely linked with an individual's more permanent characteristics and is therefore subjected to their biographical and everyday experiences. The use of biographical elements, including in particular the processing of aversive and distressing experiences, could therefore not only provide a beneficial point of contact between clinical and sports psychology but could also lead to an enhancement of the athletes' performance in a manner that has so far been largely neglected (Hanin, 2007). On the other hand, this study underlines the significance of socialization in the development of competitively orientated characteristics (Fine, 2010). In a socialization context that is more modern, more liberal and less strongly orientated toward classically stereotypical role models, female athletes seem to develop the same competitively oriented behaviors as male athletes (cf. Sobiech, 2006; Niederbacher and Zimmermann, 2011). This corroborates research emphasizing the social gender role as a counterweight to birth gender assignments in the explanation of gender effects (Koch, 2004; Keeler, 2007). The perception of a stereotypically masculine role orientation in female athletes having a greater competitive orientation, directed toward assertiveness and strength, aligns with existing research findings (Lenzi et al., 1997; Archer, 2004). As other studies have shown that the masculinization of assertive female athletes can often be accompanied by acute psychological stress (Krane, 2001), the results of this study highlight the need for further research to pursue and update currently outdated and stereotyped standards and concepts. This investigation was designed to investigate individual athletes participating in team sports. The clinical origins of ACM, appetitive aggression, were assessed in individuals having participated in military cohorts and the questions focused on acts of aggression that often were implemented in group settings (Weierstall and Elbert, 2011), while ACM, by extension, similarly focuses on individual athletes participating in a team sport setting with 4 of the 14 questions specifically referring to either teammates or the other team. The results of this study are not intended for application to athletes performing in individual sports.

## **6.6 Conclusion**

Female athletes performing in a sport context that has been both legally and socially viewed as a domain reserved for males preserve against numerous stereotypes and obstacles. This study highlights ACM as one of a myriad of influencers playing a role amidst a highly intersectional web of socializing factors related to family systems, gender identity and role modeling. Due to this complexity, further interdisciplinary research, including behavioral and biological markers, is needed to validate our current findings and deepen our understanding of the psychological underpinnings of individual development and functioning, both in sports and beyond, amidst varying exposure to social constructs and expectations.



CHAPTER **7** 

# General Discussion of the Results

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In this section, the results of this dissertation are summarized and discussed with respect to the research questions delineated in the Introduction.

1. Deconstructing the binary: How is the perpetrator-victim binary conceptualized in the current “cycle of violence” model, and does this model hold up in light of current observations about the transmission of violence (Figure 7.1).



Figure 7.1: The Trajectory of Violence. This representation of violence as originating or being utilized by perpetrators and implemented against victims reduces the complexity of violence to two binarily opposed participants.

The first article, situated in the context of one of the most extreme forms of violence, torture, defines the players in the current perpetrator-victim binary model. In summary, it makes the case that, at a systemic level, torture is strategically employed to exert power and control over a vulnerable party and can involve appetitive elements for the individuals implementing the violence (Elbert et al., 2010; Maclure and Denov, 2006). The victims are the individuals at the receiving end of the violence who suffer a wide range of physical and psychological abuse, subsequently battle numerous mental health complications and stand to benefit from psychological treatment and specific interventions, such as Narrative Exposure Therapy. The article goes on to highlight the mental health and reintegration challenges facing implementers of torture and makes the case that perpetrators would similarly benefit from psychological interventions, such as Forensic Offenders Narrative Exposure Therapy. Extending beyond focusing solely on the victims’ rehabilitation and the perpetrators’ punishment for future directions and solutions, this article makes the case that both roles require balanced consideration and treatment options as means to address the cycle of violence.

The first article is situated in this thesis to lay the groundwork for making the case that the current model of violence transmission (see Figure 7.2) is overly reductionist, first in form and thereby subsequently in future directions.



Figure 7.2: The Transmission of Violence. A continuation of the previous Trajectory of Violence, this model includes the sequence of victimization that follows the initial act of violence. This model is limited in its linear form, unable to depict the cyclical transmission of violence.

This model is unable to encompass the seemingly countless transmission trajectories of violence observed in the aggression research findings demonstrated. Due to this limitation, the case is being made that this model illustrates violence as occurring seemingly in a vacuum in which it has a unidirectional trajectory that originates in a perpetrator and terminates in a victim. This unidirectional trajectory alone undermines the goal of the model to portray that violence is cyclical. The term “cycle of violence” implies that violence is not terminal but rather is propagated and thereby cycles forward to create more victims. However, as soon as it is established that there are secondary (and by default tertiary, quaternary, quinary and so on) victims, then it is implicit that the perpetrator themselves is likely to have also been a victim of a prior perpetrator, a concept already well established in the literature (Pears & Capaldi, 2001; Widom, Czaja, & DuMont, 2015; Widom, 1989). Furthermore, this shortfall of the model also implies that any previously suggested future directions are also highly likely to be similarly lacking in the complexity required to address the reality of the transmission of violence. The remaining articles are efforts to investigate current findings in expressions and experiences of proactive aggression, specifically appetitive aggression, as they relate to the current perpetrator-victim conceptualization and simultaneously consider the implications of these findings and what alterations to the present model they suggest.

2. Investigating assumptions associated with the current perpetrator-victim binary model: Do males and females experience appetitive aggression differently, how does context impact individual relationships with proactive forms of aggression, and what do such findings suggest about the current model of the cycle of violence?

The second article tackles currently held assumptions that some individuals are less likely to become willing perpetrators, solely due to their biological sex. Just as violence originating in perpetrators and terminating in victims is an insufficient representation of the complexity of the cycle of violence, so is the assumption that, when individuals are situated in contexts offering numerous opportunities to perpetrate violence, males are more likely to become willing perpetrators than females (See Figure 7.3).



Figure 7.3: Binary overlap that can occur when females are presumed less likely to be capable of appetitive aggression than males.

In a context of extreme violence, this study demonstrated that, while sex differences for appetitive aggression were observed in non-combatants, individuals with fewer opportunities to perpetrate violence, no difference could be found in individuals with such access, combatants. Accordingly, the male and female subsets of the combatant group each demonstrated higher levels of appetitive aggression than their respective non-combatant counterparts. This finding suggests that the more violence perpetrated, the greater the likelihood that the individual develops a desire to inflict more violence, regardless of being male or female, a finding that coincides with prior research (Weierstall, 2011; 2012). The observed sex differences in appetitive aggression in non-combatants also coincide with previous findings- either that males are simply more aggressive than females (Maccoby & Jacklin, 1980) and/or that males and females simply experience and express aggression differently and measures that focus on direct forms of aggression will consistently show females as less aggressive due to their possible preferences for more indirect forms of aggression (Björqvist et al., 1994). However, individuals with experience perpetrating violence, both male and female, reported similar levels of appetitive aggression, a finding that aligns with theories that male and female aggression vary situationally rather than qualitatively (Frodi et al., 1977) and that males and females are more similar than different in their experience of aggression (Hyde, 1984).

This research shows that in contexts in which individuals are perpetrating violence against others, all individuals are at an increased risk for experiencing appetitive aggression, regardless of sex. The finding specifically implies that public policies or opinions suggesting that females, even those that have performed in combat or in an otherwise violently perpetrating roles, are less likely to savor that violence and are thereby perceived as easier to reintegrate, than males, are in fact misguided and counter-productive. All individuals in contexts of extreme violence, whether male or female, should be given equal consideration

when determining the damage incurred during and the future challenges related to the exposure to violence, both perpetrated and endured. This results of this study serve to update the current transmission of violence model to incorporate reactive and proactive forms of aggression that are subsequent to the earlier implementations of violence (See Figure 7.4).

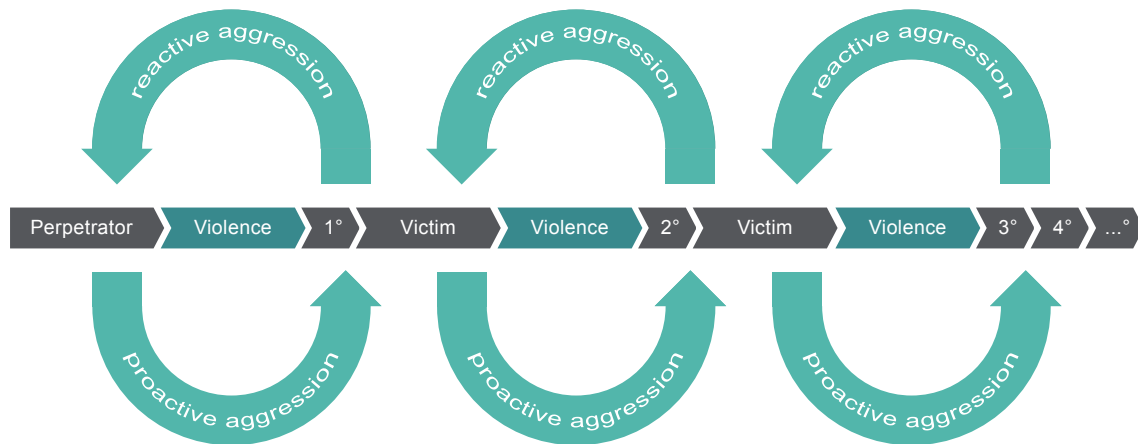


Figure 7.4: The Updated Transmission of Violence. This model expands the current conceptualization of the transmission of violence to include the back-cycling of reactive forms of aggression toward those who perpetrated the original violence and also the forward cycling for proactive aggression toward future victims.

The third study delved deeper into the factors influencing appetitive aggression observed in individuals having perpetrated violence in an effort to better understand what factors, in addition to perpetration, play a role in the development of appetitive aggression. Significant moderation effects of sex following regression analyses suggest sex-linked pathways in the development of appetitive aggression. In females, childhood maltreatment was negatively associated with appetitive aggression, while traumatic events were not. In males, however, appetitive aggression was positively associated with both childhood maltreatment and traumatic events. Also, particularly for combatants, perpetrated events were more strongly correlated with appetitive aggression for females than for males.

In alignment with the results from the second article and prior research, the results of this study demonstrated that the more violence perpetrated, the greater the propensity towards appetitive aggression. Furthermore, albeit far from conclusive or generalizable, it sheds light on some of the variations in the impact of childhood maltreatment and traumatic events in the development of that appetitive aggression for both males and females. Most importantly, this study highlights that researchers should not be asking whether or not females experience appetitive aggression but rather in which manner they are experiencing and expressing their acquired attraction to violence, a topic that is addressed in the fourth article.

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The fourth article reported numerous findings related to female experiences of appetitive aggression spanning three different female populations functioning in a context of extreme violence: combatants, armed group supporters, and civilians. As predicted in line with prior research (e.g., Hecker et al., 2012; Weierstall et al., 2013b), former combatants experienced more traumatic events, perpetrated more violence, had the highest levels of PTSD and reported higher levels of appetitive aggression than supporters and civilians. Supporters had higher levels of appetitive aggression than civilians. However, all three groups reported similar exposure to childhood maltreatment, and childhood maltreatment was a stronger predictor for appetitive aggression than PTSD. Appetitive aggression and childhood maltreatment contributed to various forms of aggression independent of one another, increasing overall levels of aggression. These findings illustrate that abuse suffered during childhood, symptoms of PTSD and finding violence appealing all play roles in current levels of aggressive behavior. Furthermore, in line with prior research, appetitive aggression seems to play a critical role in surviving regions in continuous turmoil (Crombach & Elbert, 2014). Female members of armed groups require the same level of consideration as their male counterparts amidst reintegration procedures and access to mental health resources, specifically those addressing appetitive aggression.

This fourth article directly deconstructs female experiences of appetitive aggression in contexts of varying degrees of opportunity to perpetrate forms of violence in association with armed groups. During childhood, a civilian context for all the individuals in the study, there were similar levels of experienced childhood maltreatment. As the participants grew older, some stayed in civilian contexts, while others either actively or passively participated in contexts of armed conflict. The varying degrees of violence associated with each context displayed varying levels of appetitive aggression. In essence, this study highlights that, in contexts in which there is widespread childhood maltreatment as in Burundi, when necessity (i.e. war) and opportunity (i.e. recruiting by armed groups) present themselves, some victims will take on roles as perpetrators. While the civilians protected themselves from being exposed to the levels of violence experienced, both endured and perpetrated, the combatants benefit from their budding appetitive aggression that possibly buffers them against the damage of the impending wave of violence that is sure to come in these conflict regions. This study demonstrates that the line constituting the perpetrator-victim binary is anything but clear, supporting even further the suggestion of a more dualistic understanding of the perpetrator and victim roles in the cycle of violence. Especially in contexts of armed conflict, individuals can transition from victims' roles to perpetrating roles only to return to victims' roles again, and even be in both roles simultaneously (See Figure 7.5).

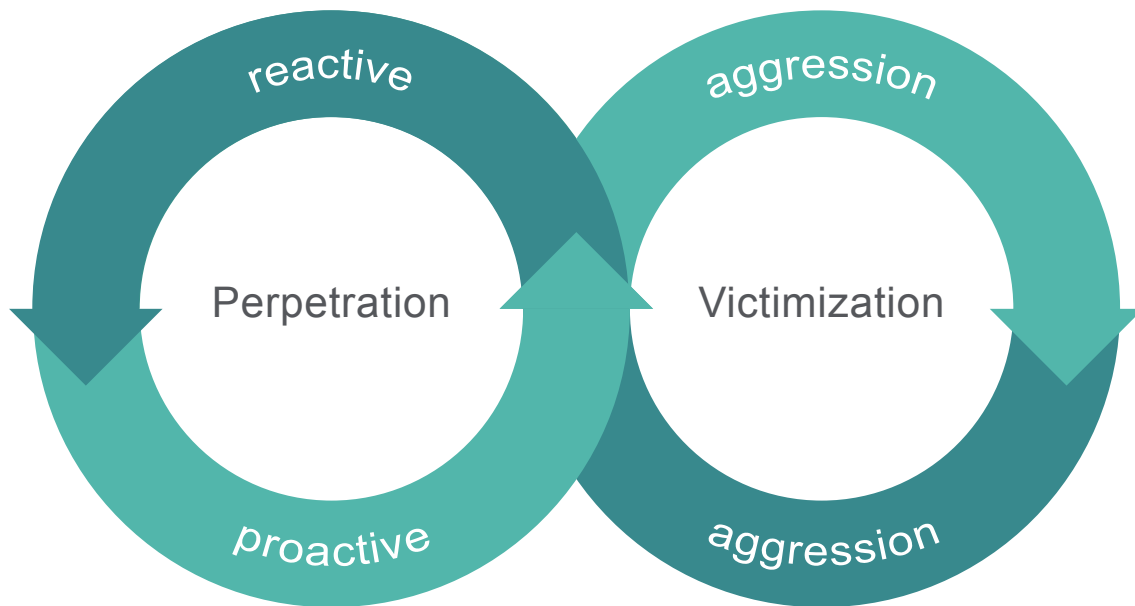


Figure 7.5: The Cycles of Violence. This model shifts the focus from violence to aggression, reflecting the model transition from outcomes to motivators. Here, perpetrators and victims are not binarily juxtaposed but rather two dualistic roles situated in a closely intertwined relationship functioning in a context of violence.

The final article transitions from a context of violence to explore appetitive aggression in a purely civilian context to investigate the accessibility of a pleasure in aggressive behavior in a setting associated with far less lifetime exposure to extreme violence.

The fifth and final paper took place in Germany, a civilian setting lacking active armed conflict, and examined one of the only contexts in which direct displays of aggression are societally permitted and encouraged: competitive sports. Football is a high-contact, team sport containing many elements similar to those found in armed groups: a group of individuals contesting against another group with a desire to defeat them. The aggressive contact between opponents is highly regulated, but certain levels of unsanctioned aggression are not considered completely taboo. For example, cleating the opponent during the struggle to get the ball can result in a foul or a card depending on who made last contact with the ball and the level of aggression involved. However, in juxtaposition to life off the field, physically assaulting and possibly injuring an opponent does not typically involve a more significant consequence, such as arrest or a loss of status from other community members.

This study compared accomplished female football players and demonstrated that the higher-level athletes, represented by premier league status, reported significantly higher proclivity towards direct competition against opponents than their lower-level, regional league counterparts. This finding is parallel to the aforementioned research demonstrating that the more experience individuals have perpetrating violence, in this case the more time competing and training on the football pitch as with premier league players compared to

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regional league, the higher their levels of appetitive aggression will be. In essence, the more exposure individuals have with direct contest with an opponent, the more likely they are to enjoy the competition-related aggression. Furthermore, this study sought to examine the intersection between sex, gender identity and social role modeling to better understand some of the influences impacting individual levels of appetitive competition motivation. Almost 50% of the variance in appetitive competition was determined by having been raised with a more modern upbringing style and the development of gender role identities that do not align with the traditional feminine stereotypes. It appears that football provides a context in which females are given an opportunity to use direct, physical forms of aggression, and those who have not developed a strong adherence to the commonly accepted feminine traits of passivity and gentleness or who have admired masculine role models are more likely to enjoy the more aggressive aspects of competition.

This study tests the aforementioned findings about the development of appetitive aggression in females in a nonviolent context. While it does not directly pertain to the cycle of violence itself, it does suggest that in contexts in which there are fewer opportunities to perpetrate violence, such as societies not at war and in which there is not a preponderance of domestic forms of violence in comparison to those in conflict zones, in which there are fewer opportunities to perpetrate violence, some individuals, may find seek out situations in which there are civilian parallels to inter-group contests involving direct contact with opponents and utilizing physical behaviors that resemble aggression. Just as in Burundi where it is far less common for females to seek out combatant roles perhaps due to social gender role adherence, it was also a challenge for females in Germany to gain access to participation in high levels of a sport previously reserved only for males. Nonetheless, many of these women persisted, participated and even reported enjoying some of the aspects of participation that pertain to aggressive behavior.

## **Limitations and Future Directions**

While the findings of the aforementioned studies make strides in understanding the perpetrator-victim binary in the cycle of violence, there are also many points due extra consideration and reservation. The first article is a cursory summary of prior research that explores the victim and perpetrator roles in what is often one of the most extreme expressions of appetitive aggression- torture. The intent of this work was to expand the discussion of the impact of torture on individuals to encompass perpetrator perspectives and even touch on systemic motivations for implementing torture. It is recommended that future research similarly consider all impacted individuals in efforts to better understand and thereby curb future utilizations of torture.

There are also generalizable limitations related to all four research articles. The studies are retrospective cohort designs that offer only limited interpretations of the data with reference to causality and trajectory of reported effects. Such study designs cannot

control exposure or outcome assessment and depend wholly on the participants' accounts as well as other documentation of the events under scrutiny. Accounts of the same event vary between and within individuals, and in the case of violence exposure, memory effects and social desirability are especially applicable. Such retrospective study designs require very large sample sizes for subsequent validation.

In order to get closer to understanding sex differences and similarities in appetitive aggression, the second study needs to be replicated with much larger sample sizes in varying contexts. Future studies replicating the investigation with male and female combatants in similar conflict contexts need to address female combatants in armed groups and militaries in which females constitute a larger number of the armed forces, thereby sharing combat experiences qualitatively and quantitatively more comparable to those of their male counterparts. This is due to limitations in the study that suggest that perhaps the female combatants who participated in the study reported such unexpectedly high levels of appetitive aggression simply because the context in which they performed required that they be exceptionally ruthless and aggressive in order to be provided an opportunity to serve alongside male comrades. If they had not had longer training periods and fewer enlistment obstacles than female soldiers in other armies actively including females, perhaps the findings would reflect a female appetitive aggression that appears less extreme. Additionally, the female combatant participants are possibly a biased sample of especially ruthless individuals who actively sought opportunities for performing violence and are outliers of the overarching female population from this region. Future comparisons distinguishing between voluntarily enlisted combatants and forcibly enlisted combatants need to be made to disentangle the role of motivation toward violence and the role of violent perpetration in the development of appetitive aggression.

The findings from the third and fourth articles also need to be replicated in larger sample sizes. Overall, the susceptibility to appetitive aggression in males and females with similar trauma loads and event types needs to be investigated on a broader scale before conclusive determinations can be made. Other important, future research questions include: are females having endured less violence more prone to appetitive aggression than other females with higher trauma loads? Is there an initial resistance to enjoying utilizing violence against others that after a certain threshold transforms into a subsequently rapid increase in appetitive aggression? Are males with fewer experiences of perpetration initially more prone to appetitive aggression than females in similar conditions? Do the levels of appetitive aggression in these males then begin to level out with subsequent perpetration in comparison with their female counterparts? And finally, would findings to the aforementioned questions equate to sex differences in the load and timing for the procurement of high levels of appetitive aggression or is variation within each sex just as important as between sex variation? The fifth article similarly needs replication in a larger sample, preferably focused on the highest level participation in competitive, direct contact

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sports possible. Furthermore, behavioral and biological markers need to be incorporated to support any self-report findings. Especially in societies in which all forms of aggression are frowned upon, self-report on appetitive properties of aggressive behavior is highly likely to be impacted by social desirability. Neurological and physiological assessments would greatly substantiate findings in future studies investigating appetitive competition motivation.

## Conclusion

The violence experienced by the individuals who have been victimized does not simply dissipate. It damages such an individual, leaving a mark. If the mark is extreme enough or enough marks have accumulated, the victim is traumatized and can even exhibit violence reactionary to the initial threats toward themselves or others, such as against family and community members, i.e. domestic violence or against strangers, i.e. road rage. The violence can also be exhibited proactively toward others. Even when the victim dies immediately after enduring the violence, the violence does not disappear with them. The research has demonstrated that in individuals who perpetrate, each subsequent act of violence increases the likelihood of having a desire to utilize even more violence in the future. The violence did not leave the perpetrator, never to return, rather the violence cycles back, returning to the perpetrator and often growing in intensity with each turn of the cycle. Simply punishing and excluding those who perpetrate does not acknowledge the susceptibility toward violence growing in the victims. And subsequently punishing and excluding the victims who go on to perpetrate violence would only serve to add to the already growing group of “bad guys.” Without addressing the violence growing in all individuals swept up in a context of violence, i.e. those perpetrating, those receiving and the large number of individuals doing both, the cycle will continue. Interventions and treatment options acknowledging both the “good” and the “bad” potential in individuals are likely to prove most effective at stemming the transmission of violence.

Binaries are powerful operationalizations that serve to simplify the complexity of a problem and thereby increase accessibility. While they prove extremely useful in theoretical practice, they can wreak havoc when too generously applied in reality to complex individuals living in complex systems. In the case of cycle of violence, the binary of “good guy” versus “bad guy” implies a unidirectional transmission of violence in which violence terminates in the good guy. And, while there are admissions that some of those good guys go on to hurt other good guys, overall the goodness of most victims is preserved. Most people like to think of themselves as inherently “good” and incapable of perpetrating violence, let alone savoring that violence. Such abhorrent acts are reserved for the others, the bad ones, who are deserving only of punishment and societal exclusion. This type of model placates the larger civil society into understanding that if they are somehow swept up in the cycle of violence, it is simply misfortune and their own “goodness” will remain intact. Furthermore, it removes responsibility from individuals not in contexts of violence because it is simply bad luck for those who are. To accept a more complex model in which individuals are susceptible to perpetration, that individuals are complex and their interaction with others is similarly complex, all the way up to societal and global levels, carries with it the burden that none are immune to the cycle of violence. Additional binaries subsequently begin to arise and be applied to address this growing complexity. Moreover, there is a risk that gender binaries are similarly applied. “Bad guys” are more likely to be males because

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females are less prone to violence, situating them more on the “good guy” half of the paradigm. Forcing the overlay of binaries, such as sex or gender, on existing binaries is detrimental to all individuals falling on the males-female and masculine-feminine spectrums respectively. Discarding reductionist binary models embraces the complexity of the reality of the system of violence functioning in the world.

In final summary, this dissertation deconstructs what is commonly understood as the cycle of violence into its respective players and their experiences in an effort to offer fresh insights and suggestions for future directions. Literature on the psychological fallout from the cycle of violence has consistently highlighted that both perpetrators and victims are impacted by the violence. However, this perpetrator-victim binary minimizes the complexity and interconnectedness of individuals exposed to violence. Violence is the result of individual mechanisms of aggression. Many perpetrators were also once victims themselves, and many victims can go on to perpetrate violence against others, depending on whichever forms of aggression are internally at work. Moreover, this binary bleeds over to reinforce other reductionist conceptualizations, such as assuming that males have a higher propensity for enjoying aggression than females. Inasmuch as males and females each have comparable capacities for being traumatized by victimization, they can also similarly find the perpetration of violence appealing. Neither sex is immune to appetitive aggression and should not be underestimated as such in the consideration of mental health interventions and reintegration programs.

# References

- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edn. Washington, DC: American Psychiatric Association.
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders: DSM-V*. Washington, DC: American Psychiatric Association.
- Amnesty International. (2013). *Amnesty International Annual Report 2013. The State of the World's Human Rights*. Amnesty International Ltd, London. ISBN: 978-0-86210-480-1.
- Amone-P'Olak, K. (2004). A study of the psychological state of former abducted children at Gulu World Vision Trauma Centre. *Torture*, 14(1), 24–34.
- Amone-P'Olak, K., Garnefski, N., & Kraaij, V. (2007). The impact of war experiences and physical abuse on formerly abducted boys in northern Uganda. *South African Psychiatry Review*, 10, 76–82.
- Anderson, C.A., & Bushman, B.J. (2002). Human aggression. *Annu Rev Psycholog*, 52, 27-51. doi: 10.1146/annurev.psych.53.100901.135231
- Annan, J., Blattman, C., Mazurana, D., and Carlson, K. (2009). Women and Girls at War: “Wives,” Mothers, and fighters in Uganda’s Lord’s Resistance Army. Available: <http://www.hicn.org/wordpress/wp-content/uploads/2012/06/wp63.pdf> [Accessed May 6, 2015].
- Annan, J., Blattman, C., Mazurana, D., and Carlson, K. (2011). Civil war, reintegration, and gender in Northern Uganda. *J. conflict Resolut.* 55, 877–908. doi: 10.1177/0022002711408013
- Annan, J., Brier, M., Aryemo, F. (2009). From “rebel” to “returnee” daily life and reintegration for young soldiers in Northern Uganda. *Journal of Adolescent Research* 24 (6), 639–667.
- Arata, C.M., Langhinrichsen-Rohling, J., Bowers, D., and O'Brien, N. (2007). Differential correlates of multi-type maltreatment among urban youth. *Child Abuse Negl* 31(4), 393-415. doi: 10.1016/j.chiabu.2006.09.006.
- Archer, J. (2004). Sex Differences in Aggression in Real-World Settings: A Meta-Analytic Review. *Review of General Psychology* 8(4), 291-322. doi: 10.1037/1089-2680.8.4.291.supp.
- Arnsten, A. (2009). Stress signaling pathways that impair prefrontal cortex structure and function. *Nature Reviews Neuroscience* 10 (6), 410–422.

- 
- Augsburger, M., Meyer-Parlapanis, D., Bambonyé, M., Elbert, T., and Crombach, A. (2015). Appetitive Aggression and Adverse Childhood Experiences Shape Violent Behavior in Females Formerly Associated with Combat. *Frontiers in Psychology* 6, 1756. doi: 10.3389/fpsyg.2015.01756.
- Bayer, C. P., Klasen, F., & Adam, H. (2007). Association of trauma and PTSD symptoms with openness to reconciliation and feelings of revenge among former Ugandan and Congolese child soldiers. *JAMA: The Journal of the American Medical Association*, 298(5), 555–559. doi:10.1001/jama.298.5.555
- Becker, D. (1999). *Through the looking glass: Women and borderline personality disorder*. Boulder, CO: Westview Press.
- Becker, D., & Lamb, S. (1994). Sex bias in the diagnosis of borderline personality disorder and posttraumatic stress disorder. *Professional Psychology: Research and Practice*, 25, 55–61.
- Beckham, J. C., Feldman, M. E., Kirby, A. C., Hertzberg, M. A., & Moore, S. D. (1997). Interpersonal violence and its correlates in Vietnam veterans with chronic posttraumatic stress disorder. *Journal of Clinical Psychology*, 53(8), 859-869. doi:10.1002
- Bem, S. L. (1981). *Bem sex-role inventory: Professional manual*. Palo Alto, CA: Consulting Psychologists Press.
- Berkowitz, L. (1993). *Aggression: Its causes, consequences, and control*. McGraw-Hill Book Company.
- Berkowitz, L. (1993). Pain and aggression: Some findings and implications. *Motivation and Emotion*, 17(3), 277–293. doi:10.1007/BF00992223
- Bernhardt, P. C. (1997). Influences of serotonin and testosterone in aggression and dominance: Convergence with social psychology. *Current Directions in Psychological Science*, 6(2), 44–48. doi:10.1111/1467-8721.ep11512620
- Betancourt, T. S., Borisova, I. I., Williams, T. P., Brennan, R. T., Whitfield, T. H., De La Soudiere, M., Williamson, J., & Gilman, S. E. (2010). Sierra Leone's Former Child Soldiers: A Follow-Up Study of Psychosocial Adjustment and Community Reintegration. *Child development*, 81(4), 1077-1095.
- Bjorkqvist, K., Osterman, K., & Lagerspetz, K. M. (1994). Sex differences in covert aggression among adults. *Aggressive behavior*, 20(1), 27-33.
- Bloom, G., Stevens, D., & Wickwire, T. (2003). Expert coaches' perceptions of team building. *Journal of Applied Sport Psychology*, 15(2), 129-143.
- Bovin, M.J., Jager-Hyman, S., Gold, S.D., Marx, B.P., Sloan, D.M. (2008). Tonic immobility mediates the influence of peritraumatic fear and perceived inescapability on posttraumatic stress symptom severity among sexual assault survivors. *Journal of Traumatic Stress* 21, 402–409. doi:10.1002/jts.20354
- Bortz, J. (2005). *Statistik für Sozialwissenschaftler [Statistics for Social Scientists]*, 6th Edn. Heidelberg: Springer Medizin Verlag.

- Bracha, H.S. (2004). Freeze, flight, fight, fright, faint: adaptationist perspectives on the acute stress response spectrum. *CNS Spectrums* 9, 679–685.
- Brady, K. T., Killeen, T. K., Brewerton, T., & Lucerini, S. (2000). Comorbidity of psychiatric disorders and posttraumatic stress disorder. *Journal of Clinical Psychiatry*.
- Braquehais, M. D., Oquendo, M. A., Baca-Garcia, E., and Sher, L. (2010). Is impulsivity a link between childhood abuse and suicide? *Compr. Psychiatry* 51, 121–129. doi:10.1016/j.comppsy.2009.05.003
- Bray, S. R., Martin, K. A., & Widmeyer, W. N. (2000). The relationship between evaluative concerns and sport competition state anxiety among youth skiers. *Journal of Sports Sciences*, 18(5), 353-361.
- Brett, R. (2002). *Girl Soldiers: Challenging the Assumptions*. New York, NY: Quaker United Nations Office.
- Brewin, C.R. 2011. The nature and significance of memory disturbance in post traumatic stress disorder. *Annual Review of Clinical Psychology* 7, 203–227.
- Brewin, C.R., Dalgleish, T., Joseph, S. (1996). A dual representation theory of post-traumatic stress disorder. *Psychological Review* 103 (4), 670–686.
- Brewin, C.R., Gregory, J.D., Lipton, M., Burgess, N. (2010). Intrusive images in psychological disorders: characteristics, neural mechanisms, and treatment implications. *Psychological Review* 117 (1), 210–232. doi:10.1037/a0018113
- Brodsky, B. S., Oquendo, M., Ellis, S. P., Haas, G. L., Malone, J. M., and Mann, J. J. (2001). The relationship of childhood abuse to impulsivity and suicidal behavior in adults with major depression. *Am. J. Psychiatry* 158, 1871–1877. doi: 10.1176/appi.ajp.158.11.1871
- Brown, M., and Forsythe, A. (1974). Robust tests for the equality of variances. *J. Am. Stat. Assoc.* 69, 364–367. doi: 10.1080/01621459.1974.10482955
- Browning, C.R. (1993). *Ordinary Men: Reserve Police Battalion 101 and the final Solution in Poland*. Harper.
- Bull, S. J., Shambrook, C. J., James, W., & Brooks, J. E. (2005). Towards an understanding of mental toughness in elite English cricketers. *Journal of Applied Sport Psychology*, 17(3), 209-227.
- Butler, J. (2005). *Teaching games for understanding: Theory, research, and practice*. Human Kinetics.
- Buvinić, M., & Morrison, A. R. (2000). Living in a more violent world. *Foreign Policy*, 58-72.
- Byrne, C. A., and Riggs, D. S. (1996). The cycle of trauma: relationship aggression in male Vietnam veterans with symptoms of posttraumatic stress disorder. *Violence Vict.* 11, 213–225.
- Calvete, E., and Orue, I. (2013). Cognitive Mechanisms of the Transmission of Violence: Exploring Gender Differences among Adolescents Exposed to Family Violence. *Journal of Family Violence* 28, 73-84. doi: 10.1007/s10896-012-9472-y.

- 
- Campbell, A. (1994). *Men, women, and aggression*. Basic Books.
- Campbell, A. (2005). Aggression. In D.M. Buss (Ed.) *Handbook of evolutionary psychology* (pp. 628-652). Hoboken, NJ: Wiley.
- Campbell, A. (2006). Sex differences in direct aggression: what are the psychological mediators? *Aggress. Violent Behav.* 11, 237–264. doi: 10.1016/j.avb.2005.09.002
- Campbell, A. (2013). "High stakes and low risks: Women and aggression", in: *A mind of her own: The evolutionary psychology of women*. (ed.) A. Campbell. (Oxford: Oxford University Press).
- Catani, C. (2010). War at Home – a Review of the Relationship between War Trauma and Family Violence. (English Version of) *Verhaltenstherapie* 20(1), 19-27. doi: 10.1159/000261994.
- Catani, C., Jacob, N., Schauer, E., Kohila, M., & Neuner, F. (2008). Family violence, war, and natural disasters: A study of the effect of extreme stress on children’s mental health in Sri Lanka. *BMC Psychiatry*, 8, 33. doi:10.1186/1471-244X-8-33
- Cerin, E., Szabo, A., Hunt, N., & Williams, C. (2000). Temporal patterning of competitive emotions: A critical review. *Journal of Sports Sciences*, 18(8), 605-626.
- Chapman, D., Anda, R. F., Felitti, V., Dube, S., Edwards, V., & Whitfield, C. (2004). Epidemiology of adverse childhood experiences and depressive disorders in a large health maintenance organization population. *Journal of Affective Disorders*, 82, 217–225. doi:10.1016/j.jad.2003.12.013
- Chaumba, J., and Bride, B. E. (2010). Trauma experiences and posttraumatic stress disorder among women in the United States military. *Soc. Work Ment. Health* 8, 280–303. doi: 10.1080/15332980903328557
- Cloitre, M., Stolbach, B.C., Harman, J.K., Kolk, B., Pynoos, R., Wang, J., Petkova, E. (2009). A developmental approach to complex PTSD: childhood and adult cumulative trauma as predictors of symptom complexity. *Journal of Traumatic Stress* 22 (5), 399–408.
- Cole, E. R. (2009). Intersectionality and research in psychology. *American psychologist*, 64(3), 170-80.
- Collani, G., & Werner, R. (2005). Self-related and motivational constructs as determinants of aggression. An analysis and validation of a German version of the Buss-Perry Aggression Questionnaire. *Personality and Individual Differences*, 38, 1631-43.
- Collins, P. H. (1998) ‘It’s All in the Family: Intersections of Gender, Race, and Nation’, *Hypatia* 13(3): 62–82.
- Côté, J., & Sedgwick, W. (2003). Effective behaviors of expert rowing coaches: A qualitative investigation of Canadian athletes and coaches. *International Sports Journal*, 7(1), 62-77.
- Côté, J., Baker, J., & Abernethy, A. B. (2003). From play to practice: A developmental framework for the acquisition of expertise in team sports.

- Coulter, C., Persson, M., and Utas, M. (2008). *Young Female fighters in African Wars: Conflict and its Consequences*. Stockholm: Sweden Elanders Sverige AB.
- Crenshaw, K. W. (1993) 'Beyond Racism and Misogyny: Black Feminism and 2 Live Crew', in M. J. Matsuda (ed.) *Words That Wound*, pp. 111–32. Boulder, CO: Westview Press.
- Crenshaw, K. W. (1994) 'Mapping the Margins: Intersectionality, Identity Politics, and Violence Against Women of Colour', in M. fineman and R. Mykitiuk (eds) *The Public Nature of Private Violence*, pp. 94–118. New York: Routledge.
- Cresswell, S. L., & Eklund, R. C. (2005). Motivation and burnout in professional rugby players. *Research Quarterly for Exercise and Sport*, 76(3), 370-376.
- Crombach, A., and Bambonye, M. (2015). Intergenerational violence in Burundi: Experienced childhood maltreatment increases the risk of abusive child rearing and intimate partner violence. *European Journal of Psychotraumatology* 6, 26995. doi: 10.3402/ejpt.v6.26995.
- Crombach, A., & Elbert, T. (2014). The benefits of aggressive traits: a study with street and former street children in Burundi. *Child Abuse Negl.* 38, 1041–1050. doi: 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. *Clin. Psychol. Sci.* 3, 270–282. doi: 10.1177/2167702614534239
- 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. doi:10.1080/10926771.2013.785458
- Crumlish, N., O'Rourke, K., 2010. A systematic review of treatments for post-traumatic stress disorder among refugees and asylum-seekers. *The Journal of Nervous and Mental Disease* 198, 237–251.
- Cullerton-Sen, C., Cassidy, A.R., Murray-Close, D., Cicchetti, D., Crick, N.R., and Rogosch, F.A. (2008). Childhood maltreatment and the development of relational and physical aggression: the importance of a gender-informed approach. *Child Dev* 79(6), 1736-1751. doi: 10.1111/j.1467-8624.2008.01222.x.
- Curtis, G. C. (1963). Violence breeds violence - perhaps?. *The American Journal of Psychiatry*, 120, 386-387.
- Daly, M., & Wilson, M. (1996). Homicidal tendencies. *Demos*, 8, 39–45.
- Davidson, R. J. (2000). Dysfunction in the neural circuitry of emotion regulation—a possible prelude to violence. *Science* 289, 591–594. doi: 10.1126/science.289.5479.591
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

---

De Jong, J., Komproe, I., Van Ommeren, M., El Masri, M., Araya, M., Khaled, N., Somasundaram, D., (2001). Lifetime events and posttraumatic stress disorder in 4 post-conflict settings. *JAMA: The Journal of the American Medical Association* 286 (5), 555–562.

Dekel, R., & Goldblatt, H. (2008). Is there intergenerational transmission of trauma? The case of combat veterans' children. *American Journal of Orthopsychiatry*, 78(3), 281. doi: 10.1037/a0013955

De Vries, G. J. (2004). Minireview: sex differences in adult and developing brains: compensation, compensation, compensation. *Endocrinology*, 145(3), 1063-1068.

DeWall, C. N., Baumeister, R. F., Stillman, T. F., and Gailliot, M. T. (2007). Violence restrained: effects of self-regulation and its depletion on aggression. *J. Exp. Soc. Psychol.* 43, 62–76. doi: 10.1016/j.jesp.2005.12.005

Dohrenwend, B. P., Yager, T. J., Wall, M. M., & Adams, B. G. (2013). The Roles of Combat Exposure, Personal Vulnerability, and Involvement in Harm to Civilians or Prisoners in Vietnam-War-Related Posttraumatic Stress Disorder. *Clinical Psychological Science*, 1(3), 223-238. doi:10.1177/2167702612469355

Duda, J. L. (2001). Achievement goal research in sport: Pushing the boundaries and clarifying some misunderstandings. *Advances in motivation in sport and exercise*, 129, 182.

Durand-Bush, N., & Salmela, J. H. (2002). The development and maintenance of expert athletic performance: Perceptions of world and Olympic champions. *Journal of Applied Sport Psychology*, 14(3), 154-171.

Eckart, C., Stoppel, C., Kaufmann, J., Tempelmann, C., Hinrichs, H., Elbert, T., Kolassa, I. (2011). Structural alterations in lateral prefrontal, parietal and posterior midline regions of men with chronic posttraumatic stress disorder. *Journal of Psychiatry and Neuroscience* 36 (3), 176.

Edwards, V., Holden, G., Anda, R., & Felitti, V. (2003). Relationship between multiple forms of childhood maltreatment and adult mental health in community respondents: Results from the Adverse Childhood Experiences (ACE) Study. *American Journal of Psychiatry*, 160(8), 1453– 1460. doi:10.1176/appi.ajp.160.8.1453

Eisenberger, N.L., Lieberman, M.D., Williams, K.D., 2003. Does rejection hurt? An fMRI study of social exclusion. *Science* 302 (5643), 290–292.

Elbert, T., Hermenau, K., Hecker, T., Weierstall, R., Schauer-Elbert, M. (2012). FORNET: Behandlung von traumatisierten und nicht-traumatisierten Gewalttätern mittels Narrativer Expositionstherapie. *Interventionen bei Gewalt-und Sexualstraftätern: Risk-Management, Methoden und Konzepte der forensischen Therapie* (S. 255–276). Medizinisch Wissenschaftliche Verlagsgesellschaft.

Elbert, T., Moran, J., and Schauer, M. (2017). "Appetitive Aggression," in *Aggression and violence: A Social Psychological Perspective*, ed. B.J. Bushman. (New York: Taylor & Francis/Routledge), 119-135.

- Elbert, T., Rockstroh, B., Kolassa, I.-T., Schauer, M., and Neuner, F. (2006). "The influence of organized violence and terror on brain and mind: a co-constructive perspective," in *Lifespan Development and the Brain: The Perspective of Biocultural Co-Constructivism*, eds P. Baltes, P. Reuter-Lorenz, and F. Roesler (Cambridge: Cambridge University Press), 326–363.
- Elbert, T., & Schauer, M. (2002). Burnt into memory. *Nature*, 419(6910), 883. doi:10.1038/419883a
- Elbert, T., Schauer, M., Ruf, M., Weierstall, R., Neuner, F., Rockstroh, B., Junghöfer, M. (2011). The tortured brain. *Zeitschrift für Psychologie* 219 (3), 167–174.
- Elbert, T., Schauer, M., Schauer, E., Huschka, B., Hirth, M., & Neuner, F. (2009). Trauma-related impairment in children—a survey in Sri Lankan provinces affected by armed conflict. *Child Abuse & Neglect*, 33(4), 238–246. doi:10.1016/j.chiabu.2008.02.008
- 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. doi:10.1007/s00406-010-0144-8
- Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational psychologist*, 34(3), 169–189.
- Elliot, A. J., & Conroy, D. E. (2005). Beyond the dichotomous model of achievement goals in sport and exercise psychology. *Sport and Exercise Psychology Review*, 1(1), 17–25.
- Ericsson, K. A. (2007). Deliberate practice and the modifiability of body and mind: Toward a science of the structure and acquisition of expert and elite performance. *International Journal of Sport Psychology*, 38(1), 4.
- Ertl, V., Pfeiffer, A., Saile, R., Schauer, E., Elbert, T., and Neuner, F. (2010). Validation of a mental health assessment in an African conflict population. *Psychol. Assess.* 22, 318–324. doi: 10.1037/a0018810
- Foa, E. B., Cashman, L., Jaycox, L., and Perry, K. (1997). The validation of a self-report measure of posttraumatic stress disorder: the posttraumatic diagnostic scale. *Psychol. Assess.* 9, 445–451. doi: 10.1016/j.psychres.2007.09.005
- Foa, E. B., Riggs, D. S., Dancu, C. V., and Rothbaum, B. O. (1993). Reliability and validity of a brief instrument for assessing post-traumatic stress disorder. *J. Trauma. Stress* 6, 459–473. doi: 10.1002/jts.2490060405
- Foa, E. B., and Tolin, D. F. (2000). Comparison of the PTSD symptom scale-interview version and the clinician administered PTSD scale. *J. Trauma. Stress* 13, 181–191. doi: 10.1023/A:1007781909213
- Fontaine, R.G. (2007). Disentangling the psychology and law of instrumental and reactive subtypes of aggression. *Psychology, Public Policy and Law*; 13(2): 143–165. doi: 10.1037/1076-8971.13.2.143
- Ford, M. E. (1992). *Motivating humans: Goals, emotions, and personal agency beliefs*. Sage Publications.

- 
- Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition & Emotion*, 19(3), 313-332.
- Frodi, A., Macaulay, J., & Thome, P. R. (1977). Are women always less aggressive than men? A review of the experimental literature. *Psychological bulletin*, 84(4), 634. doi: 10.1037/0033-2909.84.4.634
- Fusé, T., Forsyth, J.P., Marx, B., Gallup, G.G., Weaver, S. (2007). Factor structure of the tonic immobility scale in female sexual assault survivors: an exploratory and confirmatory factor analysis. *Journal of Anxiety Disorders* 21, 265–283. <http://dx.doi.org/10.1016/j.janxdis.2006.05.004>
- Galovski, T., and Lyons, J. A. (2004). Psychological sequelae of combat violence: a review of the impact of PTSD on the veteran's family and possible interventions. *Aggress. Violent Behav.* 9, 477–501. doi: 10.1016/s1359-1789(03)00045-4
- Garcia-Leon, A., Reyes, G. A., Vila, J., Pe´rez, N., Robles, H., & Ramos, N. N. (2002). The Aggression Questionnaire: A validation study in student samples. *The Spanish Journal of Psychology*, 5(1), 45-53.
- Geen, R. G. (2001). *Human aggression* (2nd ed.). Oxford, UK: Taylor & Francis.
- Gibson, J. T., & Haritos-Fatouros, M. (1986). The education of a torturer. *Psychology Today*, 20, 50– 58.
- Gill, D. L. (1993). Competitiveness and competitive orientation in sport. *Handbook of research on sport psychology*, 314-327.
- Ginzburg, K., Ein-Dor, T., & Solomon, Z. (2010). Comorbidity of posttraumatic stress disorder, anxiety and depression: a 20-year longitudinal study of war veterans. *Journal of Affective Disorders*, 123(1), 249-257. doi:10.1016/j.jad.2009.08.006
- Gould, D., Dieffenbach, K., & Moffett, A. (2002). Psychological characteristics and their development in Olympic champions. *Journal of applied sport psychology*, 14(3), 172-204.
- Grossman, D. (1995). *On killing: The psychological cost of learning to kill in war and society*. Boston: Little, Brown and Co.
- Gunderson, J. G. (2001). *Borderline personality disorder: A clinical guide*. Washington, DC: American Psychiatric Publishing.
- Hall, H. K., & Kerr, A. W. (1997). Motivational antecedents of precompetitive anxiety in youth sport. *Sport Psychologist*, 11, 24-42.
- Hall, H. K., Kerr, A. W., & Matthews, J. (1998). Precompetitive anxiety in sport: The contribution of achievement goals and perfectionism. *Journal of Sport and Exercise Psychology*, 20, 194-217.
- Haney, C., Banks, C., & Zimbardo, P. (1973). Interpersonal dynamics in a simulated prison. *International Journal of Criminology & Penology*.
- Hanin, Y. L. (2004). Emotions in sport: An individualized approach. *Encyclopedia of applied psychology*, 1, 739-750.

- Hanin, Y. L. (2007). Emotions in sport: Current issues and perspectives. *Handbook of sport psychology*, 3, 31-58.
- Hárdi, L., Kroó, A. (2011). The trauma of torture and the rehabilitation of torture survivors. *Zeitschrift für Psychologie/Journal of Psychology* 219 (3), 133.
- Hareli, S., & Weiner, B. (2002). Social emotions and personality inferences: A scaffold for a new direction in the study of achievement motivation. *Educational Psychologist*, 37(3), 183-193.
- Hatzfeld, J. (2004). *Zeit der Macheten. Gespräche mit den Tätern des Völkermordes in Ruanda*. Gießen: Haland & Wirth im Psychosozial-Verlag.
- Hayes, A.F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York: Guilford Press.
- 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(3), 244-249. doi:10.1016/j.ijlp.2012.02.016
- Hecker, T., Hermenau, K., Maedl, A., Hinkel, H., Schauer, M., & Elbert, T. (2013a). Does perpetrating violence damage mental health? Differences between forcibly recruited and voluntary combatants in DR Congo. *J. Trauma. Stress* 26, 142–148. doi: 10.1002/jts.21770
- Hecker, T., Hermenau, K., Maedl, A., Schauer, M., & Elbert, T. (2013b). Aggression inoculates against PTSD symptom severity – insights from armed groups in the eastern DR Congo. *European Journal of Psychotraumatology*, 4, 1-9. doi:10.3402/ejpt.v4i0.20070
- Hendin, H., & Haas, A. P. (1991). Suicide and Guilt as Manifestations of PTSD. *American Journal of Psychiatry*, 148, 586-591. doi:10.1176/ajp.148.5.586
- Hensel-Dittmann, D., Schauer, M., Ruf, M., Catani, C., Odenwald, M., Elbert, T., Neuner, F. (2011). Treatment of traumatized victims of war and torture: a randomized controlled comparison of narrative exposure therapy and stress inoculation training. *Psychotherapy and Psychosomatics* 80 (6), 345–352.
- Herman, J.L. (1992). Complex PTSD: a syndrome in survivors of prolonged and repeated trauma. *Journal of Traumatic Stress* 5 (3), 377–391.
- Hermenau, K., Hecker, T., Ruf, M., Schauer, E., Elbert, T., & Schauer, M. (2011). Childhood adversity, mental ill-health and aggressive behavior in an African orphanage: Changes in response to trauma-focused therapy and the implementation of a new instructional system. *Child and Adolescent Psychiatry and Mental Health*, 5(1), 29. doi:10.1186/1753-2000-5-29
- Hermenau, K., Hecker, T., Maedl, A., Schauer, M., and Elbert, T. (2013a). Growing up in armed groups: trauma and aggression among child soldiers in DR Congo. *Eur. J. Psychotraumatol.* 4:21408. doi: 10.3402/ejpt.v4i0.21408
- Hermenau, K., Hecker, T., Schaal, S., Maedl, A., and Elbert, T. (2013b). Addressing post-traumatic stress and aggression by means of narrative exposure - A randomized

---

controlled trial with ex-combatants in the eastern DRC. *J. Aggress. Maltreat. Trauma.* 22, 916–934. doi: 10.1080/10926771.2013.824057

Herrmann, I., and Palmieri, D. (2010). Between Amazons and Sabines: a historical approach to women and war. *Int. Rev. Red Cross* 92, 19–30. doi: 10.1017/s1816383109990531

Hinsberger, M., Sommer, J., Kaminer, D., Holtzhausen, L., Weierstall, R., Seedat, S., et al. (2016). Perpetuating the cycle of violence in South African low-income communities: attraction to violence in young men exposed to continuous threat. *Eur J Psychotraumatol* 7, 29099. doi: 10.3402/ejpt.v7.29099.

Hodges, N. J., Kerr, T., Starkes, J. L., Weir, P. L., & Nananidou, A. (2004). Predicting performance times from deliberate practice hours for triathletes and swimmers: What, when, and where is practice important?. *Journal of Experimental Psychology: Applied*, 10(4), 219.

Hyde, J. S. (1984). How large are gender differences in aggression? A developmental meta-analysis. *Developmental psychology*, 20(4), 722.

IBM Corp. Released (2012). *IBM SPSS Statistics for Windows, Version 21.0*. Armonk, NY: IBM Corp.

Jackson, S. A., & Eklund, R. C. (2002). Assessing flow in physical activity: The flow State Scale-2 and Dispositional flow Scale-2. *Journal of Sport & Exercise Psychology*.

Jacob, N., Neuner, F., Maedl, A., Schaal, S., & Elbert, T. (2014). Dissemination of psychotherapy for trauma spectrum disorders in postconflict settings: a randomized controlled trial in Rwanda. *Psychotherapy and psychosomatics*, 83(6), 354-363.

Joel, D., & Fausto-Sterling, A. (2016). Beyond sex differences: new approaches for thinking about variation in brain structure and function. *Phil. Trans. R. Soc. B*, 371(1688), 20150451.

Jung, H., Herrenkohl, T.I., Lee, J.O., Hemphill, S.A., Heerde, J.A., and Skinner, M.L. (2015). Gendered Pathways From Child Abuse to Adult Crime Through Internalizing and Externalizing Behaviors in Childhood and Adolescence. *J Interpers Violence*. doi: 10.1177/0886260515596146.

Kaplan, A., & Maehr, M. L. (2002). Adolescents' Achievement Goals: Situating Motivation in Sociocultural Contexts.

Karunakara, U. K., Neuner, F., Schauer, M., Singh, K., Hill, K., Elbert, T., et al. (2004). Traumatic events and symptoms of post-traumatic stress disorder amongst Sudanese nationals, refugees and Ugandans in the West Nile. *Afr. Health Sci.* 4, 83–93.

Kavussanu, M., & Ntoumanis, N. (2003). Participation in sport and moral functioning: Does ego orientation mediate their relationship?. *Journal of Sport and Exercise Psychology*, 25, 501-518.

Keane, T. M., & Kaloupek, D. G. (1997). Comorbid psychiatric disorders in PTSD. *Annals of the New York Academy of Sciences*, 821 (1), 24-34. doi:10.1111/j.1749-6632.1997.tb48266.x

- Kessler, R., Sonnega, A., Bromet, E., Hughes, M., Nelson, C. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry* 52 (12), 1048.
- Killermann, S. (2013). *The social justice advocate's handbook: A Guide to Gender*. Austin: Impetus books.
- Kim, J.J., Diamond, D.M. (2002). The stressed hippocampus, synaptic plasticity and lost memories. *Nature Reviews Neuroscience* 3 (6), 453–462.
- Klasen, F., Oettingen, G., Daniels, J., & Adam, H. (2010). Multiple trauma and mental health in former Ugandan child soldiers. *Journal of Traumatic Stress*, 23(5), 573-581. doi:10.1002/jts.20557
- Kleinert, J., & Raven, H. (2011). „Ich will nicht mehr “– Stress, Motivation und Drop-out im Jugendleistungssport. In *Leistungssport 2020 - neue Antworten auf veränderte Wirklichkeit: Reader zum 25. internationalen Workshop im Rahmen der Ruhrolympiade am 31. Mai und 1. Juni 2009 in Duisburg* (Vol. 25, p. 59). Meyer & Meyer Verlag.
- Kleinknecht, C., Kleinert, J., & Ohlert, J. (2014). Erfassung von „Kohäsion im Team von Freizeit- und Gesundheitssportgruppen“ (KIT-FG). *Zeitschrift für Gesundheitspsychologie*, 22(2), 68-78.
- Kessler, R., Sonnega, A., Bromet, E., Hughes, M., and Nelson, C (1995). Posttraumatic stress disorder in the national comorbidity survey. *Arch. Gen. Psychiatry* 52, 1048–1060. doi: 10.1001/archpsyc.1995.03950240066012
- 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, 1518. doi:10.3389/fpsyg.2014.01518
- Kolassa, I., & Elbert, T. (2007). Structural and functional neuroplasticity in relation to traumatic stress. *Current Directions in Psychological Science*, 16(6), 321–325. doi:10.1111/j.1467- 8721.2007.00529.x
- Kolassa, I., Ertl, V., Eckart, C., Kolassa, S., Onyut, L. P., and Elbert, T. (2010). Spontaneous remission from PTSD depends on the number of traumatic event types experienced. *Psychol. Trauma* 2, 169–174. doi: 10.1037/a0019362
- Kolb, L.C. (1989). Heterogeneity of PTSD. *The American Journal of Psychiatry* 146 (6), 811.
- Konner, M. (2006). Human nature, ethnic violence and war. In M. Fitzduff & C. E. Stout (Eds.), *The psychology of resolving global conflicts: From war to peace. Nature vs. nurture* (1st ed., pp. 1– 40). Westport, Connecticut: Praeger Security International.
- Kowal, J., & Fortier, M. S. (1999). Motivational determinants of flow: Contributions from self-determination theory. *The Journal of Social Psychology*, 139(3), 355-368.
- Krysinska, K., & Lester, D. (2010). Post-traumatic stress disorder and suicide risk: a systematic review. *Archives of Suicide Research*, 14(1), 1-23. doi: 10.1080/13811110903478997

---

Lane, A., Terry, P., & Karageorghis, C. (1995). Antecedents of multidimensional competitive state anxiety and self-confidence in duathletes. *Perceptual and motor skills*, 80(3), 911-919.

Lee, J.O., Herrenkohl, T.I., Jung, H., Skinner, M.L., and Klika, J.B. (2015). Longitudinal examination of peer and partner influences on gender-specific pathways from child abuse to adult crime. *Child Abuse Negl* 47, 83-93. doi: 10.1016/j.chiabu.2015.07.012.

Lightdale, J. R., & Prentice, D. A. (1994). Rethinking sex differences in aggression: Aggressive behavior in the absence of social roles. *Personality and Social Psychology Bulletin*, 20(1), 34-44. doi: 10.1177/0146167294201003

Maas, C., Herrenkohl, T.I., and Sousa, C. (2008). Review of research on child maltreatment and violence in youth. *Trauma Violence Abuse* 9(1), 56-67. doi: 10.1177/1524838007311105.

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 (1), 73-85.

Maccoby, E. E., & Jacklin, C. N. (1980). Sex differences in aggression: A rejoinder and reprise. *Child development*, 964-980.

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. doi:10.1016/S0140-6736(13)60354-2

MacNair, R. M. (2001). Psychological reverberations for the killers: Preliminary historical evidence for perpetration-induced traumatic stress. *Journal of Genocide Research*, 3(2), 273-282. doi:10.1080/14623520120062457

MacNair, R. M. (2002). Perpetration-induced traumatic stress in combat veterans. *Peace and Conflict: Journal of Peace Psychology*, 8(1), 63-72. doi:10.1207/S15327949PAC0801\_6

MacNair, R. M. (2006). Violence begets violence: The consequences of violence become causation. In M. fitzduff & C. E. Stout (Eds.), *The psychology of resolving global conflicts: From war to peace. Group and Social Factors* (2nd ed., pp. 191-210). Westport, Connecticut: Praeger Security International.

Maedl, A., Schauer, E., Odenwald, M., and Elbert, T. (2010). "Psychological Rehabilitation of Ex-Combatants in Non-Western, Post-Conflict Settings," in *Trauma Rehabilitation after War and Conflict: Community and Individual Perspectives*, ed. E. Martz. (New York: Springer), 177-214.

Maguen, S., Lucenko, B. A., Reger, M. A., Gahm, G. A., Litz, B. T., Seal, K. H., ... & Marmar, C. R. (2010). The impact of reported direct and indirect killing on mental health symptoms in Iraq war veterans. *Journal of Traumatic Stress*, 23(1), 86-90. doi:10.1002/jts.20434

- Mattaini, M. A. (2003). Understanding and reducing collective violence. *Behavior and social issues*, 12(2), 90.
- Mazurana, D. (2004). *Women in Armed Opposition Groups Speak on War, Protection and Obligations under International Humanitarian and Human Rights Law*. Available: [http://www.icrc.org/eng/assets/files/other/women\\_armed\\_groups\\_2005.pdf](http://www.icrc.org/eng/assets/files/other/women_armed_groups_2005.pdf) [Accessed May 10, 2015].
- Mazurana, D., and Carlson, K. (2004). *From Combat to Community: Women and Girls of Sierra Leone*. Cambridge, MA: Women's Policy Commission, Harvard University.
- McCarthy, M. M., & Konkle, A. T. (2005). When is a sex difference not a sex difference?. *Frontiers in neuroendocrinology*, 26(2), 85-102.
- McCarthy, P. J. (2011). Positive emotion in sport performance: current status and future directions. *International Review of Sport and Exercise Psychology*, 4(1), 50-69.
- McEllistrem, Joseph E. (2004). Affective and Predatory Violence: a Bimodal Classification System of Human Aggression and Violence. *Aggression & Violent Behavior*; 10: 1-30. doi: 10.1016/j.avb.2003.06.002
- McDonnell, M., Robjant, K., Katona, C. (2013). Complex posttraumatic stress disorder and survivors of human rights violations. *Current Opinion in Psychiatry* 26 (1), 1–6.
- McFall, M., Fontana, A., Raskind, M., & Rosenheck, R. (1999). Analysis of violent behavior in Vietnam combat veteran psychiatric inpatients with posttraumatic stress disorder. *Journal of Traumatic Stress*, 12(3), 501-517. doi:10.1023/A:1024771121189
- McKay, S., and Mazurana, D. E. (2004). *Where are the Girls? Girls in fighting Forces in Northern Uganda, Sierra Leone and Mozambique: Their Lives During and After War*, Rights & Democracy. Montréal, QC: International Centre for Human Rights and Democratic Development.
- McPherson, J. (2012). Does Narrative exposure therapy reduce PTSD in survivors of mass violence? *Research on Social Work Practice* 22 (1), 29–42.
- Medeiros, E. (2007). Integrating mental health into post-conflict rehabilitation: the case of Sierra Leonean and Liberian child soldiers. *Journal of Health Psychology* 12 (3), 498–504.
- Melander, E. (2015). *Organized Violence in the World 2015: An assessment by the Uppsala conflict Data Program*.
- Meyer-Parlapanis, D., and Elbert, T. (2015). "Torture and its consequences, Psychology of," in *International Encyclopedia of the Social and Behavioral Sciences*, 2nd Edn., Vol 24, ed J. D. Wright (Oxford: Elsevier), 434–441.
- Meyer-Parlapanis, D., Weierstall, R., Nandi, C., Bambonyé, M., Elbert, T. and Crombach, A. (2016). Appetitive Aggression in Women: Comparing Male and Female War Combatants. *Front. Psychol.* 6:1972. doi: 10.3389/fpsyg.2015.01972

- 
- Milgram, S. (1974). *Obedience to Authority: An Experimental View*, London: Tavistock Publications.
- Miller, B. W., Roberts, G. C., & Ommundsen, Y. (2004). Effect of motivational climate on sportspersonship among competitive youth male and female football players. *Scandinavian Journal of Medicine & Science in Sports*, 14(3), 193-202.
- Moran, J. K., Weierstall, R., and Elbert, T. (2014). Differences in brain circuitry for appetitive and reactive aggression as revealed by realistic auditory scripts. *Front. Behav. Neurosci.* 8:425. doi: 10.3389/fnbeh.2014.00425
- Morland, L. A., Love, A. R., Mackintosh, M.-A., Greene, C. J., and Rosen, C. S. (2012). Treating anger and aggression in military populations: research updates and clinical implications. *Clin. Psychol. Sci. Pract.* 19, 305–322. doi: 10.1111/cpsp12007
- Musch, J., & Grondin, S. (2001). Unequal competition as an impediment to personal development: A review of the relative age effect in sport. *Developmental review*, 21(2), 147-167.
- Nandi, C., Crombach, A., Bambonye, M., Elbert, T., and Weierstall, R. (2015). Predictors of posttraumatic stress and appetitive aggression in active soldiers and former combatants. *Eur. J. Psychotraumatol.* 6:26553. doi: 10.3402/ejpt.v6. 26553
- Nell, V. (2006). Cruelty's rewards: The gratifications of perpetrators and spectators. *Behavioral and Brain Sciences*, 29(03), 211-257. doi: 10.1017/S0140525X06009058
- Nelson, R. J., & Trainor, B. C. (2007). Neural mechanisms of aggression. *Nature Reviews Neuroscience*, 8(7), 536-546. doi: 10.1038/nm2174
- Neuner, F., Kurreck, S., Ruf, M., Odenwald, M., Elbert, T., Schauer, M. (2010). Can asylum-seekers with posttraumatic stress disorder be successfully treated? A randomized controlled pilot study. *Cognitive Behavior Therapy* 39 (2), 81–91.
- Neuner, F., Schauer, M., Karunakara, U., Klaschik, C., Robert, C., and 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. doi: 10.1186/1471-244X-4-34
- Newton, M., & Duda, J. L. (1993). The relationship of task and ego orientation to performance: Cognitive content, affect, and attributions in bowling. *Journal of Sport Behaviour*, 16, 209-209.
- Ntoumanis, N., & Biddle, S. J. (1999). A review of motivational climate in physical activity. *Journal of sports sciences*, 17(8), 643-665.
- Odenwald, M., Hinkel, H., Schauer, E., Schauer, M., Elbert, T., Neuner, F., & Rockstroh, B. (2009). Use of khat and posttraumatic stress disorder as risk factors for psychotic symptoms: a study of Somali combatants. *Social Science & Medicine*, 69(7), 1040- 1048. doi:10.1016/j.socscimed.2009.07.020
- O'Mara, S. (2009). Torturing the brain. *Trends in Cognitive Sciences* 13 (12), 497–500.
- O'Mara, S., 2011. On the imposition of torture, an extreme stressor state, to extract

information from memory: a baleful consequence of folk cognitive neurobiology. *Zeitschrift für Psychologie/Journal of Psychology* 219 (3), 159–166.

Ommundsen, Y., & Pedersen, B. H. (1999). The role of achievement goal orientations and perceived ability upon somatic and cognitive indices of sport competition trait anxiety. A study of young athletes. *Scandinavian journal of medicine & science in sports*, 9(6), 333-343.

Orcutt, H. K., King, L. A., & King, D. W. (2003). Male-perpetrated violence among Vietnam veteran couples: Relationships with veteran's early life characteristics, trauma history, and PTSD symptomatology. *Journal of Traumatic Stress*, 16(4), 381- 390. doi:10.1023/A:1024470103325

Orth, U., and Wieland, E. (2006). Anger, hostility, and posttraumatic stress disorder in trauma-exposed adults: a meta-analysis. *J. Consult. Clin. Psychol.* 74, 698–706. doi: 10.1037/0022-006X.74.4.698

Parish, L. E., & Treasure, D. C. (2003). Physical activity and situational motivation in physical education: Influence of the motivational climate and perceived ability. *Research Quarterly for Exercise and Sport*, 74(2), 173-182.

Pears, K. C., and Capaldi, D. M. (2001). Intergenerational transmission of abuse: a two-generational prospective study of an at-risk sample. *Child Abuse Negl.* 25, 1439–1461. doi: 10.1016/S0145-2134(01)00286-1

Pettersson, T., and Wallensteen, P. (2015). Armed conflicts, 1946-2014. *Journal of Peace Research* 52(4), 536-550. doi: 10.1177/0022343315595927.

Pfeiffer, A. & Elbert, T. (2011). PTSD, depression and anxiety among former abductees in Northern Uganda. *conflict and Health*, 5(1), 14. doi:10.1186/1752-1505-5-14

Pham, P. N., Vinck, P., & Stover, E. (2009). Returning home: forced conscription, reintegration, and mental health status of former abductees of the Lord's Resistance Army in northern Uganda. *BMC Psychiatry*, 9(1), 23. doi:10.1186/1471-244X-9-23

Priebe, S., Jankovic Gavrilovic, J., Bremner, S., Ajdukovic, D., Franciskovic, T., Galeazzi, G. M., ... & Bogic, M. (2013). Psychological symptoms as long-term consequences of war experiences. *Psychopathology*, 46(1), 45-54. doi:10.1159/000338640

Prigerson, H. G., Maciejewski, P. K., & Rosenheck, R. A. (2001). Combat trauma: trauma with highest risk of delayed onset and unresolved posttraumatic stress disorder symptoms, unemployment, and abuse among men. *The Journal of Nervous and Mental Disease*, 189(2), 99-108. doi:10.1097/00005053-200102000-00005

Raine, A., Dodge, K., Loeber, R., Gatzke-Kopp, L., Lynam, D., Reynolds, C., Stouthamer-Loeber, M. and Liu, J. (2006), The reactive-proactive aggression questionnaire: differential correlates of reactive and proactive aggression in adolescent boys. *Aggr. Behav.*, 32: 159–171. doi:10.1002/ab.20115

- 
- Rasche, K., Dudeck, M., Otte, S., Klingner, S., Vasic, N., and Streb, J. (2016). Factors influencing the pathway from trauma to aggression: A current review of behavioral studies. *Neurology, Psychiatry and Brain Research* 22(2), 75-80. doi: 10.1016/j.npbr.2016.01.009.
- Ray, W., Odenwald, M., Neuner, F., Schauer, M., Ruf, M., Wienbruch, C., Elbert, T. (2006). Decoupling neural networks from reality dissociative experiences in torture victims are reflected in abnormal brain waves in left frontal cortex. *Psychological Science* 17 (10), 825–829.
- Rayfield, D. (2007). *Stalin and His Hangmen: The Tyrant and Those Who Killed for Him*. Random House Digital, Inc., New York.
- Reijneveld, S.A., Crone, M.R., Verhulst, F.C., and Verloove-Vanhorick, S.P. (2003). The effect of a severe disaster on the mental health of adolescents: a controlled study. *The Lancet* 362(9385), 691-696. doi: 10.1016/s0140-6736(03)14231-6.
- Rheinberg, F. (2002). *Motivation (4. Aufl)* Stuttgart: Kohlhammer.
- Richardson, D. S. (2005). The myth of female passivity: thirty years of revelations about female aggression. *Psychol. Women Q.* 29, 238–247. doi: 10.1111/j.1471-6402.2005.00218.x
- Richardson, D. S., and Hammock, G. S. (2007). Social context of human aggression: are we paying too much attention to gender? *Aggress. Violent Behav.* 12, 417–426. doi: 10.1016/j.avb.2006.11.001
- Richardson, S. S. (2013). *Sex itself: The search for male and female in the human genome*. University of Chicago Press.
- Rieder, H., and Elbert, T. (2013). The relationship between organized violence, family violence and mental health: findings from a community-based survey in Muhanga, Southern Rwanda. *Eur. J. Psychotraumatol.* 4:21329. doi: 10.3402/ejpt.v4i0.21329
- Ritchie, S. J., Cox, S. R., Shen, X., Lombardo, M. V., Reus, L. M., Alloza, C., Harris, M.A., Alderson, H., Hunter, S., Neilson, E. & Liewald, D. C. (2017). Sex differences in the adult human brain: Evidence from 5,216 UK Biobank participants. *bioRxiv*, 123729.
- Robazza, C. (2006). Emotion in sport: An IZOF perspective. *Literature reviews in sport psychology*, 127-158.
- Robazza, C., Bortoli, L., & Hanin, Y. (2004). Precompetition emotions, bodily symptoms, and task-specific qualities as predictors of performance in high-level karate athletes. *Journal of Applied Sport Psychology*, 16(2), 151-165.
- Robjant, K., Fazel, M. (2010). The emerging evidence for narrative exposure therapy: a review. *Clinical Psychology Review* 30 (8), 1030–1039.
- Roosendaal, B., McEwen, B., Chattarji, S. (2009). Stress, memory and the amygdala. *Nature Reviews Neuroscience* 10 (6), 423–433.
- Roth, M., Neuner, F., and Elbert, T. (2014). Transgenerational consequences of PTSD: risk factors for the mental health of children whose mothers have been exposed to the Rwandan genocide. *Int. J. Ment. Health Syst.* 8, 1–12. doi: 10.1186/1752-4458-8-12

- Rousseeuw, P., Croux, C., Todorov, V., Ruckstuhl, A., Barrera-Salibian, M., Verbeke, T., et al. (2015). "robustbase: Basic Robust Statistics [software]". 0.92-5 ed.).
- Roy, A. (2005). Childhood trauma and impulsivity. Possible relevance to suicidal behavior. *Arch. Suicide Res.* 9, 147–151. doi: 10.1080/13811110590903990
- Ruiz, M. C., & Hanin, Y. L. (2004a). Metaphoric description and individualized emotion profiling of performance states in top karate athletes. *Journal of Applied Sport Psychology*, 16(3), 258-273.
- Ruiz, M. C., & Hanin, Y. L. (2004b). Idiosyncratic description of anger states in skilled Spanish karate athletes: An application of the IZOF model. *Revista de Psicología del Deporte*, 13(1), 75-93.
- Ryan, R. M., & Deci, E. L. (2000). Self-Determination Theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68-78.
- Ryska, T. A. (2003). Sportsmanship in young athletes: The role of competitiveness, motivational orientation, and perceived purposes of sport. *The Journal of Psychology*, 137(3), 273-293.
- Saile, R., Ertl, V., Neuner, F., and Catani, C. (2014). Does war contribute to family violence against children? findings from a two-generational multi-informant study in Northern Uganda. *Child Abuse Negl.* 38, 135–146. doi: 10.1016/j.chiabu.2013.10.007
- Savarese, V. W., Suvak, M. K., King, L. A., & King, D. W. (2001). Relationships among alcohol use, hyperarousal, and marital abuse and violence in Vietnam veterans. *Journal of Traumatic Stress*, 14(4), 717-732. doi:10.1023/A:1013038021175
- 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. doi:10.1080/10926771.2014.956916
- Schauer, E., and Elbert, T. (2010). "The psychological impact of child soldiering," in *Trauma Rehabilitation after War and conflict: Community and Individual Perspectives*, ed. E. Martz (New York, NY: Springer), 311–360.
- Schauer, M., & Elbert, T. (2010). Dissociation following traumatic stress. *Zeitschrift für Psychologie/Journal of Psychology* 218 (2), 109–127.
- Schauer, M., Neuner, F., Elbert, T. (2011). *Narrative Exposure Therapy*, second ed. Hogrefe & Huber, Göttingen.
- Seal, K. H., Cohen, G., Waldrop, A., Cohen, B. E., Maguen, S., & Ren, L. (2011). Substance use disorders in Iraq and Afghanistan veterans in VA healthcare, 2001– 2010: Implications for screening, diagnosis and treatment. *Drug and Alcohol dependence*, 116(1), 93-101. doi:10.1016/j.drugalcdep.2010.11.027
- Shackelford, T. K. (2005). An evolutionary psychological perspective on cultures of honor. *Evolutionary Psychology*, 3, 381–391.

---

Silva, J. A., Derecho, D. V., Leong, G. B., Weinstock, R., & Ferrari, M. M. (2001). A classification of psychological factors leading to violent behavior in posttraumatic stress disorder. *Journal of Forensic Sciences*, 46(2), 309-316.

Sommer, J., Hinsberger, M., Elbert, T., Holtzhausen, L., Kaminer, D., Seedat, S., et al. (2017). The interplay between trauma, substance abuse and appetitive aggression and its relation to criminal activity among high-risk males in South Africa. *Addict Behav* 64, 29-34. doi: 10.1016/j.addbeh.2016.08.008.

Sommershof, A., Aichinger, H., Engler, H., Adenauer, H., Catani, C., Boneberg, E., Kolassa, I. (2009). Substantial reduction of naïve and regulatory T cells following traumatic stress. *Brain, Behavior, and Immunity* 23 (8), 1117–1124.

Staub, E. (2006). Reconciliation after genocide, mass killing, or intractable conflict: Understanding the roots of violence, psychological recovery, and steps toward a general theory. *Political Psychology*, 27(6), 867–984. doi:10.1111/j.1467-9221.2006.00541.x

Steel, Z., Silove, D., Phan, T., and Bauman, A. (2002). Long-term effect of psychological trauma on the mental health of Vietnamese refugees resettled in Australia: a population-based study. *Lancet* 360, 1056–1062. doi: 10.1016/s0140-6736(02)11142-1

Stockley, P., and Campbell, A. (2013). Female competition and aggression: interdisciplinary perspectives. *Philos. Trans. R. Soc. Lond. B Biol. Sci.* 368:20130073. doi: 10.1098/rstb.2013.0073

Taft, C. T., Kaloupek, D. G., Schumm, J. A., Marshall, A. D., Panuzio, J., King, D. W., & Keane, T. M. (2007). Posttraumatic stress disorder symptoms, physiological reactivity, alcohol problems, and aggression among military veterans. *Journal of Abnormal Psychology*, 116(3), 498. doi:10.1037/0021-843X.116.3.498

Taft, C.T., Schumm, J., Orazem, R.J., Meis, L., and Pinto, L.A. (2010). Examining the Link Between Posttraumatic Stress Disorder Symptoms and Dating Aggression Perpetration. *Violence and Victims* 25(4), 456-469. doi: 10.1891/0886-6708.25.4.456.

Teicher, M.H., Samson, J.A., Polcari, A., and McGreenery, C.E. (2006). Sticks, Stones, and Hurtful Words: Relative Effects of Various Forms of Childhood Maltreatment. *American Journal of Psychiatry* 163(6), 993-1000.

Tester, K. (1997). *Moral Culture*. Sage.

Topitzes, J., Mersky, J.P., and Reynolds, A.J. (2012). From child maltreatment to violent offending: an examination of mixed-gender and gender-specific models. *J Interpers Violence* 27(12), 2322-2347. doi: 10.1177/0886260511433510.

Trabold, N., Swogger, M.T., Walsh, Z., and Cerulli, C. (2015). Childhood Sexual Abuse and the Perpetration of Violence: The Moderating Role of Gender. *Journal of Aggression, Maltreatment & Trauma* 24(4), 381-399. doi: 10.1080/10926771.2015.1022288.

Tull, M. T., Barrett, H. M., Mcmillan, E. S., and Roemer, L. (2007). A preliminary investigation of the relationship between emotion regulation difficulties and posttraumatic stress symptoms. *Behav. Ther.* 38, 303–313. doi: 10.1016/j.beth.2006.10.001

Turner, M., Cipolotti, L., Yousry, T., Shallice, T. (2007). Confabulation: damage to a specific inferior medial prefrontal system. *Cortex* 44 (6), 637–648.

Ulrich-Lai, Y., Herman, J. (2009). Neural regulation of endocrine and autonomic stress responses. *Nature Reviews Neuroscience* 10 (6), 397–409.

United Nations (2015). Concerned Over Potential Violence in Burundi, UN Chief Urges Resumption of Dialogue [Online].

Available: <http://www.un.org/apps/news/story.asp?NewsID=51056-.VYQGwFXtIHw> [Accessed June 19, 2015].

United Nations General Assembly, 10 December, 1984. Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment. Treaty Series, vol. 1465. United Nations, p. 85. <http://www.refworld.org/docid/3ae6b3a94.html> (accessed 31.07.13.).

United States Department of State - Bureau of Democracy, Human Rights, and Labor (2013). "Burundi 2013 Human Rights Report".

United States Institute of Peace (2002). International Commission of Inquiry for Burundi: final Report [Online].

Available: <http://www.usip.org/sites/default/files/file/resources/collections/commissions/Burundi-Report.pdf> [Accessed 25 June, 2015].

Uvin, P. (2009). *Life after Violence. A People's Story of Burundi*. New York, NY: Zed Books.

Vallerand, R. J., Blais, M. R., Brière, N. M., & Pelletier, L. G. (1989). Construction et validation de l'Échelle de Motivation en Éducation (EME). *Revue canadienne des sciences du comportement*, 21, 323-349.

Vallerand, R. J., Pelletier, L. G., Blais, M. R., Brière, N. M., Senécal, C. B., & Vallières, E. F. (1992). The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement*, 52, 1003-1017.

Vallerand, R. J., & Ratelle, C. F. (2002). Intrinsic and extrinsic motivation: A hierarchical model. *Handbook of self-determination research*, 128, 37-63.

van Casteren, M., and Davis, M. H. (2007). Match: a program to assist in matching the conditions of factorial experiments. *Behav. Res. Methods* 39, 973–978. doi: 10.3758/BF03192992

Van Winkle, E. P., & Safer, M. A. (2011). Killing versus witnessing in combat trauma and reports of PTSD symptoms and domestic violence. *Journal of Traumatic Stress*, 24(1), 107-110. doi:10.1002/jts.

Van-Yperen, N. W., & Duda, J. L. (1999). Goal orientations, beliefs about success, and performance improvement among young elite Dutch soccer players. *Scandinavian journal of medicine & science in sports*, 9(6), 358-364.

- 
- Vinck, P., Pham, P. N., Stover, E., & Weinstein, H. M. (2007). Exposure to war crimes and implications for peace building in northern Uganda. *JAMA: The Journal of the American Medical Association*, 298(5), 543–554. doi:10.1001/jama.298.5.543
- Weierstall, R., Bueno Castellanos, C. P., 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). doi:10.1186/1752-1505-7-9
- Weierstall, R., and Elbert, T. (2011). The appetitive aggression scale: development of an instrument for the assessment of human's attraction to violence. *Eur. J. Psychotraumatol.* 1:8430. doi: 10.3402/ejpt.v2i0.8430
- Weierstall, R., Haer, R., Banholzer, L., and Elbert, T. (2013). Becoming cruel: Appetitive aggression released by detrimental socialisation in former Congolese soldiers. *International Journal of Behavioral Development* 37(6), 505-513. doi: 10.1177/0165025413499126.
- Weierstall, R., Huth, S., Knecht, J., Nandi, C., and Elbert, T. (2012a). Appetitive aggression as a resilience factor against trauma disorders: appetitive aggression and PTSD in German World War II veterans. *PLoS ONE* 7:e50891. doi: 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, 6345. doi: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, 41. doi:10.1186/1471-244X-12-41
- White, S. A., & Zellner, S. R. (1996). The relationship between goal orientation, beliefs about the causes of sport success, and trait anxiety among high school, intercollegiate, and recreational sport participants. *Sport Psychologist*, 10, 58-72.
- Widom, C. S. (1989). The cycle of violence. *Science* 244, 160–166. doi: 10.1126/science.2704995
- Widom, C. S. (1989). Child abuse, neglect, and adult behavior: research design and findings on criminality, violence, and child abuse. *American Journal of Orthopsychiatry*, 59(3), 355. doi: 10.1111/j.1939-0025.1989.tb01671.x
- Widom, C. S., Czaja, S. J., & DuMont, K. A. (2015). Intergenerational transmission of child abuse and neglect: Real or detection bias?. *Science*, 347(6229), 1480-1485. doi: 10.1126/science.1259917
- Wilker, S., Pfeiffer, A., Kolassa, S., Koslowski, D., Elbert, T., and Kolassa, I. (2015). How to quantify exposure to traumatic stressors? Reliability and validity of measures for cumulative trauma exposure in a post-conflict population. *Eur. J. Psychotraumatol.* 6:28306. doi: 10.3402/ejpt.v6.28306

Williams, J. M., & Krane, V. (1998). Psychological characteristics of peak performance. In, JM Williams (Ed.) Applied sport psychology personal growth to peak performance (pp. 158-170). Mountain View.

Wilson, M., Daly, M., and Pound, N. (2002). "An evolutionary psychological perspective on the modulation of competitive confrontation and risk-taking," in *Hormones, Brain and Behavior*, Vol. 5, eds D. W. Pfaff, A. P. Arnold, S. E. Fahrbach, A. M. Etgen, and R. T. Rubin (San Diego, CA: Academic Press), 381–408.

Wood, W., & Eagly, A. H. (2009). Gender identity. *Handbook of individual differences in social behavior*, 109-125.

Woodward, H. E., Taft, C. T., Gordon, R. A., & Meis, L. A. (2009). Clinician bias in the diagnosis of posttraumatic stress disorder and borderline personality disorder. *Psychological Trauma: Theory, Research, Practice, and Policy*, 1(4), 282.

World Bank (2009). Burundi – Emergency Demobilization, Reinsertion and Reintegration Project. Washington, DC: World Bank.

World Bank (2011). World Development Report. conflict, Security, and Development. Washington DC: World Bank.

Zillmann, D. (1979). *Hostility and aggression*. Hillsdale, NJ: Erlbaum.

Zimbardo, P.G., (2003) Forward In: *The psychological origins of institutionalized torture*, ed. M. Haritos-Fatouros, pp. xv-xviii. Routedledge.

Zimbardo, P. G. (2008). *Der Luzifer-Effekt. Die Macht der Umstände und die Psychologie des Bösen*. Heidelberg: Spektrum Akademischer Verlag.