Social acknowledgment and its relation to PTSD and aggression in a victim-offender sample in South Africa: new perspectives on a major public health problem

Dissertation

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## Abbreviations

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<tr>
<td>AAS</td>
<td>Appetitive Aggression Scale</td>
</tr>
<tr>
<td>CBT</td>
<td>Cognitive Behavioral Therapy</td>
</tr>
<tr>
<td>CFI</td>
<td>Comparative Fit Index</td>
</tr>
<tr>
<td>DRC</td>
<td>Democratic Republic of the Congo</td>
</tr>
<tr>
<td>DSM-IV/5</td>
<td>Diagnostic and Statistical Manual of Mental Disorders IV/5</td>
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<tr>
<td>(FOR)NET</td>
<td>Narrative Exposure Therapy (for Forensic Offender Rehabilitation)</td>
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<tr>
<td>PSS-I</td>
<td>PTSD Symptom Scale – Interview</td>
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<td>PTSD</td>
<td>Posttraumatic Stress Disorder</td>
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<td>RMSEA</td>
<td>Root Mean Square Error of Approximation</td>
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<td>SAQ</td>
<td>Social Acknowledgment Questionnaire</td>
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<td>TFAC</td>
<td>Thinking For A Change</td>
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Summary

Violence, declared as a public health problem, is one of the major factors underlying a global mental health crisis. In communities with high rates of interpersonal violence and thus in persistently unsafe environments, violence exposure is associated with psychological disorders such as posttraumatic stress disorder (PTSD). Further, it is related to behavioral problems in the form of violent outbursts and the propensity to enjoy violence, i.e. appetitive aggression. This violence breeds further violence, and thus a cycle of violence develops. Substance abuse as well as social factors may have an additional impact on these adverse consequences of violent environments. In order to overcome the detrimental effects of violence exposure, the Narrative Exposure Therapy for Forensic Offender Rehabilitation (FORNET) – a short-term intervention aiming to reduce symptoms of posttraumatic stress and the propensity towards violence – has been developed. One crucial test of its practical efficacy is whether it can be successful even under continuous exposure to traumatic stress. FORNET has not been sufficiently studied in this context so far. Further, factors that are involved in the cycle of violence need to be considered with regard to their potential influence on treatment effects.

The aims of this thesis were to study the cycle of violence on the example of young South African males with a background of violent victimization and perpetration of violence. Thus, I investigated how violence exposure and perpetration, severity of PTSD symptoms, and appetitive aggression are related to each other. Furthermore, I explored how substance abuse and the perceived social acknowledgment of individuals’ violent experiences contributes to the cycle of violence. Additionally, the efficacy of the FORNET was investigated with regard to changes in PTSD symptom severity, appetitive aggression and committed offenses. Finally, the influence of risk and protective factors on treatment outcomes was examined.

A sample of 290 male South Africans from low-income urban areas in Cape Town, aged 14 to 40 years (M = 22.0, SD = 4.5), was recruited through a reintegration center for offenders and
youth-at-risk for violence perpetration and substance abuse. In order to study the questions outlined above, participants were assessed with regard to the number of different experienced traumatic event types, the number of committed offenses, PTSD symptom severity (PTSD Symptom Scale-Interview [PSS-I]; Foa & Tolin, 2000), and the extent of appetitive aggression (Appetitive Aggression Scale [AAS]; Weierstall & Elbert, 2011). Substance abuse prior to violence perpetration and social acknowledgment (Social Acknowledgment Questionnaire [SAQ]; Maercker & Mueller, 2004) were assessed as potential risk and protective factors, respectively. Further, a subsample of the participants was involved in a treatment study investigating changes in PTSD symptoms, appetitive aggression scores and number of committed offenses by means of FORNET. The efficacy of FORNET was studied by comparing it to the cognitive-behavioral intervention “Thinking for a Change” (TFAC) and a waiting list control condition. Post-treatment social acknowledgment was considered to be a potential influential factor with regard to treatment outcome.

The findings from the four conducted studies presented in this thesis showed that (1) the number of different experienced traumatic event types was positively associated with PTSD symptom severity, appetitive aggression and substance abuse; (2) the number of committed offenses was positively related to appetitive aggression; (3) PTSD symptom severity was positively associated with appetitive aggression. In terms of risk and protective factors in the cycle of violence, results further demonstrated that (1) the severity of substance abuse prior to the commission of offenses was positively related to appetitive aggression and to the number of committed offenses; (2) general disapproval, a subscale of the SAQ, was correlated with both higher PTSD symptom severity and higher levels of appetitive aggression, and a complementary muted therapeutic improvement in PTSD symptom severity and appetitive aggression after treatment.

With regard to treatment approaches, FORNET significantly reduced PTSD scores at 8-months follow-up and scores were significantly lower than those of the waiting list control condition.
Changes in scores for appetitive aggression and committed offenses were not significant for any of the treatment conditions nor the waiting list control condition. Further, path analyses demonstrated ongoing general disapproval from the community to be significantly related to a lower reduction in PTSD symptom severity and appetitive aggression after psychotherapeutic treatment.

In sum, trauma-focused treatment can reduce the psychological symptoms of posttraumatic stress even for individuals living under continuing unsafe conditions in low-income urban communities in South Africa. Achieving optimal treatment outcome for PTSD and changes in violent behavior within a context of ongoing violence may require more than treatment of trauma-related suffering and confrontation with one’s own offenses: Results indicate that improved social acknowledgment plays a significant role in the reduction of PTSD symptom severity and appetitive aggression in a context of ongoing community and gang violence. Further, psychotherapeutic interventions for trauma-related suffering may not be effective without first targeting social structures and second providing sustained drug abuse rehabilitation.
Zusammenfassung


Die Ergebnisse der vier im Rahmen der vorliegenden Arbeit durchgeführten Studien zeigten, dass (1) die Anzahl der verschiedenen erlebten traumatischen Ereignisse sowohl positiv mit der PTBS-Symptomschwere, appetitiver Aggression, als auch mit Substanzmissbrauch assoziiert war; (2) die Anzahl verübter Straftaten positiv mit appetitiver Aggression verbunden war; (3) die PTBS-Symptomschwere positiv mit appetitiver Aggression assoziiert war. Analysen zu Risiko- und Schutzfaktoren im Gewaltkreislauf ergaben, dass (1) die Häufigkeit des Substanzmissbrauchs vor Gewaltausübung positiv mit appetitiver Aggression und der Anzahl von verübten Straftaten verbunden war; (2) erlebtes generelles Unverständnis, eine Subskala des Fra-
gebogens zu sozialer Anerkennung, positiv mit der PTBS-Symptomschwere, als auch dem Ausmaß an appetitiver Aggression korreliert und negativ mit Veränderungen der PTBS-Symptomschwere und appetitiver Aggression nach Behandlung assoziiert war.


Record of achievements

The research and the articles in this thesis were realized in collaboration with a number of colleagues. In the following, I list my independent research contributions per article.


Jessica Sommer, Martina Hinsberger, Roland Weierstall, Leon Holtzhausen, Debra Kaminer, Soraya Seedat, Andreas Maercker, Solomon Madikane, and Thomas Elbert

My contributions:

- contributed to the design of the study
- participated in the interviewer training
- carried out a large number of clinical interviews
- supervised clinical interviews
- conducted the statistical analysis
- drafted and revised the manuscript.

Article 2: The interplay between trauma, substance abuse and appetitive aggression and its relation to criminal activity among high-risk males in South Africa


My contributions:

- contributed to the design of the study
- participated in the interviewer training
- carried out a large number of clinical interviews
- supervised clinical interviews
- conducted the statistical analysis
- drafted and revised the manuscript.

Article 3: Feasibility and effectiveness of Narrative Exposure Therapy and Cognitive Behavioral Therapy in a context of ongoing violence in South Africa


My contributions:

- contributed to the design of the study
- participated in the interviewer training
- carried out a large number of clinical interviews
- supervised clinical interviews
- carried out a substantial part of the FORNET training
- carried out a large number of FORNET therapies
- revised the manuscript.

Article 4: Associations between societal disapproval and changes in symptoms of PTSD and appetitive aggression following treatment among high-risk South African males
Jessica Sommer, Martina Hinsberger, Leon Holtzhausen, Debra Kaminer, Soraya Seedat, Thomas Elbert, Mareike Augsburger, Andreas Maercker, and Roland Weierstall (in submission)

My contributions:

- contributed to the design of the study
- participated in the interviewer training
- supervised clinical interviews
- carried out a large number of clinical interviews
- carried out a substantial part of the FORNET training
- carried out a large number of FORNET therapies
- conducted the statistical analysis
- drafted and revised the manuscript.
1 Background

In 1996, violence was declared a public health problem by the World Health Assembly (WHA; Krug, Mercy, Dahlberg, & Zwi, 2002). The scale of this problem becomes evident with the current mass refugee movements caused by violence (Schauer, 2016): Almost 41 million people were internally displaced and more than 21 million were refugees in 2015 (United Nations High Commissioner for Refugees [UNHCR], 2016). On average, 36% of all refugees are traumatized (for a review see Lindert, von Ehrenstein, Priebe, Mielck, & Brähler, 2009), indicating a global mental health crisis. A growing body of research demonstrates that any kind of violence exposure, be it domestic violence (e.g. Knight & Hester, 2016), sexual violence (e.g. Kisiel et al., 2014), community violence (e.g. Schwab-Stone et al., 2013), or psychological violence (e.g. Crombach, Bambonyé, & Elbert, 2014), is a risk factor for mental health – across different cultures, sexes, and ages albeit with varying impact. This risk becomes further augmented when an individual experiences different forms of violence during his/her life. This is referred to as poly-victimization (e.g. Ford, Elhai, Connor, & Frueh, 2010). The detrimental effect of violence on mental health status is for example indicated by an increasing risk of developing psychological disorders and behavioral problems such as posttraumatic stress disorder (PTSD; e.g. Wilker et al., 2015) and appetitive aggression (e.g. Crombach & Elbert, 2015).

Gaining a greater understanding of the causes of violence, understanding the dynamics, and investigating risk factors for violence perpetration as well as potential protective factors within the cycle of violence is indispensable (Bushman et al., 2016). This allows complex relationships to be disentangled and reveals paths to violence prevention (Parry, Plüddemann, Louw, & Leggett, 2004). Additionally, effective intervention strategies for violence environments can be developed.
1.1 South Africa – an example of extreme violence

South Africa has maintained a precarious stability since the end of the apartheid era in 1994. However, rates of violence, with consequent trauma exposure and PTSD levels are extremely high (e.g. Dinan, McCall, & Gibson, 2004), with one of the highest rates of homicide worldwide (Demombynes & Özler, 2005). In the Western Cape and in particular in low-income urban areas in Cape Town such as Gugulethu and Khayelitsha, where data for this thesis was collected, community violence is at the highest levels nationwide (De Kock, 2012). However, so far little progress has been made to gain a better understanding of why violence has remained persistent in South Africa since the end of the apartheid era more than 20 years ago (Kynoch, 2005). Multiple factors are discussed in the literature as to why adolescents and young adults in particular become involved in a cycle of violence (Widom & Maxfield, 2001) from victimization to perpetration in South Africa (Abrahams, Martin, & Vetten, 2004; Burton, 2007; Kynoch, 1999).

From the beginning of the apartheid era in 1948 until now, South Africa has undergone different kinds of severe violence (Kaminer, Grimsrud, Myer, Stein, & Williams, 2008). Under the apartheid regime, ethnic segregation into white, black, colored and Indian South Africans was enforced. This led to inequality in terms of education, health care and economic opportunities between the different ethnic groups (Das-Munshi et al., 2016). In addition, severe human rights violations were committed before democracy was established in 1994 (Truth and Reconciliation Commission, 1998) when Nelson Mandela became the first black president of South Africa. Research indicates a significant relationship between self-experienced as well as witnessed apartheid-related human rights violations and self-perpetrated lifetime intimate partner violence in men (Gupta, Reed, Kelly, Stein, & Williams, 2010). This may form one potential cause for today’s high rates of crime in South Africa and supports the argument of Barbarin and Richter (2001) that a transition from politically motivated violence to family and community violence took place after the apartheid era. Further, the segregation of different ethnic races of South
Background

Africans during the apartheid regime is still present in the form of racially separated areas (Shields, Nadasen, & Pierce, 2008), which have radically different living conditions: Recent statistics show that the unemployment rate of black Africans is at extremely high levels (41%), especially when compared to the unemployment rate of whites (9%; Statistics South Africa, 2016). This inequality, then again, is related to crime, as wealthier areas are targeted for burglary by those living in less wealthy communities (Demombynes & Özler, 2005).

The high rates of crime in South Africa are also associated with disintegration of families and communities in the course of the apartheid era, for example by forced removal, leading to a breakdown of social control within families and the community and thus to a reduced protection against crime (Emmett, 2003). Further, in the South African context, the absence of fathers is common (Denis & Ntsimane, 2006), and research indicates that growing up without a father and thus a male-role model is a predictor of young men’s violent behavior (Mackey, 2004; Mackey & Mackey, 2003). Children, who are not sufficiently protected by their community, tend to seek for surrogate families within criminal gangs (Lockhat & van Niekerk, 2000) as they yearn for acceptance and acknowledgment, as described by a statement of a young man involved in gansterism, presented in Owen & Greeff (2015):

“‘There’s not that someone who is paying attention to you [in your family] . . . and there in the gangs they are paying attention to you and that’s where you feel more welcome. You are being accepted there.’” (Owen & Greeff, 2015, p.16)

In fact, gangs are comparable to family systems, for example with regard to their organized hierarchical structure of role allocation present in both systems (Ruble & Turner, 2000). Although gang involvement provides social support for members within the gang (Lyon, Hengge-ler, & Hall, 1992; Wegner, Behardien, Loubser, Ryklief, & Smith, 2016), it puts gang members at higher risk for trauma exposure: Initiation rituals frequently involve being subjected to sexual violence by other gang members; being forced to commit murder in order to become a gang
member can be traumatic; as well as violent attacks through rival gangs (Kerig, Chaplo, Bennett, & Modrowski, 2016; Kerig, Wainryb, Twali, & Chaplo, 2013). In Cape Town around 100,000 inhabitants, i.e. 5% of the Western Cape’s population, were estimated to be involved in one of approximately 280 gangs (BBC News, 2001; Standing, 2005). As the majority of urban gang-affiliated individuals are males (Kerig et al., 2013), young males are especially at risk of experiencing multiple traumatic events in comparison to females (Williams et al., 2007), with death rates from injuries being three times higher than those of women (Bradshaw et al., 2004).

1.2 The cycle of violence

1.2.1 Associations between violence exposure and PTSD
Within the spectrum of mental health impairments, violence exposure forms an especially strong predictor for the development of posttraumatic stress disorder (PTSD; e.g. Elbert, Rockstroh, Kolassa, Schauer, & Neuner, 2006). PTSD is a syndrome defined by a combination of distressing symptoms of intrusive re-experiencing of the traumatic event (e.g. through nightmares), avoidance of recollections of the traumatic event, negative alterations in mood and cognition, and hyperarousal (American Psychiatric Association, 2013). The likelihood of developing PTSD symptoms augments monotonically with the number of different traumatic events experienced, up to a certain threshold where any individual would develop the clinical picture; this phenomenon is called the building block effect (e.g. Catani, Jacob, Schauer, Kohila, & Neuner, 2008; Kolassa & Elbert, 2007; Neuner et al., 2004; Schauer et al., 2003). Furthermore, man-made traumata, i.e. interpersonal violence such as domestic or community violence, are more likely associated with PTSD than other forms of traumatic events such as natural or technological disasters (e.g. Creamer, Burgess, McFarlane & Cowell, 2001; Forbes et al., 2013; Rasche et al., 2016).
In the South African context, it is not only the actual victimization but also the continuous stress of being at risk of victimization that is strongly associated with heightened mental health impairments (Shields et al., 2008). The prevalence of PTSD in South Africa is very high, with 21-22% of adolescents from representative samples suffering from PTSD (Das-Munshi et al., 2016; Seedat, Nyamai, Njenga, Vythilingum, & Stein, 2004), which is almost as high as PTSD rates in German asylum seekers from countries-at-war (29%; Richter, Lehfeld, & Niklewski, 2015). In comparison, the prevalence of PTSD in a representative German and American sample of adolescents was 1% and 5%, respectively (Kilpatrick et al., 2003; Perkonigg et al., 2005).

1.2.2 Associations between violence exposure and appetitive aggression

Research demonstrates that “violence breeds violence” (Curtis, 1963): There is a well-documented connection between the exposure to violence, as a victim or a witness, and self-committed aggressive behavior or aggressive tendencies (e.g. Halliday-Boykins & Graham, 2001; Kerig & Becker, 2015; Weierstall, Hinsberger et al., 2013). The risk of becoming a violent offender is significantly higher in persons with a background of childhood victimization (e.g. Elbert et al., 2006; Maas, Herrenkohl, & Sousa, 2008; Scarpa & Haden, 2006): Having been sexually abused in the past is strongly related to sexual-offending behavior (e.g. Aebi et al., 2015); witnessing of domestic violence in childhood is significantly associated with violent behavior as an adult (Abrahams & Jewkes, 2005).

One potential explanation for the above-mentioned associations could be the development of appetitive aggression: This phenomenon is defined as an aggression seeking behavior, accompanied by the goal to harm someone severely and the self-rewarding lust to act violently (Elbert, Moran, & Schauer, 2016; Elbert, Weierstall, & Schauer, 2010). It frequently arises when individuals face conditions of severe violence, as in the case of child soldiers and former combatants from Uganda and from the Democratic Republic of the Congo (DRC; Elbert et al., 2010; Hecker, Hermenau, Maedl, Elbert, & Schauer, 2012), street children in Burundi (Crombach &
Elbert, 2014), or refugee minors in Germany (Mueller-Bamouh, Ruf-Leuschner, Dohrmann, Schauer, & Elbert, 2016). Under these adverse circumstances, individuals seem to learn that acting aggressively may be beneficial and even crucial in order to survive (e.g. Crombach & Elbert, 2015; Nell, 2006). Further, aggression seeking behavior may represent a source of control and power (Parkes, 2007). A positive evaluation of cruelty seems to grow in proportion to the number of violent acts: The number of different committed violent acts, in fact, represents the most important predictor of the enjoyment of aggressive acts, comparable to the building block effect for PTSD (Köbach, Schaal, & Elbert, 2015).

Interrelatedness of violence, PTSD and appetitive aggression

The cyclic structure of violence, which is illustrated in Figure 1.1., is influenced by many factors. Externalizing behavior, such as the development of antisocial behavior and aggression, is not only related to having experienced severe interpersonal traumatic events, but is also mediated by PTSD symptoms such as re-experiencing as well as permanent increased arousal. Both of these symptoms are associated with anger and irritability (Kerig, Vanderzee, Becker, & Ward, 2012; Kerig, Ward, Vanderzee, & Moeddel, 2009). Fantasizing about revenge as a symptom of PTSD (Gäbler & Maercker, 2011) and even experiencing satisfaction while ruminating about or actually harming the assailter, initially a reactive form of aggression, may turn into a proactive intrinsic motivation for violence.

![Diagram of the cycle of violence](image_url)

Figure 1.1 Schematic illustration of the cycle of violence.
However, the perpetration of a violent act can also be traumatic for the perpetrator, referred to as *perpetration-induced traumatic stress* (PITS; MacNair, 2002), which has been shown to mediate the positive relationship between gang membership and PTSD (Chaplo & Kerig; 2013; Kerig et al., 2016). This development is less likely, if the perpetrator experiences the violent act as *appetitive* (Bovin & Marx, 2011; Köbach, Schaal, & Elbert, 2015), for example when feelings of helplessness due to victimization are overcome by acting violently oneself and a feeling of effectiveness and control is reestablished instead (Crombach & Elbert, 2014).

Violence exposure is predominantly hypothesized to be the cause of higher appetitive aggression (e.g. Elbert et al., 2010; Schaal, Heim, & Elbert, 2014). However, the likelihood of being victimized through different kinds of traumatic experiences may yet again be enhanced with higher appetitive aggression: The desire and fascination to engage in violent acts increases risk taking behavior, i.e. a person high in appetitive aggression stops caring about whether he/she could be harmed or even killed when fighting (Weierstall & Elbert, 2011), which in turn is associated with a higher probability of victimization (Fetchenhauer & Rohde, 2002). Experiencing potential traumatic events, such as getting stabbed when rival gangs take revenge (Scarpa & Haden, 2006), or being victimized by *mob justice*, i.e. an informal mechanism of community justice marked by extreme brutality towards the offender (e.g. being beaten to death; Monaghan, 2008), becomes more likely alongside a rising motivation to perpetrate violence (Begle et al., 2011).

In sum, both trauma exposure as well as ensuing posttraumatic stress reactions are a major consequence of involvement in gangs. Additionally, these two factors must be considered as risk factors for involvement within violent gangs due to the vulnerability to recruitment (for a review see Kerig et al., 2013). This interrelatedness highlights the complexity of the cycle of violence, in which PTSD and appetitive aggression are integrated, and consequently emphasizes the need to consider factors that may contribute to breaking this cycle. Additionally, it is
important to acknowledge further risk factors, which may add to the aggravation of the dynamics within the cycle of violence. This is addressed in the subsequent section.

1.3 Protective factors and risk factors in the cycle of violence

1.3.1 Social support

It has been pointed out that recovery from traumatic experiences necessitates actual or anticipated safety (Foa, Keane, Friedman, Cohen, 2008). However, since in contexts such as South Africa, especially in low-income urban areas, continuous stress is present (Eagle & Kaminer, 2013), other factors contributing to recovery from or prevention of mental health impairments, must be considered (Ward et al., 2012). Social support has been postulated to be the most important factor in reducing the psychological impact of stressful experiences (Turner, 1981). Aneshensel (1992) theorized that social resources represent a potential buffer against mental health impairments. Social stress, in turn, contributes to psychological problems (Aneshensel, Phelan, & Bierman, 2013). With regard to the question of whether positive or negative aspects of social factors are more influential in terms of mental health, Vinokur & van Ryn (1993) compared effects of social undermining and social support and found that the beneficial effect of social support has a weaker impact on mental health than the adverse effect of social undermining.

In addition to violence exposure, a large number of psychosocial factors, such as functional social support, i.e. the perception of emotional sustenance by family or friends (King, King, Fairbank, Keane, & Adamas, 1998), represent key elements in the prevention of the development of both trauma-associated mental-health problems (e.g. Rubin, Berntsen, & Bohni, 2008) and aggressive behavior (e.g. Song, Singer, & Anglin, 1998). Research has shown cross-sectional associations between social support and PTSD (Littleton, 2010), and has further highlighted the role of social support as one of the key predictors of PTSD symptom severity (Ozer,
Best, Lipsey, & Weiss, 2008). Exposure to gang violence has less negative effects on children who experience strong social support (Shields et al., 2008). With regard to aggression, most violent offenders are young men who feel unsupported or even rejected by their family and society (social causation; e.g. Walsh, Beyer & Petee, 1987). Social exclusion was even more predictive than poverty, drug abuse or gang membership with regard to adolescent violence (U.S. Surgeon General’s Report on Youth Violence, 2001). In turn, violent and aggressive behavior may evoke rejection by others (social selection; e.g. Newcomb, Bukowski, & Pattee, 1993).

1.3.2 Social acknowledgment

Beyond social support, it has been demonstrated that the social acknowledgment of an individual’s violent experiences, i.e. positive reactions of the social environment, such as expressing understanding with regard to the psychological response of a person affected by a traumatic incident, is even more predictive than conventional measures of social support with regard to PTSD symptom severity, and is negatively related to PTSD (Maercker & Müller, 2004; Krammer, Kleim, Simmen-Janevska, & Maercker, 2016; Xu et al., 2016). Social acknowledgment is measured in three subscales: Recognition as a victim, general disapproval and family disapproval. The positively poled subscale recognition measures the perception that one’s suffering is acknowledged and understood and has been shown to be related to less severe PTSD symptom severity (e.g. Maercker & Müller, 2004), whereas recognition deficits were associated with more PTSD symptoms (e.g. Kunst & Koster, 2016). The negatively poled subscales family disapproval and general disapproval, which describe the invalidation or rejection of the victim’s traumatic experiences by the family or social environment, were related to higher levels of PTSD symptom severity (e.g. Guan, Gao, Liu, Cheng, & Ge, 2016; Maercker & Müller, 2004; Maercker, Povilonyte, Lianova, & Pöhlmann, 2009). Studies demonstrate stronger associations between the negative than the positive subscales of social acknowledgment and PTSD,
suggesting an emphasis on general disapproval as most predictive for PTSD symptom severity (e.g. Forstmeier, Kuwert, Spitzer, Freyberger, & Maercker, 2009; Jones, Müller, & Maercker, 2006; Mueller, Moergeli, & Maercker, 2008; Mueller, Orth, Wang, & Maercker, 2009; Schumm, Koucky, & Bartel, 2014; Wagner, Keller, Knaevelsrud, & Maercker, 2012). Table 1.1 summarizes the presented literature and provides an overview of further research on social acknowledgment.

With regard to individuals with a background of victimization as well as perpetration of violence, King et al. (1998) found that US veterans involved in the Vietnam War presented with less PTSD symptoms when experiencing feelings of being understood by their close social network after returning home. Adaptive behaviors and attitudes in former child soldiers from Sierra Leone were promoted by family and community acceptance, whereas experienced discrimination for their war history led to increased hostility in a longitudinal study (Betancourt, Agnew-Blais, Gilman, Williams, & Ellis, 2010; Betancourt, Newnham, McBain, & Brennan, 2013).

Despite these findings and the well-demonstrated relationship between social rejection and aggression, the investigation of the association of social acknowledgment, and in particular general disapproval, with aggression is lacking. With regard to factors such as feelings of acceptance being significantly related to attraction to gangs in South Africa (Owen & Greeff, 2015; Wegner et al., 2016), social acknowledgment in the community or the family needs to be further examined, as it may prevent youth from turning towards gangs to find the longed-for acknowledgment. Schematic illustrations of the hypothesized impact of general disapproval, family disapproval and recognition on the cycle of violence are shown in Figure 1.2. Once associations between social factors such as social acknowledgment and PTSD, as well as appetitive aggression are studied, interventions that address these specific mechanisms can be developed.
Figure 1.2 Schematic illustration of the hypothesized impact of (a) general and family disapproval and (b) recognition as a victim on the cycle of violence.

Note. Bold arrows indicate a hypothesized aggravating effect, dotted arrows a hypothesized alleviating effect.
Table 1.1 *Overview of research on social acknowledgment*

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Title</th>
<th>Sample</th>
<th>Main findings</th>
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<tbody>
<tr>
<td>Maercker and Müller</td>
<td>2004</td>
<td>Social Acknowledgment as a victim or survivor: A scale to measure a recovery factor of PTSD</td>
<td>178 former political prisoners in East Germany and 151 recently traumatized interpersonal crime victims from Germany</td>
<td>Recognition as a victim and the SAQ total score were negatively correlated with PTSD symptom severity. General and family disapproval were positively associated with PTSD symptom severity. The relationship between general disapproval and PTSD symptom severity was strongest.</td>
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<tr>
<td>Jones et al.</td>
<td>2006</td>
<td>Trauma and posttraumatic reactions in German development aid workers: Prevalences and relationship to social acknowledgement</td>
<td>312 developmental aid workers from the governmental German Development Service (DED)</td>
<td>General disapproval was positively related to PTSD symptom severity.</td>
</tr>
<tr>
<td>Mueller et al.</td>
<td>2008</td>
<td>Disclosure and social acknowledgement as predictors of recovery from posttraumatic stress: A longitudinal study in crime victims</td>
<td>86 German crime victims</td>
<td>General disapproval was positively associated with PTSD symptom severity and predicted PTSD symptom severity at 11 months post-crime.</td>
</tr>
<tr>
<td>Forstmeier et al.</td>
<td>2009</td>
<td>Posttraumatic growth, social acknowledgement as survivors, and sense of coherence in former German child soldiers of World War II</td>
<td>103 former German child soldiers of World War II</td>
<td>General disapproval and recognition correlated significantly with intrusion symptoms.</td>
</tr>
<tr>
<td>Maercker et al.</td>
<td>2009</td>
<td>Is acknowledgment of trauma a protective factor? The sample case of refugees from Chechnya</td>
<td>61 Chechen refugees</td>
<td>Social acknowledgment and recognition was negatively associated with PTSD symptom severity. General and family disapproval were positively related to PTSD symptom severity.</td>
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<td>Mueller et al.</td>
<td>2009</td>
<td>Disclosure attitudes and social acknowledgment as predictors of posttraumatic stress disorder symptom severity in Chinese and German crime victims</td>
<td>151 German and 144 Chinese adult crime victims</td>
<td>General disapproval was positively related to PTSD symptom severity in the cross-cultural sample.</td>
</tr>
<tr>
<td>Nietlisbach and Maercker</td>
<td>2009</td>
<td>Effects of social exclusion in trauma survivors with posttraumatic stress disorder</td>
<td>8 non-treatment-seeking, untreated participants suffering from PTSD in an experimental exclusion condition</td>
<td>Experimental exclusion was associated with less feelings of belonging. Belonging again was positively correlated with recognition as a victim.</td>
</tr>
<tr>
<td>Wagner et al.</td>
<td>2012</td>
<td>Social acknowledgement as a predictor of post-traumatic stress and complicated grief after witnessing assisted suicide</td>
<td>85 Swiss family members who were present at an assisted suicide</td>
<td>Social acknowledgement was associated with PTSD symptom severity. General disapproval demonstrated the strongest impact on PTSD symptom severity.</td>
</tr>
<tr>
<td>Maercker and Horn</td>
<td>2013</td>
<td>A socio-interpersonal perspective on PTSD: The case for environments and interpersonal processes</td>
<td>n/a</td>
<td>Theoretical introduction to a socio-interpersonal framework model of PTSD.</td>
</tr>
<tr>
<td>Schumm et al.</td>
<td>2014</td>
<td>Associations between perceived social reactions to trauma-related experiences with PTSD and depression among veterans seeking PTSD treatment</td>
<td>198 U.S. veterans who experienced military trauma</td>
<td>General disapproval was positively related to PTSD symptom severity whereas family disapproval and recognition were not associated with PTSD symptom severity.</td>
</tr>
<tr>
<td>Maercker and Hecker</td>
<td>2016</td>
<td>Broadening perspectives on trauma and recovery: A socio-interpersonal view of PTSD</td>
<td>n/a</td>
<td>Extension of the socio-interpersonal framework model of PTSD.</td>
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<tr>
<td>Guan et al.</td>
<td>2016</td>
<td>The mediating effect of perceived social acknowledgment on the relationship between patient assaults and posttraumatic stress reactions in emergency nurses</td>
<td>444 emergency room nurses in China</td>
<td>General and family disapproval mediated the associations between the frequency of patient assaults as well as the extent of physical injury and PTSD symptom severity.</td>
</tr>
<tr>
<td>Maercker et al.</td>
<td>2016</td>
<td>Childhood trauma and resilience in old age: applying a context model of resilience to a sample of former indentured child laborers</td>
<td>74 former Swiss indentured child laborers</td>
<td>Change scores of resilience were associated with social acknowledgment and an interaction between social acknowledgment and trauma exposure.</td>
</tr>
<tr>
<td>Krammer et al.</td>
<td>2016</td>
<td>Childhood trauma and complex posttraumatic stress disorder symptoms in older adults: A study of direct effects and social-interpersonal factors as potential mediators</td>
<td>116 older individuals who had experienced childhood traumatic events</td>
<td>Traumatic events during childhood were related to adult PTSD symptom severity. Social acknowledgment partially mediated this association with regard to PTSD symptoms such as anger and irritability.</td>
</tr>
<tr>
<td>Kunst and Koster</td>
<td>2016</td>
<td>Psychological distress following crime victimization: An exploratory study from an agency perspective</td>
<td>201 victims who had reported a crime to the Dutch police</td>
<td>Recognition deficits were positively associated with PTSD symptom severity.</td>
</tr>
<tr>
<td>Xu et al.</td>
<td>2016</td>
<td>Web-based intervention improves social acknowledgement and disclosure of trauma, leading to a reduction in posttraumatic stress disorder symptoms</td>
<td>21 Han Chinese in a web-based intervention group and 29 Han Chinese in a wait-list control, both suffering from PTSD</td>
<td>After 1-month intervention, a significant improvement in social acknowledgement was observed, which mediated the reduction in PTSD symptom severity.</td>
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*Background*
1.3.3 ** Substance abuse**

Suffering from severe mental illness alone is a risk factor for violence perpetration; however, this risk rises further, when individuals present with comorbid substance use disorders (Van Dorn, Volavka, & Johnson, 2012). This is often the case, as being exposed to severe forms of interpersonal trauma and community violence not only predicts heightened antisocial behavior, but also heightened substance abuse, i.e. a socially problematic, excessive consumption of intoxicating substances (Doweiko, 2015; Kerig et al., 2012; Waller, Gardner, & Cluver, 2014). Different forms of high-risk behaviors, such as substance abuse and delinquency, have been shown to be tightly linked, especially in the context of gang activity (Begle et al., 2011). Substance abuse is also connected to increased perpetration of violence (e.g. Carlson, Shafer, & Duffee, 2010; Rowe, Wang, Greenbaum, & Liddle, 2008), as illustrated in Figure 1.3. For example, withdrawal symptoms can heighten the risk of violent behavior towards individuals or the community (Setlalentoa, 2010).

**Figure 1.3** *Schematic illustration of the hypothesized impact of substance abuse on the cycle of violence.* **Note.** Bold arrows indicate a hypothesized aggravating effect.
Additionally, drugs seem to be not only associated with crime in general, but also with the specific type and severity of aggressive acts (Chermack & Blow, 2002; Hecker & Haer, 2015): Interpersonal violence in comparison to general theft is more often perpetrated when under the influence of alcohol or drugs (White, Tice, Loeber, & Stouthamer-Loeber, 2002). In males, alcohol-related interpersonal violence accounted for 43% of disability-adjusted life years (DALY; Schneider et al., 2007), i.e. the loss of expected life years under ideal living conditions, in the year 2000 in South Africa. Alcohol misuse rates are heightened over weekends (Parry & Bennett, 1998), especially in younger males, and co-occur with an elevated number of intentional injuries in these time periods (Schuurman et al., 2015). Besides alcohol, methamphetamine use is of particular concern, as its consumption has risen drastically in South Africa over the past 10 years (Dada et al., 2012). Especially high levels of methamphetamine use is seen in Cape Town, where the increase in treatment admissions from 2004 onwards is the fastest ever registered for a specific substance in South Africa (Plüddemann, Plüddemann, Myers, & Parry, 2008). Methamphetamine use is of special concern with regard to low-income urban areas with high rates of violence, as it is related to further elevated levels of aggression and crime (Plüddemann, Flisher, McKetin, Parry, & Lombard, 2010; Plüddemann et al., 2008; Sommers, Baskin, & Baskin-Sommers, 2006). Further, poor social integration in the community in young adulthood has been shown to represent a risk factor for adult substance abuse (Green, Doherty, Reisinger, Chilcoat, & Ensminger, 2010). Reduced substance abuse, in turn, is associated with reduced aggression (Ward, Mertens, Bresick, Little, & Weisner, 2015).

1.4 Addressing PTSD and appetitive aggression in psychotherapeutic interventions

When treating traumatized individuals, one of the most effective psychological approaches is exposure therapy (Foa et al., 1999), which out-performed other evidence-based treatments for
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PTSD such as eye movement desensitization and reprocessing (EMDR; Shapiro, 1995) and relaxation training (Marks et al., 1998) with regard to effectiveness and speed of symptom reduction (Taylor et al., 2003). Another form of therapy, which also works on the principle of exposure, is the Narrative Exposure Therapy (NET; Schauer, Neuner, & Elbert, 2011). It is a mixture of the exposure principles of Foa and Rothbaum (1998) and the Testimony Therapy developed by Lira and Weinstein (TT; Cienfuegos & Monelli, 1983). It focuses on creating a life-span narrative for the patient: In this way, the traumatic memories, which are sensory in character, intense, terrifying and confused, are both habituated through exposure, as well as verbally integrated into the individual’s biography. Whereas formerly, an external trigger would evoke a network of fear related associations (emotional, cognitive, physiological, behavioural), known as the “fear-network” (Schauer et al., 2011) now these decontextualized flashbacks become an ordered part of a person’s memory. This creation of a narrative itself is adaptable to different cultural contexts, and different age-groups. NET is thus a culturally sensitive short-term intervention, which is successful in reducing PTSD in multiple-trauma patients (e.g. Adenauer et al., 2011; Schaal, Elbert, & Neuner, 2009; Schauer, Neuner, & Elbert, 2011). Further, NET has been shown to be more efficient in reducing PTSD symptomatology than other therapeutic approaches such as trauma counselling (Neuner et al., 2008) or a group adaptation of Interpersonal Therapy (Schaal et al., 2009; for a review see Robjant & Fazel, 2010).

An adapted form of NET, called Narrative Exposure Therapy for Forensic Offender Rehabilitation (FORNET; Elbert, Hermenau, Hecker, Weierstall, & Schauer-Elbert, 2012; Hermenau, Hecker, Schaal, Maedl, & Elbert, 2013) addresses not only traumatic events, which have been experienced by an individual, but also committed offenses, as illustrated in Figure 1.4. It therefore aims to reduce not only PTSD but also appetitive aggression. This therapeutic approach has mostly been investigated in post-conflict countries, demonstrating a significant post-treatment reduction in PTSD (Hermenau et al., 2013), and aggressive behavior (Crombach & Elbert,
Background

2015) in former child soldiers who returned to society after war or street children in Burundi, respectively.

![Figure 1.4 Schematic illustration of the hypothesized impact of FORNET on the cycle of violence. Note. Dotted arrows indicate a hypothesized alleviating effect.](image)

In South Africa, however, war-like circumstances with regard to gang violence continue to be evident in certain low-income urban areas (Buire, 2011). Some studies indicate that ongoing threats may hinder the effectiveness of treatment (e.g. Thabet, Vostanis, & Karim, 2005). Yet, others show that specific treatments, such as FORNET, can be effective in reducing PTSD even under circumstances that are still insecure (Köbach, Schaal, Hecker et al., 2015). The efficacy of FORNET in the context of gang violence has not yet been examined. Investigating the effectiveness of evidence-based psychotherapeutic interventions in new settings, especially those of continuous traumatic stress, broadens knowledge about treatment-options and about other hitherto neglected factors that may influence treatment outcomes.
1.5 Aims of this thesis

In order to break the cycle of violence, the underlying complex mechanisms need to be disentangled. The present thesis therefore addressed the following study points in a sample with victim-offender attributes in South Africa:

Firstly, the associations between the various key factors were explored. This includes the relations between violence exposure and perpetration, PTSD symptom severity, and appetitive aggression. The overall influence of social acknowledgment from both the immediate family and social network and the broader community on these life-events was also examined. This encompasses social acknowledgement of both past violent experiences as victim and past experiences as perpetrator.

The second focus was on substance abuse prior to the commission of offenses and its association with the number of offenses committed, whilst taking into account violence exposure, PTSD, and appetitive aggression. The aim was to determine the extent to which the assessment or prevention of substance abuse must be considered in psychological work with young offenders living under high levels of violence.

Thirdly, for the first time the efficacy of the trauma- and aggression-focused short-term intervention FORNET was investigated in a South African setting within a population not at war, but living under continuous stress due to severe community violence, especially in the form of gang violence.

Lastly, to gain a deeper understanding of factors potentially influencing treatment effects, we investigated the impact of those factors that have been considered to interact in the cycle of violence, i.e. intermediate traumatic events, offenses, social acknowledgment and especially general disapproval, on treatment outcome.
2 Social acknowledgment of violent experiences and its role in PTSD and appetitive aggression among high-risk males in South Africa

2.1 Abstract

Background: Violence exposure poses a risk for posttraumatic stress disorder (PTSD) and appetitive aggression. Does acknowledgment of violent experiences by one's social environment additionally affect these adverse consequences of violence?

Methods: We investigated relations between number of traumatic event types, number of violent offenses, PTSD symptoms, appetitive aggression, and social acknowledgment. N = 290 participants were recruited through a Cape Town rehabilitation center for offenders.

Results: Using path analysis, we demonstrate higher societal disapproval to be associated with more intense PTSD symptoms and greater appetitive aggression. However, past experiences of recognition were also related to more intense PTSD symptoms. Violence exposure was positively associated with PTSD symptoms and appetitive aggression, and a higher number of violent offenses was related to greater appetitive aggression.

Conclusions: Results indicate that besides violence exposure, social acknowledgment may play a significant role in the severity of PTSD and appetitive aggression. Intervention programs should not neglect targeting social structures.

Keywords: violence exposure, social acknowledgment, PTSD, appetitive aggression, South Africa
2.2 Introduction

Violence exposure has been highlighted as one major risk factor for the development of PTSD (Köbach, Schaal, & Elbert, 2015; Neugebauer et al., 2009): PTSD symptoms increase with cumulative exposure to different traumatic events, known as the building block effect (Neuner et al., 2004; Wilker et al., 2015). Further, traumatic experiences are also related to a lowered threshold for aggression (Barbarin, Richter, & deWet, 2001; Benhorin & McMahon, 2008); they can cause anger and hyperarousal, which may be also expressed by a “fight” reaction in line with the new clinical conceptualizations of PTSD in the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013). Yet, being exposed to violence may also lead to habituation, involving a more normative and less aversive experience of aggression and thus a lower threshold for self-perpetrated atrocities (Guerra, Huesmann, & Spindler, 2003). Baumeister and Campbell (1999) postulate that with increased violent offending, a pleasure of harming others emerges. This thrill of hunting down someone, known as appetitive aggression (Elbert et al., 2016; Elbert et al., 2010), may arise when the environment trains the individual to behave cruelly and when this fosters survival strategies. Appetitive aggression may therefore reduce the risk of developing PTSD (Hecker et al., 2013; Weierstall, Schaal, Schalinski, Dusingizemungu, & Elbert, T. 2011) and may thus promote an adaptation to conditions in which violent threats are frequently encountered. However, considering the long-term consequences for both community and individual, appetitive aggression may still be understood as an adverse effect, since this shift from victimization to perpetration poses a risk for further aggression.

Given the above findings, a question of interest is why some individuals who grow up in violent environments develop PTSD or appetitive aggression, while others do not. Studies indicate that social support may serve as a resiliency factor in trauma-associated mental-health problems and
PTSD (King et al., 1998). Further, with regard to PTSD symptom severity, Maercker and Müller (2004) investigated the role of social acknowledgment of an individual’s violent experiences, i.e. a part of social support which embraces not only the instrumental and emotional support offered to an individual by his close environment, but also refers to the societal context, in which the affected individual may feel excluded due to his violent experiences. Social acknowledgment comprises of three subscales of which the positively poled subscale recognition, i.e. the perceived appreciation as someone in a difficult state of suffering, was related to less PTSD symptoms (e.g. Maercker & Müller, 2004; Maercker, Povilonyte, Lianova, & Pöhlmann, 2009), whereas its negatively poled subscales family disapproval and general disapproval, i.e. the invalidation or rejection of the victim’s traumatic experiences by the family or social environment, were related to more PTSD symptoms (e.g. Maercker et al., 2009; Wagner et al., 2012).

Regarding appetitive aggression, social acknowledgment may also be protective: Serious delinquency is often found in young men who feel rejected by their social environment (Miller-Johnson, Coie, Maumary-Gremaud, Lochman, & Terry, 1999) and consequently join gangs, thereby forming subcultures within their community. This creates another downward spiral: High levels of aggression may provoke further rejection (Bolger & Patterson, 2001), while feeling excluded may foster violence (Twenge, Baumeister, Tice, & Stucke, 2001). Thus far, the impact of social acknowledgment of past experiences in a sample with offender attributes has not been rigorously studied.

South Africa reports one of the highest homicide rates, with 46.0% of injury deaths caused through interpersonal violence – almost five times the global average (Seedat et al., 2009). Youth from poor communities are at particularly high risk for traumatization (Shields et al., 2008) and absorption into gang structures (Ward & Bakhuis, 2010). We investigated in a South African high-risk population with victim and offender attributes (1) whether family and general
disapproval were positively related to PTSD and appetitive aggression, and recognition, in turn, negatively; (2) whether trauma exposure was positively related to both PTSD symptoms as well as appetitive aggression; and (3) whether the number of violent offenses was positively related to appetitive aggression.

2.3 Method

2.3.1 Participants

In 2013-2014, 290 Black Xhosa-speaking South African males from low-income neighborhoods around Cape Town were recruited through a community-based organization attempting to rehabilitate offenders and youth at risk. Recruitment focused on those currently attending the program (20%) and those previously having taken part or at risk for perpetrating or becoming victims of crime (80%). There were no significant differences between the two groups concerning all included variables ($p > .24$, Mann-Whitney-U-test) except for recognition ($p = .02$), which was significantly higher in those participating in the program at the time of the interview ($M = 1.50$, $SD = .61$) compared to those who were not ($M = 1.30$, $SD = .65$). Ages ranged from 14-40 years ($M = 21.96$, $SD = 4.53$). The educational background was rather low with 81% of the participants having had less than 12 years of education.

2.3.2 Materials

**Number of traumatic event types.** Exposure to potentially traumatic events was assessed using an adapted 36-item list from the Children’s Exposure to Violence Checklist (CEVC; Amaya-Jackson, 1998). The CEVC has demonstrated excellent psychometric properties (Martin, Revington, & Seedat, 2013) and has proven its validity in South African offender populations (Weierstall et al., 2013). Items assess threats to one’s physical integrity, direct victimization and witnessing of traumatic events, which were rated dichotomously: 0 if participants had
not experienced the event, 1 if they had. Traumatic event types were summed with possible scores ranging from 0-36 points. The reliability of the CEVC in our sample was high (Kuder-Richardson $\alpha = .97$). Traumatic events ranged from 5-32 different events ($M = 18.71, SD = 5.11$).

**PTSD symptom severity.** PTSD symptoms during the past 2 weeks were assessed with the PTSD Symptom Scale–Interview (PSS-I; Foa & Tolin, 2000). For each of the 17 items, possible ratings ranged from 0 (*not at all*) to 3 (*very much*), indicating the extent to which the trauma led to each of the B (re-experiencing), C (numbing/avoidance), and D (hyperarousal) PTSD symptoms of the *DSM-IV-TR* (4th ed., text rev.; American Psychiatric Association, 2000). Studies established this measure’s validity in South African offender populations (Weierstall et al., 2013). We summed the score of all items. Cronbach’s alpha in this sample was .88. PTSD symptoms ranged from 0-39 points ($M = 8.49, SD = 9.07$).

**Appetitive Aggression.** We assessed attraction to violence using the Appetitive Aggression Scale (AAS; Weierstall & Elbert, 2011), which has been validated in South African offender populations (Weierstall et al., 2013). It consists of 15 statements (e.g. “While fighting, does the desire to hunt or kill take control of you?”) with ratings ranging from 0 (*I totally disagree*) to 4 (*I totally agree*). For the analysis, the sum score was calculated. Cronbach’s alpha in this sample was .86. AAS scores ranged from 0-60 points ($M = 15.42, SD = 13.08$).

**Number of violent offenses.** To measure perpetrated violence, we used a list of 21 different offense types (e.g. physical/sexual assault) from the AAS, which has been successfully administered in South African offenders (Weierstall et al., 2013). We summed the number of violent offense types for the analysis. Kuder-Richardson alpha in this sample was .87. Offense types ranged from 1-21 different offenses ($M =11.65, SD = 4.35$).
Social acknowledgment. The Social Acknowledgment Questionnaire, which has demonstrated good psychometric properties (SAQ; Maercker & Müller, 2004), assesses individuals’ perceptions of recognition or disapproval from society and their family after traumatic experiences. The 16 items are scored from 0 (Not at all) to 3 (Completely) and divided into three subscales: One positively poled (recognition; e.g.: “Important figures of public life in my place of residence expressed their sympathy for me after the violent incidents”), two negatively (general disapproval; e.g.: “Somehow I am no longer a normal member of society since the violent incidents”; family disapproval; e.g.: “My family feels uncomfortable talking about my experiences”). The questionnaire was adapted to fit the participants’ profiles as victims and perpetrators of violence. The item “My boss showed full understanding for any absence from work” was adapted (possible answer: not applicable) to the participants’ living conditions, where having a superior is rare due to high unemployment (Kingdon & Knight, 2004). To adjust for this circumstance the recognition score, which included the critical item, was calculated either by 5 or 6, based on whether the question was rated or not. As 85.9% of the participants answered not applicable, the item was excluded from the Cronbach’s alpha analysis (recognition, $\alpha = .56$; general disapproval, $\alpha = .71$; family disapproval, $\alpha = .51$). Recognition scores ranged from 0-3 ($M = 1.33, SD = .65$), general disapproval scores from 0-15 ($M = 7.15, SD = 3.78$), and family disapproval scores from 0-15 ($M = 6.21, SD = 3.36$).

2.3.3 Procedure
Diagnostic interviews were led by four German mental-health experts and three local counselors, all of whom had received intensive training in the concepts of trauma, appetitive aggression and clinical diagnosis through the use of structured interviews. Bilingual first-language isiXhosa-speaking interpreters, specifically trained for translations in clinical settings, assisted with the interviews. Questionnaires were translated into isiXhosa by bilingual interpreters and back-translated into English.
The study protocol was approved by the Ethical Review Boards of the University of Konstanz, University of Cape Town and the Health Research Ethics Committee of Stellenbosch University. Participants received financial compensation for participation in the interviews and gave informed consent (consent for minors was given by parents or caretakers).

### 2.3.4 Data analysis

Path analyses were performed with AMOS 22 for SPSS. To test the hypothesized relations, we included number of traumatic event types, number of violent offenses, general disapproval, family disapproval and recognition as predictors, PTSD and appetitive aggression as outcomes. To increase the variation range in the investigated variables, the two subgroups were integrated into one model and group membership was included as a control variable. Of 290 participants, 36 had missing data on any of the variables; these values were estimated using maximum likelihood estimation, providing more accurate estimates of population parameters than other methodological approaches (e.g. case-deletion; Enders, 2006).

### 2.4 Results

According to fit criteria (Hu & Bentler, 1999), our hypothesized model fit the data well: $\chi^2 (2, N = 290) = 3.72, p = .156$, CFI = .995, RMSEA = .055 (90% CI = .000-.140). However, the hypothesized links from family disapproval to PTSD and appetitive aggression, and from recognition to appetitive aggression did not achieve significance. Further, no significant paths between the control variable and the endogenous variables existed. All non-significant links were excluded in a stepwise manner and a revised model obtained (Figure 2.1).
Figure 2.1 Path model of relations between number of traumatic event types, number of violent offenses, general disapproval, recognition, PTSD symptoms and appetitive aggression. Paths with one arrowhead indicate directed associations. Double-headed arrows represent co-variances. Paths connected through dotted arrows indicate possible reciprocal relations. Standardized regression weights are shown. *$p < .05$, **$p < .01$, ***$p < .001$.

The revised model accounted for 28% of the variance in PTSD and for 35% in appetitive aggression. The model’s fit statistics were good: $\chi^2 (3, N = 290) = 4.52, p = .211$, CFI = .995, RMSEA = .042 (90% CI = .000-.115). General disapproval was positively related to PTSD and appetitive aggression. Recognition was positively related to PTSD but not significantly related to appetitive aggression. Participants reporting more traumatic event types demonstrated higher PTSD and appetitive aggression scores. A higher number of violent offenses was also related to higher appetitive aggression.
PTSD symptoms (a) and appetitive aggression (b) related to the number of traumatic event types and general disapproval are shown in Figure 2.2. Participants with high trauma load but low general disapproval did not report severe PTSD symptoms and had mainly low appetitive aggression, whereas severe PTSD symptoms and extreme appetitive aggression occurred mainly when general disapproval was high alongside multiple traumatic event types.
Figure 2.2 *Relationships between general disapproval, number of traumatic event types and (a) PTSD symptoms (b) appetitive aggression.* With increasing general disapproval (ordinate), the severity of (a) PTSD symptoms (b) appetitive aggression (color coding) increases along with different traumatic stressors (abscissa).
2.5 Discussion

This study examined relations between number of traumatic event types, number of violent offenses, social acknowledgment (general disapproval, family disapproval, recognition), PTSD symptoms and appetitive aggression in high-risk males from poor communities around Cape Town. Using path analyses, and in line with longitudinal findings (Wagner et al., 2012), we found a positive relation between general disapproval and PTSD. Perceiving a lack of sympathy may lead to more PTSD symptoms. A similar effect was observed for appetitive aggression: The stronger the feeling that one is no longer a normal community member, the greater seemed the propensity to engage in violence, which may be due to a hostile cognitive mindset, activated by social rejection (DeWall, Twenge, Gitter, & Baumeister, 2009). However, one could also argue that general disapproval on the part of society may have been related to rejection as a reaction to the offenses emerging from appetitive aggression. Because the cross-sectional design of our investigation does not allow for the determination of causality, further research is needed to clarify causality. Nevertheless, our results do suggest general disapproval to be an important factor in improving our understanding of what may promote PTSD and appetitive aggression.

In our study, only general disapproval – not family disapproval – was positively related to PTSD. This pattern has been shown before (Schumm et al., 2014), but the reasons for these findings are not yet well understood. Ullman and Filipas (2001) suggested that different origins of acknowledgment may become more or less important according to an individual’s cultural background, sex or type of traumatic experience. Furthermore, family disapproval did not seem to play a significant role in appetitive aggression. In our sample, this may be explained by membership in a gang often being associated not only with a spatial but also an internal separation from one’s family; extensive drug abuse and poor parental supervision has been found to be present in the family backgrounds of young men joining gangs (Eitle, Gunkel, & Van
Gundy, 2004). In the search for a surrogate family (Ruble & Turner, 2000), they may not have been greatly exposed to their own families’ reactions to their past violent experiences; or the evaluation of these experiences by the individual’s family may no longer have been meaningful while their friend’s reactions, within the broader social environment, may have had a greater impact on these youths.

Recognition from others – e.g. from peers and social workers in offender reintegration programs – was not significantly related to appetitive aggression, but was positively related to PTSD. Based on studies with victim populations, this was unanticipated. Yet, flowing from the idea that PTSD and appetitive aggression share violence exposure as a common etiology, one explanation could be that PTSD symptoms elicit more social recognition than aggressive ones. It might, however, also be in line with findings of Weierstell, Schalinski, Crombach, Hecker, & Elbert (2012) and Hecker et al. (2013), suggesting that appetitive aggression may serve as an antidote to the development of PTSD under certain circumstances. When attending a reintegration program, former offenders are asked to process their past and are confronted with negative consequences of committing violence. Formerly positive attitudes towards aggression may thereby be transformed in a stressful examination of one’s offenses and history. Because aggression is viewed as a coping mechanism for dealing with trauma in adverse environments (Spaccarelli, Coatsworth, & Bowden, 1995), PTSD symptoms may increase as the positive “gangster” self-image is destroyed. This finding highlights the importance of providing trauma interventions when working with offenders.

Further, we replicated the dose-response effect between the number of traumatic event types and PTSD symptoms (Neugebauer et al., 2009; Wilker et al., 2015). Moreover, cumulative exposure to traumatic stressors was related to higher appetitive aggression. PTSD symptoms such as hyperarousal and hostility can lead to reactive aggression (Hellmuth, Stappenbeck, Hoerster, & Jakupcak, 2012) which may turn into appetitive aggression as the individual learns
that acting aggressively in a cruel environment can entail the advantages of no longer being a victim; appetitive aggression therefore may represent a survival strategy (Crombach & Elbert, 2015; Hecker et al., 2013). Although longitudinal studies have indicated causal relations between violence exposure and subsequent violence perpetration (Schwab-Stone et al., 1999), one can however also argue that the likelihood of violence exposure rises with the motivation to perpetrate violence, as offenses are often accompanied by traumatic events like being attacked by a rival gang (Scarpa & Haden, 2006).

Additionally, studies in war zones indicate that a higher number of violent offenses is related to higher levels of appetitive aggression (Köbach, Schaal, & Elbert, 2015). This effect was also found in our sample; however, it is difficult to deduce whether appetitive aggression arises from violent acts or whether appetitive aggression leads to violent acts that in turn increase appetitive aggression even further. Most likely, the two factors interact in a cycle of violence (Elbert et al., 2006).

In highly traumatized populations, affected individuals may not always get a chance to talk about their struggles, as traumatic experiences may be normative and therefore less acknowledged (Scarpa & Haden, 2006). This may worsen post-trauma adjustment and promote appetitive aggression. The improvement of social acknowledgment after violent experiences should therefore be considered as an important target for interventions intending to lower PTSD rates (Maercker et al., 2009) and to reduce appetitive aggression.

Sharing narratives of perpetrators, who have often been victimized themselves before turning violent (Malik, Sorensen, & Aneshensel, 1997), may be helpful to promote acknowledgment of the perpetrator’s state of suffering in community-wide meetings, to open up dialogues that facilitate a better understanding of aggression (King & Sakamoto, 2015), and to build positive support systems of classmates, teachers and other members of the community, which may contribute to decreased rates of aggression (Benhorin & McMahon, 2008).
2.6 Limitations

Our study included only South African high-risk young males and the external validity of the findings remains to be demonstrated. Social desirability may have played a role when participants answered questions about their self-committed offenses, possibly leading to an increase in the error variance of the data. Further, given the correlational nature of this cross-sectional study, conclusions about causal relations require additional evidence from longitudinal studies.

2.7 Conclusions

Despite the harmful effects of chronic community violence (i.e. increased risk of PTSD and appetitive aggression), important factors such as social acknowledgment of violent experiences that have not been addressed in similar studies on victims with offender attributes have been identified in this study. Improvements in the social environment may help youths to overcome adverse life circumstances and in turn contribute to breaking the vicious cycle of violence.

2.8 Acknowledgments

This research was supported by the European Research Council (T.E., ERC-2012-AdG 323977 Memo TV). This research was also supported by the German National Academic Foundation (J.S.). We thank the participants, the REALISTIC staff, our local supporters, and Noah Lorenz and Veronika Wieshammer for making this study possible.
3 The interplay between trauma, substance abuse and appetitive aggression and its relation to criminal activity among high-risk males in South Africa

3.1 Abstract

**Background:** In persistently unsafe environments, the cumulative exposure to violence predicts not only the development of posttraumatic stress disorder (PTSD), but also of increased aggression and violent outbursts. Substance use disorders interact with these developments, as drug consumption may blunt symptoms and also reduce the threshold for violent acts. Investigating the interplay between these variables and the possible cumulative effect of drug abuse on the attraction to cruelty is a crucial step in understanding the cycle of violence and developing intervention programs that address this cycle in violence-troubled communities such as low-income urban areas in South Africa.

**Methods:** Young males at risk (N = 290) were recruited through a reintegration center for offenders in Cape Town. We assessed types of traumatic events experienced, PTSD symptom severity, appetitive aggression, committed offenses and patterns of drug abuse prior to the perpetration of violence.

**Results:** Path-analyses confirmed a positive relationship between exposure to traumatic events and PTSD symptom severity, appetitive aggression, the number of committed offenses and drug abuse prior to violence. PTSD symptoms were positively associated with the propensity toward aggression. Furthermore, more severe drug abuse was related to higher attraction to violence and more committed offenses.

**Conclusions:** We conclude that like exposure to violence, drug abuse may play a key role in
The interplay between trauma, substance abuse and appetitive aggression and its relation to criminal activity among high-risk males in South Africa

the attraction to aggression and criminal acts. Measures of violence prevention and psychotherapeutic interventions for trauma-related suffering may not be effective without enduring drug abuse rehabilitation.

**Keywords**: violence perpetration, substance abuse, posttraumatic stress disorder, appetitive aggression, South Africa

### 3.2 Introduction

Male adolescents and young adults living in low-income urban areas of South Africa are exposed to extreme levels of violence and crime. In the Cape Town metropolitan municipality, rates of severe crime are among the highest in the world (Groenewald et al., 2003). Due to the extreme levels of exposure to traumatic stressors (Lockhat & van Niekerk, 2000) and involvement in gang violence (Maxson, Whitlock, & Klein, 1998), the boundary between victimization and criminalization in these environments is often blurred. Additionally, South Africa reports one of the highest levels of per-capita alcohol consumption worldwide for individuals drinking alcohol (Rehm et al., 2003); alcohol is the drug most commonly abused by adolescents in the country, followed by illicit drugs such as cannabis, methamphetamine ("tik") and methaqualone ("mandrax") (Parry, Myers et al., 2004; Ramlagan, Peltzer, & Matseke, 2010). The present study investigates the role of drug abuse, i.e. the excessive, socially problematic consumption of intoxicating substances (Doweiko, 2015), in the relationship between victimization and the perpetration of aggressive behavior in a sample of at-risk young males from low-income areas in Cape Town.

Previous research indicates a clear relationship between drug abuse and heightened aggressive behavior. Both alcohol and illegal drugs have been associated with murder, intimate partner violence and child abuse (e.g. Plüddemann et al., 2010; Roizen, 1997; Seedat et al., 2009). This
correlation holds true for South Africa: Between 1999 and 2000, in Cape Town, Johannesburg and Durban, almost 50% of individuals arrested on charges related to family violence, homicide or rape were reported to have been either drunk or under the influence of drugs at the time of the offense (Parry, Plüddemann et al., 2004). The severity of the committed crimes is positively associated with alcohol or drug consumption preceding the violent act (Chermack & Blow, 2002; Hecker & Haer, 2015; White et al., 2002). Although these data reveal that substance abuse represents a frequent precursor to aggressive behavior (Taylor & Chermack, 1993), the question of whether drug abuse functions as a catalyst (Ching, Daffern, & Thomas, 2012) or in a causal role, remains a controversial issue (Klostermann & Fals-Stewart, 2006).

Posttraumatic stress in relation to victimization has been indicated as another important risk factor in the perpetration of violence in low-income urban areas in South Africa (Sommer et al., 2016). Symptoms such as hyperarousal, hostility and anger may be viewed as a behavioral pattern to (presumably ongoing) danger, which may lead to aggression (Hellmuth et al., 2012). Frequently, trauma survivors attempt to numb these traumatic stress symptoms through self-medication (Bremner, Southwick, Darnell, & Charney, 1996): Alcohol problems and drug abuse often co-occur with PTSD (e.g. Mathews, Abrahams, Jewkes, Martin, & Lombard, 2009; Stewart, 1996). The comorbidity between drug dependence and PTSD exacerbates aggressive tendencies and is associated with higher levels of perpetrated violence than either drug dependence or PTSD alone (Parrot, Drobes, Saladin, Coffey, & Dansky, 2003).

Aggressive behavior can be driven by the desire to defend oneself against a threat or to take revenge against those responsible for a trauma. This type of reactive aggression is often reported by individuals suffering from PTSD (Bayer, Klasen, & Adam, 2007). Additionaly, aggressive behavior can be intrinsically rewarding: Offenders may simply get a thrill from being violent. We refer to this drive as appetitive aggression (Elbert et al., 2010), a motivation that has been observed among youth offenders in low-income areas of Cape Town: Weierstall, Hinsberger et
al. (2013) showed that participants with more traits of appetitive aggression presented with less impaired psychosocial functioning, implying that the attraction to aggressive behavior may reflect a process of adaptation to living in high-violence neighborhoods.

The role of alcohol and drugs in promoting appetitive aggression has yet to be investigated in a systematic manner: A recent study by Hecker and Haer (2015) examines the impact of prior drug abuse on emotional states during the perpetration of violence in combatants from the Democratic Republic of the Congo. Most combatants felt fearless, more powerful, and more aggressive after drug abuse and had a higher propensity to behave in an appetitively aggressive manner. Appetitive aggression may thus be fueled by drug abuse due to the (at times positive) qualities linked to substance abuse, such as increased arousal, lower social inhibitions and stronger feelings of companionship when in a group (Ching et al., 2012). Furthermore, as fear is reduced (Tyner & Fremouw, 2008), the urge to engage in aggression for the purposes of revenge and satisfaction may be unleashed.

Various factors – such as exposure to traumatic events and posttraumatic stress, appetitive aggression and substance abuse – have been hypothesized to contribute to the extremely high levels of violence in South Africa. Using path analyses, we have attempted to clarify the relationship between these factors in order to provide guidance for psychological programs for young offenders living in communities with high levels of violence and crime. In line with previous research, we investigated 1) whether exposure to violence is positively related to appetitive aggression, PTSD symptoms, substance abuse and the number of committed offenses; 2) whether posttraumatic stress has a positive correlation to drug abuse and the propensity toward aggressive behavior; 3) whether drug abuse is positively correlated to aggressive tendencies and the number of committed offenses; and 4) whether appetitive aggression is positively related to the number of violent offenses as the main outcome variable.
3.3 Method

3.3.1 Participants
In 2013-2014, structured clinical interviews were conducted with 290 males in the ages of 14-40 years ($M = 21.96$, $SD = 4.53$). All respondents were Black Africans of Xhosa ethnicity from low-income areas in Cape Town and were contacted through REALISTIC, a community-based organization that seeks to rehabilitate young offenders. Recruitment focused on former offenders currently attending a reintegration program (20%), and those who had previously completed such programs as well as individuals at risk for perpetrating or becoming victims of crime (80%). The educational level was rather low, with 81% of the participants failing to meet secondary-school graduation requirements.

The ethical review boards of the University of Konstanz, Stellenbosch University and the University of Cape Town approved the study, and all participants gave their informed consent. For those under the age of 18, parents or caretakers gave informed consent. For their participation in the interview, participants received financial compensation.

3.3.2 Procedure
In order to ensure confidentiality and privacy, data were collected at the organization’s premises in Cape Town or at private offices nearby. The diagnostic interviews were conducted by a group of four German mental-health experts and three local counselors who had received 25 h of training in the theoretical concepts of mental disorders, trauma, aggression and clinical diagnosis through the use of structured interviews. Furthermore, to ensure the valid assessment of trauma symptoms and appetitive aggression, concepts and translations were discussed in detail with the interpreters before their application in the interviews. Bilingual native (Xhosa-speaking) interpreters who were specifically trained in translation in clinical settings assisted with administration and translated the questionnaires into isiXhosa and back to English. In cases in
which participants reported suicidal thoughts or acute mental-health problems, counseling or referral to local psychiatric health services was provided.

3.3.3 Measures

Traumatic event types. A checklist of 36 potentially traumatic events (e.g. physical attack, sexual assault, torture) adapted from the Children’s Exposure to Violence Checklist (CEVC; Amaya-Jackson, 1998) was administered to assess experienced and witnessed traumatic event types. This scale has demonstrated excellent internal consistency and good test-retest reliability, also in South African settings (Fehon, Grilo, & Lipschitz, 2001; Fincham et al., 2009), and has proven its validity in offender populations (Weierstall, Hinsberger et al., 2013). We calculated the total number of self-experienced and witnessed traumatic events types, with a possible range from 0 to 36. Reliability was calculated according to Dunn, Baguley and Brundsen (2014) by using omega (McDonald, 1999), a measure of internal consistency that is considered to be more sensible than Cronbach’s alpha (e.g. Zinbarg, Revelle, Yovel, & Li, 2005). Coefficient omega in our sample was 0.79, 95% confidence interval (CI) [0.75-0.82].

Posttraumatic stress symptom severity. PTSD symptom severity during the past two weeks was assessed using the PTSD Symptom Scale-Interview (PSS-I; Foa & Tolin, 2000). For each of the 17 items, ratings ranged from 0 (not at all) to 3 (very much), expressing to which extent a specific trauma was associated with each of the B, C and D PTSD symptoms of the Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association, 2000). The measure’s validity has been proven in South African offender and other African populations (e.g. Köbach, Schaal, & Elbert, 2015; Weierstall, Hinsberger et al., 2013). The PSS-I sum score was calculated by summing all item scores; possible sum scores ranged from 0 to 51 points. Coefficient omega in this sample was 0.88, 95% CI [0.85-0.90].
Appetitive Aggression Scale. An individual’s propensity toward perpetrating aggressive acts was assessed using the Appetitive Aggression Scale (AAS; Weierstall & Elbert, 2011), a structured interview that has been successfully implemented in previous African samples, including South African young offenders, and has been proven to have excellent psychometric properties (e.g. Weierstall, Hinsberger et al., 2013; Weierstall, Schalinski, Crombach, Hecker, & Elbert, 2012). The AAS contains 15 questions concerning the appetitive perception of aggression (e.g. “Is it exciting for you if you make an opponent really suffer?”). Each item is scored on a 5-point Likert scale ranging from 0 (I totally disagree) to 4 (I totally agree). For the analysis, the AAS sum score was calculated, with a possible range from 0 to 60. The reliability of the scale was high in our sample (coefficient omega = 0.87, 95% CI [0.84-0.89]).

Number of offense types. To measure self-committed aggressive behavior, we assessed the number of committed offenses using a checklist of 21 different types of offenses (e.g. assault, rape, murder) from the AAS, which has previously been successfully administered in a South African population of youth offenders (Weierstall, Hinsberger et al., 2013). We summed the number of committed offenses to obtain the offense types sum score; possible scores ranged from 0 to 21 points. Coefficient omega in this sample was 0.88, 95% CI [0.86-0.90].

Drug abuse before offenses. In combination with the list of offense types, we asked about the frequency of drug abuse before the perpetration of violent acts (“How often did you drink or take drugs before these events?”). Participants answered on a 5-point Likert scale, ranging from 0 (not at all) to 4 (every time). Additionally, we assessed substance dependence with the Mini-International Neuropsychiatric Interview based on DSM-IV criteria (M.I.N.I. version 6.0.0; Sheehan et al., 1998).

3.3.4 Data analysis

Path analyses were performed with AMOS 22 for SPSS. To test the hypothesized relationships, we included traumatic events as a predictor variable for appetitive aggression, PTSD symptom
severity, drug consumption prior to offenses and number of offenses, while appetitive aggression was included as predictor for the number of offenses, PTSD symptoms as a predictor for appetitive aggression and drug abuse, and drug abuse as a predictor for appetitive aggression and the number of offense types, which represented the main outcome variable. Of the 290 participants, 38 had missing data for one or more of the variables; these values were estimated using maximum likelihood estimation, thereby providing more accurate estimates of population parameters than other methods, such as deletion of missing cases (Enders, 2006).

3.4 Results

3.4.1 Characteristics of trauma, aggression and drug abuse

Demographic and trauma-, aggression- and drug-related sample characteristics are shown in Table 3.1. Participants were exposed to or had witnessed a broad range of 5 to 32 different traumatic experiences ($M = 18.71, SD = 5.11$), indicating high levels of poly-victimization. PTSD symptoms ranged from 0 to 39 points ($M = 8.49, SD = 9.07$), and the AAS score from 0 to 60 points ($M = 15.42, SD = 13.08$). Participants reported perpetration of a variety of violent acts, with scores ranging from 1 to 21 and a mean score of 11.65 violent acts committed. In the sample, 24.5% of the participants stated that they had mutilated at least one person in their lifetime, and 21.4% reported committing a murder at least once. With regard to drug abuse, 31.2% of the participants reported that they had never used drugs before committing violence, 28.4% declared that they had “rarely” or “sometimes” used drugs before offenses and 40.3% said they had used drugs “most of the time” or “every time” before perpetrating violence. 55.2% of the participants were diagnosed with a substance dependence disorder in the course of the interview. The most-used drugs related to substance dependence were cannabis (“dagga”, 38.6%), alcohol (33.4%), methamphetamine (“tik”, 13.4%) and methaqualone (“mandrax”, a
The interplay between trauma, substance abuse and appetitive aggression and its relation to criminal activity among high-risk males in South Africa

sedative, 5.2%). Statistical analyses revealed no significant difference between those who had participated in a reintegration program at the time of the assessment and those who had not with regard to the outcome variables.

Table 3.1 *Demographic characteristics (n = 290) and clinical data.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>M (SD) or n (%)</th>
<th>[Range]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>21.96 (4.53)</td>
<td>[14 - 40]</td>
</tr>
<tr>
<td><strong>Years of formal education</strong></td>
<td>10.46 (1.77)</td>
<td>[1 - 16]</td>
</tr>
<tr>
<td><strong>Traumatic events</strong></td>
<td>18.71 (5.11)</td>
<td>[5 - 32]</td>
</tr>
<tr>
<td><strong>Index trauma</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being attacked with a weapon</td>
<td>64 (24.9%)</td>
<td>-</td>
</tr>
<tr>
<td>Someone close being murdered</td>
<td>23 (8.9%)</td>
<td>-</td>
</tr>
<tr>
<td><strong>PSS-I</strong></td>
<td>8.49 (9.07)</td>
<td>[0 - 39]</td>
</tr>
<tr>
<td><strong>AAS</strong></td>
<td>15.42 (13.08)</td>
<td>[0 - 60]</td>
</tr>
<tr>
<td><strong>Offense types committed</strong></td>
<td>11.65 (4.35)</td>
<td>[1 - 21]</td>
</tr>
<tr>
<td>Mutilating at least one person</td>
<td>71 (24.5%)</td>
<td>[0 - &gt;10]</td>
</tr>
<tr>
<td>Committing a murder at least once</td>
<td>62 (21.4%)</td>
<td>[0 - &gt;10]</td>
</tr>
<tr>
<td><strong>Substance dependence diagnosis</strong></td>
<td>160 (55.2%)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Drugs most used</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marijuana</td>
<td>112 (38.6%)</td>
<td>-</td>
</tr>
<tr>
<td>Alcohol</td>
<td>97 (33.4%)</td>
<td>-</td>
</tr>
<tr>
<td>Methamphetamine</td>
<td>39 (13.4%)</td>
<td>-</td>
</tr>
<tr>
<td>Methaqualone (“mandrax”)</td>
<td>15 (5.2%)</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note.* PSS-I = PTSD symptom severity; AAS = Appetitive aggression score
3.4.2 Path analyses

According to fit criteria (Hu & Bentler, 1999), the hypothesized model fit the data well: $\chi^2 (1, N = 290) = 2.18, p = 0.140$, CFI = 0.995, RMSEA = 0.064, 90% CI [0.000-0.184]. However, the hypothesized link between PTSD symptom severity and drug abuse prior to violence was non-significant. This link was excluded and a revised model obtained. Figure 3.1 shows the final model.

Figure 3.1 Path model of relationships between traumatic events, PTSD symptoms, appetitive aggression, committed offense types and drug abuse prior to the commission of offenses. Paths with one arrowhead indicate directed associations. Double-headed arrows represent co-variances. Paths connected through dotted arrows indicate possible reciprocal relations. Standardized regression weights are shown. *$p<.05$, **$p<.01$, ***$p<.001$. 

AAS sum score

<table>
<thead>
<tr>
<th>Traumatic event types</th>
<th>PTSD symptom severity</th>
<th>Drug abuse before offenses</th>
<th>Offense types committed</th>
</tr>
</thead>
<tbody>
<tr>
<td>R²=.14</td>
<td>R²=.12</td>
<td>R²=.36</td>
<td></td>
</tr>
<tr>
<td>.28***</td>
<td>.19***</td>
<td>.37***</td>
<td></td>
</tr>
<tr>
<td>.13*</td>
<td>.37***</td>
<td>.20***</td>
<td></td>
</tr>
<tr>
<td>R²=.21</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

| R²=.37***             | .34***                | .21***                    |
|                       |                       |                           |
The final model accounted for 21% of the variance in appetitive aggression, 14% in PTSD symptoms, 12% in drug consumption and 36% in the number of committed offense types. Fit statistics for the final model were good: \( \chi^2 (2, N = 290) = 3.84, p = 0.146, \chi^2/df = 1.92, \) CFI = 0.993, RMSEA = 0.056, 90% CI [0.000-0.142].

In line with previous research, the model revealed that the number of traumatic event types exhibited strong positive relationships with appetitive aggression, PTSD symptoms, the number of offense types committed and drug abuse prior to the perpetration of violence. Furthermore, PTSD symptom severity was positively related to appetitive aggression, which itself was highly correlated to the number of offense types committed. Additionally, our results indicate that using drugs before committing violence seems to exacerbate the attraction to cruelty and the extent of perpetrated violence.

### 3.5 Discussion

This study investigated the relationships between traumatic experiences, PTSD symptoms, appetitive aggression, drug abuse and perpetrated violence in a sample of at-risk young men living in low-income urban areas in South Africa. Using path analyses, we obtained a dose-response effect between cumulative exposure to traumatic stressors and PTSD symptom severity, i.e. a positive relationship between the number of different traumatic events and the severity of PTSD symptoms, in line with previous research (Köbach, Schaal, & Elbert, 2015; Neuner et al., 2004; Wilker et al., 2015). Moreover, appetitive aggression and the level of perpetrated violence seem to increase with a higher number of traumatic experiences, an effect that has also been reported in previous studies (e.g. Hecker, Hermenau, Maedl, Schauer, & Elbert, 2013; Weierstall, Huth, Knecht, Nandi, & Elbert, 2012). However, it must be considered that the likelihood of being victimized may also be enhanced by engagement in violent acts, such that this path most likely represents a reciprocal relationship (Fetchenhauer & Rohde, 2002). Additionally, we find that
exposure to traumatic events is positively related to drug abuse prior to violent behavior. One explanation for this could be that youth from adverse environments often seek protection in gangs (Kerig et al., 2013), groups in which drug abuse is integrated into everyday activities (Aldridge & Medina, 2008). Drug abuse in those who engage in gang violence may be reinforced by peer pressure and the desire to maintain one’s status in the gang (Brunelle, Brochu, & Cousineau, 2000), and may play an important role in facilitating the commission of criminal acts, either by calming nerves or bolstering courage (Goldstein, Brownstein, Ryan, & Bellucci, 1989). However, alcohol or drug abuse may also increase the probability of experiencing traumatic events, since one may become more likely to provoke or be involved in a fight, which may in turn result in a traumatic experience (Murdoch, Pihl, & Ross, 1990).

Furthermore, our data showed no significant relationship between PTSD symptom severity and drug abuse prior to the perpetration of violence. With regard to victim-offender populations, this result may be interpreted in accordance with Hecker and Haer (2015), who suggest that drugs may be consumed in order to feel more vigilant, powerful and fearless (Goldstein et al., 1989) when committing violent acts such as murder or rape, rather than to cope with the psychological impact of PTSD symptoms (Bonin, Norton, Asmundson, Dicurzio, & Pidlubney, 2000). However, we found a significant relationship between PTSD and appetitive aggression, and we hypothesize that comorbid PTSD symptoms, such as revenge fantasies (Maercker & Horn, 2013), may evolve into a proactive intrinsic motivation for violence, i.e. appetitive aggression. This may then encourage an individual to join criminal subcultures or gangs for revenge, groups that are commonly characterized by a violent and aggressive masculinity (Kynoch, 1999), providing a fertile ground for the development of cruel behavior. Additionally, as pointed out by Hinsberger, Sommer et al. (2016), being part of such groups embossed by appetitive aggression, may also prolong PTSD symptoms as normative claims for vengeance.
of murdered gang members may trigger traumatic memories, leading to a complex association between PTSD and appetitive aggression.

Our model revealed a large effect for the relationship between drug abuse prior to the commission of violent acts and engagement in violence. It seems likely that drug abuse before committing violence leads to a full display of the person’s potential for aggression, which may result in a greater extent of violent behavior in terms of the number and types of offenses. Furthermore, drugs may be used in order to avoid negative feelings of guilt or shame (Brunelle et al., 2000) and may therefore increase the probability of further violence committed under the influence. A reduction in negative emotions and an increase in the positive evaluation of violence may be reflected in the positive correlation between substance abuse and appetitive aggression. An increased lust for aggression when violence is committed under the influence of drugs may be due to drug-induced feelings of enhanced confidence and energy (Panenka et al., 2013), euphoria (Cheng, Jong, Li, Ko, & Wu, 2006) or emotions related to amusement and entertainment (Ching et al., 2012). The aforementioned beneficial effect of appetitive aggression in terms of adaptation to an adverse environment (Weierstall, Haer, Banholzer, & Elbert, 2013) may thus be enhanced by the positive features of drug or alcohol consumption (e.g. increased arousal, reduced inhibitions), which may in turn lead to a further increase in the number and severity of violent acts, as shown in our model.

In sum, the relationship between drug abuse and exposure to as well as engagement in violence may best be described as a vicious cycle in which the contributory factors are so tightly linked that it becomes difficult to disentangle cause and effect (Brunelle et al., 2000). However, the understanding that drug abuse – like traumatic stress and the exposure to violence – seems to increase appetitive aggression and violent outbursts is of great importance and has significant treatment implications.
3.6 Limitations

We assessed the impact of drug abuse on violence with an emphasis on young male South Africans at risk for criminal offenses, which may limit the external validity of these findings. In order to establish whether our findings of a drug-violence nexus are replicable in different conflict settings and thus have generalizability potential, the aforementioned relationships should be explored in future studies. Given the correlational and retrospective nature of this cross-sectional study, causality cannot be directly inferred, and conclusions about temporal or causal relationships between the variables should be drawn with caution.

3.7 Conclusions

Alarmingly high levels of violence and drug abuse, particularly in low-income areas in South Africa, indicate a clear need for a better understanding of the relationship between the various factors that contribute to a downward spiral; such an understanding could serve as the basis for violence- and drug-prevention programs as well as sensitive trauma- and aggression-focused treatments. This is of special importance as traumatic experiences, resulting aggression, and drug abuse have been indicated to be linked to school failure and dropout (e.g. Walker & Sprague, 1999) – which is also reflected by the high rate of participants in our study without a high school degree – and therefore stressing the aforementioned downward spiral.

The present study provides evidence of the necessity of simultaneously addressing multiple risk factors in violence intervention efforts, given that trauma, appetitive aggression and substance abuse are inextricably interlinked. Reducing substance abuse is likely to contribute to a decrease in the high rates of violence among young South Africans (Morojele & Brook, 2006). Compared to incarceration, multi-systemic interventions for serious offenders may reduce costs –
The interplay between trauma, substance abuse and appetitive aggression and its relation to criminal activity among high-risk males in South Africa

financial costs and, more importantly, psychological and social costs – in the long term (Randall & Cunningham, 2003).

3.8 Acknowledgments

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4.1 Abstract

Objective: In an observer-blinded intervention trial, we tested the reduction of posttraumatic stress symptoms, aggressive attitude, and behavior in young males living in a context of ongoing community and gang violence by means of (a) forensic offender rehabilitation narrative exposure therapy (FORNET), and (b) the cognitive-behavioral intervention “Thinking for a Change” (TFAC). A waiting list served as the control condition.

Methods: A total of 39 young men were included in the data analysis: 15 completed FORNET, 11 underwent cognitive-behavioral therapy (CBT), and 13 were on a waiting list for later treatment. The primary efficacy endpoints were the PTSD Symptom Scale-Interview (PSS-I) severity score, the Appetitive Aggression Scale (AAS) score, and the number of perpetrated violent event types 8 months (on average) after treatment.

Results: Only in the sample receiving FORNET were posttraumatic stress disorder (PTSD) scores significantly reduced at the first follow-up (Cohen’s $d = -0.97$) and significantly different from those of the control group (Cohen’s $d = -1.03$). The changes in scores for appetitive aggression and perpetrated events were not significant for any of the treatment conditions.

Conclusions: The study shows that trauma-focused treatment can reduce the psychological symptoms of posttraumatic stress even for individuals living under unsafe conditions in low-income urban communities. However, achieving changes in violent behavior within a context
of ongoing violence may require more than the treatment of trauma-related suffering, confrontation with one’s offenses or cognitive-behavioral interventions.

**Keywords:** gang violence, community violence, continuous stress, PTSD, CBT

### 4.2 Introduction

Low-income urban areas such as the so-called “townships” in South Africa, the favelas in Brazil, and inner-city ghettos in the United States are “hotspots of crime and violence” (United Nations Human Settlements, 2007; Weisburd, Lum, & Yang, 2004). Children living in such disadvantaged socio-economic conditions are likely to encounter violence both within and outside the family and are frequently exposed to a range of traumatic stressors (Finkelhor, Turner, Hamby, & Ormrod, 2011; Williams et al., 2007). Children’s exposure to violence can lead to short- and long-term outcomes involving the internalization and externalization of behavior problems during adolescence, including posttraumatic stress (Catani et al., 2009) and the perpetration of violence (Maas et al., 2008; Smith & Thornberry, 1995; Stouthamer-Loeber, Loeber, Homish, & Wei, 2001; Widom, 1989). The group most severely impacted by serious violent crime in low-income urban communities consists of young males who both assault and are the victims of assault (Moffitt, 1993; Seedat et al., 2009; Truman & Langton, 2015) and may thus be referred to as "victim-perpetrators" (Roach, 2013, p. 157). In attempting to interrupt the cycle of violence, it is important to overcome the victim-offender dichotomy (Hecker, Hermenau, Crombach, & Elbert, 2015) and to ensure the timely supply of trauma and aggression treatment.

A growing number of studies have successfully tested early interventions in areas of ongoing threat. Results from the Jerusalem Trauma Outreach and Prevention Study (Shalev et al., 2012)
demonstrate that both prolonged exposure and cognitive therapy significantly reduced posttraumatic stress disorder (PTSD) prevalence 5 and 9 months after treatment compared with a control group. Cohen, Mannarino, and Iyengar (2011) are conducting a promising series of trauma-focused cognitive-behavioral therapy (CBT) treatment studies on children in the United States and Zambia. Cigrang, Peterson, and Schobitz (2005) tested a brief exposure-based treatment for members of the military in Iraq that included in vivo and in sensu exposure in four therapy sessions over a five-week period; symptoms were reduced by an average of 56%. Köbach, Schaal, Hecker, and Elbert (2015) successfully reduced PTSD symptoms by means of forensic offender rehabilitation narrative exposure therapy (FORNET) in a group of Congolese ex-combatants in comparison with a control group.

Working with traumatized perpetrators, Stenmark, Guzey, Elbert, and Holen (2014) found that violent offenders with PTSD fail to respond to narrative exposure therapy (NET) more often when their own offenses are not addressed in the course of the therapy. An explanation for this finding could be that an offender’s “worst event” – that is, the most psychologically damaging – is a self-perpetrated offense. In a sample of 290 South African males recruited for cross-sectional analysis, 225 had committed a serious crime (such as a severe physical assault, a murder, or a rape), and 18% reported one of their own offenses as their worst traumatic event (Hinsberger et al., 2016, unpublished data). This number is comparable to the 23% rate documented by Kilvinger, Rossegger, Arnold, Urbaniok, and Endrass (2011) in a study of 35 Swiss prisoners. In order to account for the impact of self-perpetrated violent acts and to address the specific needs of violent offenders, NET has been extended to include in sensu exposure sessions for self-committed crimes.

The aim of FORNET is to mitigate the psychological consequences of chronic trauma exposure (such as intrusions, hypervigilance, and avoidance) as well as violent and criminal behavior through the dissolution of feelings of reward upon committing violence. Repeat perpetrators
rarely experience or express feelings of guilt, shame, or pity for their victims, but such feelings are often still found to be associated with their first committed events. Consequently, the focus in FORNET is the first violent assault, killing, or rape. The effectiveness of FORNET (compared with standard treatment) in the reduction of committed offenses and physical health complaints has been demonstrated in a randomized controlled trial with a sample of former Burundian street children (Crombach & Elbert, 2015). Although participants continued to rate violent acts as appealing irrespective of the treatment condition, those who received FORNET treatment did not commit violent offenses as often as those in the control condition. Randomized controlled trials in the Eastern DRC (Hermenau et al., 2013; Köbach, Schaal, Hecker & Elbert, 2015) with former members of armed groups provided evidence that in comparison with the standard treatment, FORNET led to a reduction in PTSD severity. The level of attraction to aggressive behavior was also markedly reduced, but in both therapy and control conditions; in this case, however, the change in attitude might be associated with the participants’ beneficial change in living conditions (from a militia setting to a civilian population; Hermenau et al., 2013).

Other promising offender-oriented programs include those that address the offenders’ habits and the moral content of their thinking, such as CBT (Wikström & Treiber, 2008). The aim of CBT is to correct deficient, dysfunctional, or distorted cognitions that may lead to offending. This is accomplished by increasing an offender’s awareness of the link between his or her thought processes and offensive behavior, and by strengthening the individual’s ability to alter such processes in a positive direction. A meta-analysis of CBT programs by Landenberger and Lipsey (2005) examined several different cognitive behavioral curricula, including five evaluations of Thinking for a Change (TFAC). They found that TFAC was just as effective as other CBT interventions in reducing recidivism. In investigating the effects TFAC on a sample of probationers, Golden, Gatchel, and Cahill (2006) found that, compared with the control group,
participants who completed the program showed a 33% reduction in the rate of new criminal offenses and improved their social and interpersonal problem-solving skills. Lowenkamp, Hubbard, Makarios, and Latessa (2009) evaluated the TFAC program in a community corrections agency at a later follow-up time (2 years) than all former studies. Their results indicate that recidivism rates (new arrest) were still lower at that point in time in group-completers in comparison with similar offenders that were not exposed to the intervention. Bickle (2013) explored in a nonrandom, quasi-experimental design whether the TFAC program influences participants’ self-assessment of their social problem-solving approaches and skills and their acceptance of criminal attitudes. Compared with a waiting list group, TFAC group-completers did significantly better in demonstrating an understanding of social problem-solving skills and approaches; in addition, TFAC participants appeared to have a reduced acceptance of criminal attitudes when compared with nonparticipants.

The objective of this study was first to investigate whether FORNET – compared with a waiting list group and over time – successfully reduces PTSD symptom scores in a sample of South African men living under conditions of continuous stress due to community and gang violence. In order to explore whether any such reduction can be ascribed to the trauma-specific approach of FORNET or “only” to the undivided attention of a therapist, the FORNET results for PTSD symptom reduction are contrasted with the results of the CBT intervention “Thinking for a change” and a waiting list. Second, this study aims to examine whether FORNET and TFAC significantly reduce the attraction to violence in intervention participants as well as the number of perpetrated violent event types compared with a waiting list and over time.
4.3 Method

4.3.1 Participants

An initial sample of 89 male study participants was chosen from a larger sample of 405 male isiXhosa from low-income urban communities in Cape Town, South Africa (Gugulethu and Khayelitsha). Participants suffering from acute psychosis were excluded from the intervention study. The inclusion criteria were a minimum of 8 points on the PTSD Symptom Scale-Interview (PSS-I) and a minimum of 9 points on Appetitive Aggression Scale (AAS), which are comparable to the requirements implemented by Köbach, Schaal, Hecker and Elbert (2015) and Hermenau et al. (2013). Because both criteria had to be fulfilled (PTSD symptoms as well as appetitive aggression), the cutoffs had to be set at a low level in order to identify enough participants for the study. Eighty-nine participants met the combined cutoff requirement. The final sample (after study drop-outs and absentees at the follow-up interviews were excluded) that served as the basis for the data analysis consisted of 39 male participants, ranging in age from 16 to 40 years (\( M = 22.95, M_n = 22, SD = 4.85 \)). Most of the participants were between 18 and 26, with three outliers over 30, which largely represents the age distribution in gang structures. Seventy-two percent were currently or had previously participated in a reintegration program; 28% had never taken part in a reintegration program. The average number of formal years of education was 10.33 (\( SD = 2.12, range = 1-16 \)), but 87.2% of the sample had dropped out of school before graduating. 56.4% of the final sample had a PTSD diagnosis; the mean score for the severity of posttraumatic stress was 19.15 (\( SD = 8.32, range = 8-37 \)). The average score for appetitive aggression was 27.72 (\( SD = 11.44, range = 9 -52 \)), and the average number of offense types was 7.77 (\( SD = 4.96, range = 1-17 \)).

4.3.2 Sampling procedure

A total of 405 young men were preassessed at the beginning of the study. This sample was
recruited with the support of a locally operating institution for offender reintegration (Rebuilding and Life-skills Training Centre [REALISTIC]), a community-based organization in Cape Town that supports ex-prisoners and at-risk youth through a 6-month training program in life skills intended to prevent recidivism and relapses into drug addiction. All participants gave informed and written consent. In the case of underaged participants, parents or caretakers were additionally asked to give their written consent. The study protocol including these consent forms was approved by the Ethical Review Boards of Stellenbosch University, South Africa; the University of Cape Town, South Africa; and the University of Konstanz, Germany. The assessments took 2 hr on average, and interviewees were reimbursed for their participation in each interview with ZAR100, the equivalent of about USD8.50.

4.3.3 Primary outcome measures

The data was collected by means of structured interviews. Back-and-forth translations of the questionnaires were used to generate bilingual surveys, starting with a translation from English to isiXhosa, followed by back-translation into English by a different translator. These translations were discussed with the translators in a multiprofessional team until there was consensus on each item. A team of three South African counselors and four German clinical psychologists carried out the initial assessments. Interviewees were encouraged to speak in either English or isiXhosa based on their personal preference. Trained interpreters (native isiXhosa speakers who were fluent in English) accompanied English-speaking interviewers. The counselors received 25 hr of training from two clinical psychologists on the theoretical concepts of mental disorders, trauma, and clinical diagnosis. Regular individual and team supervision ensured cross-interview consistency and mental hygiene (self-care). Five German clinical psychologists and a trained South African counselor conducted the follow-up interviews.

Posttraumatic stress symptom severity. The severity of PTSD symptoms and the diagnosis
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of PTSD were assessed with Foa and Tolin’s PSS-I (Foa & Tolin, 2000), which asks participants about 17 PTSD symptoms experienced during the previous two weeks in accordance with Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev.; American Psychiatric Association, 2000) criteria. This measure has also been used in previous African samples (e.g., Ertl et al., 2010; Jacob, Neuner, Maedl, Schaal, & Elbert, 2014; Köbach, Schaal, & Elbert, 2015). The PTSD assessment was keyed to the most traumatic event in the participants’ past that was still troublesome to them in the present. Experienced events from a trauma-event type list, as well as from the self-committed violence event type list (see the subsection titled “Perpetrated violence” below), were counted as possible index traumata. All symptoms were rated from 0 (not at all/only once) to 3 (five or more times per week/almost always). The frequencies of all 17 PTSD symptoms were summed up to represent the severity of PTSD (maximum score: 51 points). Change scores resulted from the subtraction of the posttherapy score from the pretherapy score, such that a positive score represents an improvement (decrease) in terms of PTSD severity and a negative score represents the worsening of (increase in) PTSD symptoms. The PSS-I scores exhibited excellent internal consistency (Cronbach’s alpha = 0.86) and high interrater reliability (intraclass correlation coefficient = 0.93; Foa & Tolin, 2000). In this study, the Cronbach’s alpha was 0.88.

Appetitive aggression. The propensity for violent behavior was measured with the AAS (Weierstall & Elbert, 2011), which consists of 15 questions on attraction to violence (“Do you enjoy inciting your fellows to fight?”), addiction-specific questions (“Once fighting has started, do you get carried away by the violence?”) that address the reward-driven aspect of appetitive aggression, and questions about the desire to cause harm (“Once you got used to being cruel, did you want to be crueler and crueler?”). Responses were rated on a 5-point Likert scale (0 disagree completely to 4 agree completely) and summed up, with a maximum score of 60 points. Change scores resulted from the subtraction of the posttherapy score from the pretherapy
score, such that a positive score represents an improvement (reduction) and a negative score represents the intensification of (increase in) attraction to violence. The AAS has demonstrated good psychometric properties in various violent populations. The internal consistency for the AAS is sufficient with a Cronbach’s alpha coefficient of 0.85 (Weierstall & Elbert, 2011). For this study, the Cronbach’s alpha was 0.86.

**Perpetrated violence.** The score for perpetrated violence was calculated on the basis of 21 different violent event types. The list of these self-committed offense types was adapted from the AAS and has previously been successfully administered in a population of South African juvenile offenders (Weierstall et al., 2013). The items reflect a range of violence, starting with event types of little impact (“Have you shouted at someone?”; “Have you slapped someone?”) and progressing to severe criminal acts (“Have you killed someone?”; “Have you raped someone?”). Possible sum scores for the measure range from 0 to 21. Change scores resulted from the subtraction of the posttherapy score from the pretherapy score, such that a positive score indicates a decrease in offenses and a negative score an increase. In the current study, the Kuder-Richardson’s alpha was 0.90 (Hinsberger, Sommer et al., 2016).

**4.3.4 Study design**

Eighty-nine participants were invited to take part in the subsequent treatment period. Thirty-five of them were unable to participate due to multifarious reasons (e.g., work or school attendance). In order to preserve these participants for data analysis, they were placed on a second waiting list (“no camp”) so that they could still be contacted for further follow-ups. The remaining participants were randomly assigned to one of the three treatment conditions (FORNET, CBT, and the “camp” waiting list). Attendees were matched first in terms of posttraumatic stress symptom severity, second in their level of appetitive aggression, and third in the severity of their suicidality.
4.3.5 Treatment conditions

The therapy program was conducted in several 3-week camps in order to provide participants a safe and drug-free environment, nutrition, and shelter, ensuring that therapy motivation would not be undermined by any of these factors. Each camp included 12 to 14 study participants as well as various staff (social workers, facilitators, cooks, security). Sessions took place in separate rooms on the camp premises, thereby guaranteeing confidentiality and privacy. All camp participants (from all three treatment conditions) were able to participate in the free-time activities offered by the camp facilitators. The activities that were offered (soccer games, beach walks, etc.) were invariably nonpsychotherapeutic in nature. Four German and five South African health experts conducted the therapy sessions. All experts took part in an extended theoretical and practical training on either FORNET or CBT that was conducted by narrative exposure therapists and behavior modification therapists. Therapy sessions were conducted in English. The pairing of therapists and interpreters was continuously rotated among participants, but each participant had the same interpreter over the entire course of therapy.

FORNET. FORNET has been adapted for trauma victims from the evidence-based field intervention NET (Schauer, Neuner, & Elbert, 2011). In order to account for the specific behavioral difficulties of violent offenders, exposure sessions are extended to also include perpetrator events. The second adaptation involves the abandonment of the narration to facilitate the clients’ trust and openness. This manual-based intervention (further details in Hecker et al., 2015) consists of eight individual sessions of about two hours each. Participants had a therapy session every second working day.

The first session of FORNET begins with psychoeducation about posttraumatic stress symptoms and the purpose and procedure of the intervention. In the same session, therapy starts by chronologically reconstructing the participant’s biography. This is done by means of stones,
candles, flowers, and sticks that are placed along a rope (the participant’s life-line): stones represent traumatic incidents, a candle indicates the death of a loved one, flowers stand for positive events or helpful people, and sticks denote violent offenses committed by the participant. It is possible to combine symbols to reflect the complexity of certain incidents, and the participant decides which symbols best represent his or her experiences. The therapist does not judge or interpret the participant’s views. This development of a life-line supports the structuring of events in the participant’s life, an aspect that is generally distorted in the case of participants experiencing posttraumatic stress (Krystal, Southwick, Charney, & Schacter, 1995). It also helps the therapist to determine which events will be chosen for the six exposure sessions that follow. In the exposure sessions, the most traumatic experiences and the most violent incidents are reexperienced in sensu. Participants are often troubled by numerous traumatic and violent incidents, not all of which can or need be selected for therapy. The guiding principle of the selection is the fear network, which consists of interconnected perceptions, strong averse feelings, and distressing thoughts related to each traumatic incident; the network grows larger with every new context or environment that becomes unsafe. Thus, in therapy, it is important to cover as many different contexts as possible – for example, physical violence in the family, in the community/school, and at the hands of police/wardens; one’s own violent acts; accidents and natural catastrophes/fires; and the experience of being raped or committing rape. The focus is on the worst events and/or the first events, since emotions are often heightened during first events in comparison to events that the participant has “gotten used to” and for which coping mechanisms (such as dissociation or detachment) have already been developed. During exposure sessions, the therapist guides the participant through an incident by continually asking for the participant’s context-specific information/sensory perceptions, cognitions, feelings, and physiological responses. This emotional reexperiencing is supported and maintained on a level that is still manageable for the participant. A final body check at the end helps to determine
whether there is still anything to talk through before the termination of the session. In concluding the session, the therapist encourages the participant to articulate his or her current thoughts and feelings about the incident. In the last session, the participant creates another life-line display in order to correct any memory errors from the first session. The therapy ends with an outlook of the future and the participant’s expression of his or her hopes.

The efficacy of FORNET is based on the process of finding words and expressing what has happened. This process leads to memory reorganization and inhibition, cognitive restructuring, and reevaluation (especially of emotions such as guilt and shame); it also provides the participant with recognition (by the therapist) of personal trauma.

**CBT.** CBT is a system of psychotherapy that attempts to reduce excessive emotional reactions and self-defeating behavior by modifying the faulty or erroneous thinking and maladaptive beliefs that underlie these reactions (Beck, 1976, 1983). CBT is constructed around the concept that cognition affects behavior and that individuals have the capacity to monitor and adapt their modes of thinking and thus the way they act (Hollin, 1990).

This study made use of a structured cognitive-behavioral intervention entitled “Thinking for a Change” (Bush, Glick, & Taymans, 1997/2011). The program’s curriculum focuses on cognitive restructuring of the thoughts and attitudes that put one at risk of engaging in harmful or criminal behavior, and on improving problem-solving and social skills. “Thinking for a Change” consists of 22 short sessions, which were condensed to seven sessions of two hours, on average, so that the time frame for FORNET and the CBT program would be comparable. Each session was formatted and conveyed with the intent of maximizing consistency across participants. The therapy began with a summary and rationale section in which the scope and breadth of the program and the reasons behind it were provided by the facilitator. Sessions 2
and 3 focused on cognitive self-change (understanding how thinking determines behavior, raising awareness of thinking and one’s emotions, finding new ways to think), Session 4 included instruction in certain social skills (understanding and responding to the feelings of others, especially anger, and dealing with accusations), and Sessions 5 and 6 dealt with problem-solving behavior (interruption of impulsive behavior, problem description, gathering information, goal setting, evaluation of plans). All sessions involved homework that the participant was supposed to complete in between sessions; a review of the homework started every session. The final session evaluated and concluded the therapy.

In contrast to FORNET, the cognitive restructuring that CBT employs as a means to improve a participant’s situation concentrates on currently important events, not necessarily events from the past that were traumatizing. The focus is on dealing with life and problems in the here and now, and thus the therapy also includes training in important social skills.

Waiting lists. Participants who stayed at the camp but did not receive therapy (waiting list “camp”) took part in the nontherapeutic free-time activities that the REALISTIC staff offered to all camp participants (e.g., soccer games, trips to the beach). Participants who chose to not take part in the camp (waiting list “no camp”) did not receive any intervention or take part in any activities.

4.4 Results

4.4.1 Participant flow

Two hundred ninety assessments were conducted from October 2013 to March 2014, and a further 115 screenings were completed from October to November 2014. Therapies ran from December 2013 until March 2014, and in November 2014. The largest drop-out of participants
occurred during the third camp, when weapons were found despite clear explanation of the rules in advance and written agreements to keep the camp weapon- (and drug-) free. The team of social workers and therapists decided to terminate the camp; participants had the option of joining the REALISTIC program instead. The remaining drop-outs were due to motivational or behavioral problems (e.g., disagreements with the social workers who ran the camp and monitored compliance with camp rules). The first follow-up was conducted, on average, 10.6 months (range: 9 to 12) after the initial assessment and 8.1 month (range: 7 to 11) posttherapy. All interviewers were blind to the treatment condition of the interviewees. The reasons for nonparticipation in the follow-up sessions are shown in the flowchart in Figure 4.1. The reason “could not be found” encompasses a variety of issues – for example, one participant was homeless and thus could not be tracked down, two participants had moved, and two others were not at home every time the researchers attempted to visit. The majority of participants who could not be found were most likely untraceable because they had given false names at the initial interviews. One participant in the CBT group passed away over the course of the study due to a serious medical condition.

For the analyses, all participants assigned to the two waiting lists had to be combined into one group, irrespective of whether they had participated in a camp (n = 5) or not (n = 8). The final sample consisted of 15 FORNET, 11 CBT, and 13 waiting list participants. The groups did not differ significantly in terms of years of formal education ($H(2) = 0.862; p = .65$), number of participants that had taken part in a reintegration program (Fisher-Freeman-Halton test; $p = .185$; two-sided), the level of trauma exposure before ($H(2) = 1.33; p = .514$) or after therapy ($H(2) = 1.05; p = .591$), posttraumatic stress symptom severity ($H(2) = 3.50; p = .174$), suicidal ideation ($H(2) = 3.06; p = .217$), attraction to aggressive behavior ($H(2) = 0.57; p = .751$), or offenses committed during one’s lifetime ($H(2) = 0.57; p = .75$) or in the past 6 months ($H(2) = 0.482; p = .79$).
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Figure 4.1 Flowchart of the participants over the course of the study. PTSD = posttraumatic stress disorder; AAS = Appetitive Aggression Scale; FORNET = forensic offender rehabilitation narrative exposure therapy; CBT = cognitive-behavioral therapy.

4.4.2 Data analysis

All analyses were conducted using SPSS version 21, and all statistical methods employed were nonparametric (since the outcome variables violate the assumptions for parametric analysis in terms of normal distribution and homogeneity of variance). Group comparisons were assessed with the Mann–Whitney U test and Wilcoxon signed-rank test. Bonferroni adjustment of 5%
significance levels specifies the $p$ value at $p < .017$ for between-groups comparisons and $p < .025$ for within-group comparisons. Cohen’s $d$ effect sizes between 0.2 and 0.49 indicate a small effect, 0.5 to 0.79 a medium effect, and > 0.79 a large effect (Cohen, 1988).

### 4.4.3 Reduction of PTSD symptoms

The graph in Figure 4.2 demonstrates the course of PTSD symptom severity from preassessment to the first follow-up. The intersecting line separates the cases whose symptoms improved (above the line) from those exhibiting worse symptoms (below the line) after the treatment period. Most of the therapy participants (FORNET as well as CBT) appear above the separating line, indicating that their PTSD symptoms improved. The majority of participants in the comparison group appear below the intersecting line, thus exhibiting a further worsening of symptoms.

Figure 4.2 presents the change scores for PTSD symptom severity from preassessment to follow-up for each treatment group. We conducted a Wilcoxon signed-rank test to investigate whether the drop in PSS-I scores in the FORNET and CBT groups and the increase in PSS-I scores in the waiting list group reached statistical significance. Mean PTSD scores did not differ significantly at the first (pre) and second (Post 1) time points in participants who received no treatment ($z = -0.98, p = .327$). Although PTSD symptom severity apparently improved, on average, in the CBT group, the difference between the first and second assessment did not reach statistical significance ($z = -1.38, p = .169$). Only participants in the FORNET condition showed a significant drop in PTSD symptom scores upon comparison of mean scores pre- ($Mdn = 24$) and postassessment ($Mdn = 8; z = -2.5, p < .025, r = 0.46, Cohen’s d = 0.97$).

A Mann–Whitney $U$ test was conducted to look for significant differences in the reduction of PTSD symptoms across treatment conditions. The test identified a significant difference in the change score (pre to Post 1) between the FORNET group ($Mdn = 12.0$) and the waiting list
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group \(Mdn = -3.0; U = 42.0, z = -2.56, n_{\text{FORNET}} = 15, n_{\text{Waitinglist}} = 13, p < .017, r = -0.48,\) Cohen’s \(d = -1.03\).

Due to the low cutoff of 8 out of 51 points on the PSS-I Scale, we investigated by means of median split analysis the impact that the broad range in PTSD symptom severity within the sample (high vs. low PTSD scores) had on the outcome variables. Participants with a higher level of PTSD symptoms (median split, \(z = -2.49; p < .05\)) yielded better results in PTSD levels posttreatment than those participants with low levels of PTSD.

Figure 4.2 Scatter plot with PTSD symptom severity before (pre) and about 8 months after therapy (post 1) for the three different treatment conditions. PTSD = posttraumatic stress disorder; FORNET = forensic offender rehabilitation narrative exposure therapy; CBT = cognitive-behavioral therapy.
4.4.4 Reduction in appetitive aggression and perpetrated violence

The Kruskal-Wallis test did not indicate any significant group differences across treatment conditions in terms of changes in attraction to aggressive behavior ($H(2) = 3.93; p = .14$) or perpetrated violence in the previous six months ($H(2) = 1.44; p = .487$). Moreover, Wilcoxon signed-rank test did not find any significant differences between preassessment scores and follow-up scores for any of the treatment groups with regard to appetitive aggression (FORNET: $z = -0.50, p = .62$, CBT: $z = -1.65, p = .10$, waiting list: $z = -1.54, p = .12$) or offenses (FORNET: $z = -1.00, p = .32$, CBT: $z = -0.85, p = .40$, waiting list: $z = -0.36, p = .72$). Hence, there was neither a significant reduction nor an increase in committed offense event types or appetitive aggression for any treatment condition or over time. Figure 4.3 displays the results for all outcome variables.

![Figure 4.3](image)

Figure 4.3 Median change scores for PTSD symptom severity, appetitive aggression, and committed offenses. Whiskers represent a confidence interval of 95%. PTSD = posttraumatic stress disorder; FORNET = forensic offender rehabilitation narrative exposure therapy; CBT = cognitive-behavioral therapy (“Thinking for a Change”).
4.4.5 Influence of sociodemographic conditions on outcome variables

None of the sociodemographic variables (e.g., age, years of formal education) showed a significant correlation with any of the outcome variables, although nonattendance in the REALISTIC program had a significant influence on appetitive aggression scores: the 11 participants who had never participated in the rehabilitation program exhibited a significantly higher reduction in appetitive aggression scores than the 28 participants who had taken part in the REALISTIC program at any point in time \( (z = -2.64, p < .01) \). The 11 participants who had not taken part in the program showed a significant drop in appetitive aggression from pre- to postscores \( (z = -2.45, p < .05) \), a reduction not seen in our 28 other study participants \( (z = -0.22, p = .829) \).

4.5 Discussion

The results of this study indicate that FORNET is not only a potentially effective and feasible intervention for reducing PTSD symptoms in a context of ongoing exposure to military violence and conflict (Köbach, Schaal, Hecker, & Elbert 2015), but that it is also realizable and effective in a context of enduring gang and community violence. In follow-up assessments (conducted, on average, 8 months posttherapy), the reduction in PTSD symptom scores for the FORNET condition was significant in comparison with the waiting list (control group). The significant outcome of the Wilcoxon signed-rank test indicates that this difference between groups was not due to the worsening in PTSD symptoms of the untreated waiting list, but rather to the improvement of symptoms in the FORNET group.

PTSD change scores for the CBT group were not significantly higher than those of the waiting list, nor were they significantly lower than those of the FORNET group. The fact that this group’s PTSD reduction was not significant in comparison with the waiting list indicates that a
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trauma focus in therapy is necessary to achieve a positive outcome in terms of posttraumatic stress reduction. However, given that the trauma-specific approach of FORNET did not achieve a significantly higher reduction in PTSD than the TFAC program, our results might suggest that there are additional active factors in trauma therapy beyond the specific trauma focus, such as the undivided attention of the therapist.

The association between PTSD scores at the preassessment and the success of PTSD reduction at the follow-up assessment indicates that the treatment effects might be watered down by the inclusion of participants with partial PTSD in the study; the effects of therapy might have been more clear-cut if only participants with high PTSD scores had been admitted to the study.

Attraction to cruelty and the number of committed offense event types could not be successfully reduced by any of the interventions in the study. In light of the FORNET studies on Burundian street children (Crombach & Elbert, 2015), in which perpetrated violence was successfully reduced, and those on former DRC combatants (Hermenau et al., 2013), where appetitive aggression was successfully reduced in both experimental and control groups, this result provides an important insight. The groups examined in these previous studies experienced a change in their environment (a move to a foster home or assistance in leaving the armed militia, respectively), differentiating them from our clientele, who had to remain in the same environment after treatment. Given that there are often multiple challenges in the lives of such individuals, therapeutic benefits are more likely to be effective and sustained with a set of interventions that address multiple targets. FORNET and CBT might only be effective for the treatment of offending behavior if they are tied to benefits such as access to occupational training and employment in parallel with or immediately following therapy.

The result that only those participants who had never taken part in a reintegration program showed a reduction in appetitive aggression is not in line with the findings of Hermenau et al.
(2013), where the reintegration program seemed to be the cause for the reduction in attraction to violence in participants independent of treatment condition. In light of the fact that the reintegration program in the DRC was embedded in a “new” (more peaceful) environmental context, one might conclude that this circumstance could be a precondition for reintegration programs to be effective in South Africa as well – that is, participants need a more peaceful home environment in order to succeed.

### 4.6 Limitations

The major limitation of this study is its small sample size, in part due to the difficult living situation in the townships (participants too deeply involved in gangs or drugs, unable to take time off from school or work, solely responsible for providing for their families, etc.). Robust statistical analyses can compensate for this limitation, but at the cost of reducing the study’s power. Significant as well as nonsignificant results might therefore be established in an artifact. Furthermore, the small sample size reduces the generalizability of the study outcome to the male population of South African townships.

Moreover, the study relies on self-reported data. Highly sensitive information – for example, admitting to the commission of a rape or the enjoyment of aggressive behavior – was likely underreported (Kaminer, Hardy, Heath, Mosdell, & Bawa, 2013). Therapy requires trust to be built between the participant and therapist, and thus underreporting may have been greater prior to the intervention and in those who did not receive treatment. This could restrain the outcome for changes over time in offenses committed or attraction to violence in the treatment groups as well as between groups.

Therapy with offenders is known to face the challenge that patients are usually not experiencing a psychological strain that could represent a motivational factor for therapy compliance. If the
therapy is mandatory for the participant (e.g., while in prison or on probation), therapy compliance can be maintained despite the lack of an inner motivation. Because participation was voluntary in our study and an inner motivation for therapy was not always present, our original approach, which involved conducting the therapy sessions in a normal office setting, was unsuccessful. The only practical way to conduct interventions with our clientele was to offer the therapy in a camp setting. This approach entails the disadvantage of higher costs and thus reduced feasibility on the part of the intervention provider.

Our drop-out rate of 29% falls in the middle of drop-out rates in studies with comparable samples (e.g., Golden et al., 2006: 38%; Bickle, 2013: 18%). Drop-outs occurred in all three treatment conditions and the majority of the drop-outs (12 out of 16) were nonsystematic (camp termination due to security problems). Noncompleters were excluded from the analysis in order to maintain a preferably unclouded outcome for therapy efficacy. Due to dropouts and absenteeism at the follow-up sessions, the previously separate waiting lists “camp” (n = 5) and “no camp” (n = 8) had to be combined into one waiting list in order to achieve a sample size that would be large enough for the execution of the statistical analysis. Because these two samples differ in terms of the camp experience, it is possible that this resulted in a heterogeneous subsample. Due to the small subsample sizes, however, it was not possible to investigate potential differences. Importantly, the freetime camp program encompassed only nontherapeutic activities, suggesting that a confounding effect can be excluded.

In this study, we concentrated on the long-term effects of therapy outcomes with a first follow-up after an average of 8 months posttreatment. Long time intervals for follow-ups have the advantage of measuring the potential duration of therapy effects. The disadvantage of a delayed follow-up is that other factors may come into play, and it becomes more difficult to evaluate the acute efficacy of the therapy.
4.7 Conclusions

We conclude from this study that despite a context of ongoing gang and community violence, a trauma-specific intervention is not only feasible in the population under study, but also effective in reducing posttraumatic stress symptoms. However, in order to substantially and enduringly modify deviant behavior, a broader treatment approach might be needed, potentially encompassing trauma-focused psychotherapy, social-worker intervention, and support that addresses individual areas of deficiency or problematic behavior (e.g., encouraging staying in school through graduation, enhancing job opportunities). One step in the direction of a change in context could be the establishment of “peace zones” in townships in which criminal behavior and drug dealing are not tolerated. The requirement that former gang members undergo therapy in order to live in these zones would ensure the combination of intervention and change in environment that our study suggests is necessary for significant improvement.

4.8 Acknowledgments

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5 Associations between societal disapproval and changes in symptoms of PTSD and appetitive aggression following treatment among high-risk South African males

5.1 Abstract

Background: In violent communities, social rejection as a person with victim-offender attributes is associated with more intense symptoms of posttraumatic stress disorder (PTSD) and a higher propensity towards violence, i.e. appetitive aggression. The successful community reintegration of individuals with both a history of violence exposure and perpetration may be necessary to enhance the treatment effects of interventions addressing PTSD and aggression.

Objective: In this study, the effects of treatment and post-treatment traumatic events, offenses, and social acknowledgment on changes in PTSD symptom severity and appetitive aggression from baseline to 8-month follow-up were investigated.

Methods: Data were collected from 54 males recruited through a Cape Town offender reintegration program for an intervention study targeting trauma and aggression (n = 28 treatment; n = 26 wait-list). Changes in PTSD symptom severity after treatment were assessed with the PTSD Symptom Scale-Interview, changes in appetitive aggression with the Appetitive Aggression Scale (AAS), post-treatment traumatic events with an adapted version of the Child’s Exposure to Violence Checklist, offenses with an adapted checklist from the AAS, and social acknowledgment with an adapted form of the Social Acknowledgment Questionnaire.

Results: Path analyses revealed negative relationships between ongoing societal disapproval and changes in PTSD symptom severity and appetitive aggression at 8-months, controlling for age. All other variables were non-significant, except for treatment, which was associated with PTSD symptom reduction.
**Conclusions:** As a complement to effective psychotherapeutic treatment, improvement relative to social acknowledgment may contribute significantly to the alleviation of PTSD symptoms and appetitive aggression. Psychological interventions therefore should not neglect the impact of societal factors on treatment effects.

**Keywords:** violence, social acknowledgment, posttraumatic stress disorder, appetitive aggression, treatment efficacy

### 5.2 Introduction

Short-term interventions such as the *Narrative Exposure Therapy for Forensic Offender Rehabilitation* (FORNET) have shown promising results in reducing both posttraumatic stress disorder (PTSD; Hermenau et al., 2013; Köbach, Schaal, Hecker, & Elbert, 2015) and aggressive behavior in victim-offender populations living in violent environments (Crombach & Elbert, 2015). Effective psychological treatment may be the core facilitator of such reductions in PTSD and the propensity toward violence – also known as *appetitive aggression* (Elbert et al., 2010) – in these populations. However, other non-psychological factors may mediate or hinder treatment effects and thus need to be considered. Recent research has demonstrated that the *social acknowledgment* of a person’s past violent experiences is significantly associated with PTSD and appetitive aggression in victim-offender populations and may represent a key environmental factor at a societal level (Sommer et al., 2016). This study examined the association between such acknowledgment and treatment outcomes following a therapeutic psychological intervention.

In the literature, social acknowledgment is defined as a subtype of social support, referring not only to the emotional and instrumental support provided to an affected person by the immediate environment, but also to potential feelings of rejection and exclusion from the broader society.
because of one’s violent past (Maercker & Müller, 2004). The term covers the three constructs of general disapproval and family disapproval, i.e. the invalidation of one’s violent experiences or rejection by the social environment or family, and recognition, i.e. the perception that one’s suffering is acknowledged and understood. Research has shown that general disapproval is associated with more severe PTSD symptoms (e.g. Jones et al., 2006; Mueller, Orth, Wang, & Maercker, 2009; Sommer et al., 2016). In relation to family disapproval and recognition, the findings are more diverse, with results indicating that family disapproval is either positively associated with (e.g. Guan, Gao, Liu, Cheng, & Ge, 2016; Maercker, Povilonyte, Lianova, & Pöhlmann, 2009) or unrelated to PTSD (e.g. Jones et al., 2006; Sommer et al., 2016). Recognition has been revealed to be either negatively related to (e.g. Maercker & Müller, 2004) or unrelated to PTSD (e.g. Mueller et al., 2008); however, in a South African victim-offender population, a positive relationship between recognition and PTSD was found, as discussed in Sommer et al. (2016).

Recently – and in line with research demonstrating that social exclusion and rejection are associated with aggressive behavior (DeWall et al., 2009; Twenge et al., 2001) – Sommer et al. (2016) investigated the relationship between general disapproval and appetitive aggression, confirming a positive association, whereas recognition and family disapproval were found to be unrelated to appetitive aggression. Thus, general disapproval of violent experiences may influence not only the course of PTSD (Maercker & Horn, 2013) but also that of appetitive aggression, thereby impacting treatment outcomes.

This evidence notwithstanding, only a few studies have thus far investigated the effects of social factors during or after therapy on changes in PTSD. Tarrier and colleagues have demonstrated that negative social relationships and a lack of social support are related to poorer treatment outcomes in PTSD patients (Tarrier, Sommerfield, Pilgrim, & Faragher, 2000; Tarrier, Sommerfield, & Pilgrim, 1999). Furthermore, improvements in social acknowledgment through an
intervention incorporating techniques from Cognitive Behavioral Therapy (CBT) have been shown to mediate the reduction of PTSD in trauma victims after treatment (Xu et al., 2016). With regard to changes in appetitive aggression, scores decreased over time in a treatment trial in Congolese soldiers who received social support via a reintegration program (Hermenau et al., 2013). However, the associations between social acknowledgment and changes in appetitive aggression have yet to be studied.

In conflict areas such as low-income communities in South Africa, where residents are constantly exposed to severe forms of community violence (Eagle & Kaminer, 2013), factors beyond social acknowledgment that can potentially influence changes in PTSD and appetitive aggression must be acknowledged, as we address in this study. For example, post-treatment traumatic events that occur in between two measuring points in longitudinal assessments may be associated with changes in PTSD symptoms, potentially reinforcing the trauma memory and decreasing the likelihood of overall improvement. In fact, in a psychological treatment trial (Steketee, 1993), the stress response associated with intermediate traumatic events after treatment was found to be significantly related to relapse.

Regarding appetitive aggression, Elbert et al. (2010) suggest that violent environments (i.e. surroundings with many potential traumatic events) could be a breeding ground for appetitive aggression, as confirmed by a positive association between traumatic events and appetitive aggression (Sommer et al., 2017). Furthermore, as violence perpetration increases, aggression may be perceived more positively (Köbach, Schaal, & Hecker, 2015; Sommer et al., 2016; Weierstall et al., 2013). As a result, newly experienced traumatic events and newly committed offenses may rekindle an individual’s “addiction to violence” (Hecker et al., 2015) following the completion of a psychological treatment program and thereby decrease the likelihood of a reduction in appetitive aggression. This is especially relevant in South African contexts, where gang membership increases the probability of further violence perpetration (Jewkes et al., 2006)
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and victimization.

Finally, changes in PTSD may be related to changes in appetitive aggression, due to the interrelatedness of these two states. The perpetration of violence often co-presents with victimization (Malik et al., 1997), and PTSD has been shown to be related to aggression (Dyer et al., 2009; Jakupcak et al., 2007). Aggressive behavior may serve as a coping mechanism when individuals lack other skills to handle traumatic situations (Spaccarelli et al., 1995), resulting in a “victim-to-victimiser cycle” (Glasser et al., 2001). This “fight” reaction, which is often seen in PTSD patients (DSM-5; American Psychiatric Association, 2013), may be reflected in appetitive aggression to some extent, and reductions in PTSD may lead to reductions in appetitive aggression.

The hypotheses for this study are based on recent findings on associations between social acknowledgment, PTSD, and aggressive behavior in a victim-offender sample of 290 South African males, published in Sommer et al. (2016). A sample of juvenile ex-offenders was assessed prior to and eight months after treatment as part of an intervention trial comparing FORNET, CBT, and a wait-list control group. The hypotheses are as follows: There are (1) negative relationships between both intermediate traumatic events and general disapproval and changes in PTSD and, in turn, positive associations between both treatment and recognition and changes in PTSD; (2) negative relationships between intermediate traumatic events, offenses, and general disapproval and changes in appetitive aggression and, in turn, a positive association between treatment and changes in appetitive aggression; and (3) a positive relationship between changes in PTSD and changes in appetitive aggression. Due to a lack of available literature, no specific hypotheses were formulated for potential interaction effects with treatment.
5.3  Method

5.3.1  Participants and design

Between 2013 and 2014, 405 South African males were recruited through a reintegration center for offenders and youth deemed to be at risk of experiencing and perpetrating violence. After screening, 89 participants met the inclusion criteria (≥ 8 points on the PTSD Symptom Scale-Interview and ≥ 9 points on the Appetitive Aggression Scale) for the intervention study, which was conducted in several three-week-long camps. The 35 participants who were unable to attend the camp were assigned to the control condition “wait-list no camp”. All other participants were randomly assigned to either a treatment condition targeting trauma and aggression (eight FORNET sessions or seven CBT “Thinking for a Change” sessions; about two hours/session) or a control condition (“wait-list camp”). Further information on the treatments, therapists, and outcomes of the intervention study is detailed elsewhere (see Hinsberger, Holtzhausen et al., 2016).

The present study included 54 participants who were assigned to the treatment trial and who participated in at least one of two post-treatment assessments (8.1 and 17.7 months post-treatment). Participants were Black Xhosa-speaking males from low-income areas in Cape Town, South Africa, aged 14 to 40 years (M = 22.3, SD = 4.8). At baseline, 59% of participants were currently attending or had previously attended a reintegration program, whereas 41% had not. Participants had attended school for 1 to 16 years (M = 10.26, SD = 2.06). To control for the impact of the treatment condition, a dummy variable was included in the path analyses, with those receiving treatment (FORNET/CBT) coded as “1” (n = 28) and those in the control condition as “0” (n = 26).
5.3.2 Materials

After the interviewers were trained in the concepts of trauma and aggression, individual structured interviews (translated from English to isiXhosa and back) were conducted by German and South African mental health experts supported by local interpreters. Participants were followed-up with the same interview schedule being used pre- and post-treatment. Interviewers were blind to experimental conditions.

**Intermediate traumatic event types.** Traumatic event types occurring between pre- and post-assessment were explored using an adapted version of the Child’s Exposure to Violence Checklist (CEVC; Amaya-Jackson, 1998), comprising 36 items on the direct experiencing (e.g. “Have you been attacked with a weapon by a family member?”) and witnessing (e.g. “Have you seen someone being killed?”) of potentially traumatic events. Items were rated dichotomously: 1 if the event had been experienced, 0 if not. This measure has excellent psychometric properties (Fincham et al., 2009) and has previously been administered in South African high-risk males (Hinsberger, Sommer et al., 2016). Kuder-Richardson’s alpha in this sample was .86. Traumatic event types were summed with a possible range from 0 to 36 points.

**PTSD symptom severity.** PTSD symptom severity during the past two weeks was assessed with the PTSD Symptom Scale-Interview (Foa & Tolin, 2000), with each of the 17 items rated from 0 (*not at all*) to 3 (*very much*). The scale indicates the extent to which the index trauma evoked B (re-experiencing), C (numbing/avoidance), and/or D (hyper-arousal) PTSD symptoms from the *Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev.; DSM-IV-TR;* American Psychiatric Association, 2000). Studies have confirmed the measure’s usefulness in terms of its psychometric properties in South African at-risk youth (Sommer et al., 2017). Items were summed with a possible range from 0 to 51 points.

**Appetitive aggression.** Attraction to violence was evaluated using the Appetitive Aggression
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Scale (AAS; Weierstall & Elbert, 2011), which has previously been administered in South African high-risk males (Hinsberger, Holtzhausen et al., 2016). This questionnaire contains 15 statements (e.g. “Is it fun to prepare yourself for fighting?”) to be rated from 0 (I totally disagree) to 4 (I totally agree) according to the respondent’s current point of view. Items were summed with a possible range from 0 to 60 points.

**Intermediate offense types.** Participants were asked to indicate whether they had committed any of 21 offense types from the AAS in the past six months (e.g. Have you injured another person with a weapon [e.g. a knife] in the past six months?”). This measure’s validity has been confirmed in at-risk South African youth (Sommer et al., 2016). Kuder-Richardson’s alpha in this sample was .91. Offense types were summed with a possible range from 0 to 21 points.

**Social acknowledgement.** The 16 items on the Social Acknowledgement Questionnaire (SAQ; Maercker & Müller, 2004), rated from 0 (not at all) to 3 (completely), examine the perception of recognition or disapproval from one’s family and society after traumatic events. A version adapted to participants in a victim-offender population has been successfully administered in a South African sample (Sommer et al., 2016). Of the three subscales, recognition captures positive aspects (e.g. “The reactions of my acquaintances were helpful”), whereas general disapproval (e.g. “Most people cannot understand what I went through”) and family disapproval (e.g. “My experiences are underestimated by my family”) reflect negative aspects of social acknowledgement. The item “My boss showed full understanding for any absence from work” was adapted (possible answer: not applicable) to account for the extremely high unemployment rate of Black Africans in South Africa (Statistics South Africa, 2016). The recognition score, which included the critical item, was thus divided either by 5 or 6, based on whether the item was rated or not. Cronbach’s alpha in this sample was: recognition, $\alpha = .59$; general disapproval, $\alpha = .73$; family disapproval, $\alpha = .57$. Items were summed for each subscale with a possible range
from 0 to 3 points for recognition and 0 to 15 points for general disapproval and family disapproval.

5.3.3 Procedure

Participants were invited to take part in the intervention trial and the follow-up visits with support from the above-mentioned reintegration center. Trained German and South African therapists offered individual treatment within the frame of the intervention study. Ethical approval was obtained from the Ethical Review Boards of the University of Konstanz and the University of Cape Town and from the Health Research Ethics Committee of Stellenbosch University; clinical trials registration ID: NCT02012738. Participants gave informed consent before the initial assessment (for minors, this was provided by parents/caretakers) and received financial compensation of 100 South African Rand per (follow-up-) Interview (ZAR; minimum hourly wage for full-time domestic workers: ZAR 10.59; South African Department of Labour, 2014).

5.3.4 Data analyses

The data analyses focused on the first post-treatment assessment, in which 39 participants took part; in order to include all 54 participants, missing values were estimated using maximum likelihood estimation on the basis of all the available data on the participants. Differences between treatment conditions with regard to all pre- and post-treatment variables relevant to the path analyses were tested with Mann-Whitney U-tests. Correlations between all variables included in the hypothesized path model were calculated using SPSS 21. Path analyses were conducted using AMOS 23. Intermediate traumatic events, offenses, general disapproval, recognition, and treatment represented predictors; changes in PTSD and appetitive aggression were considered outcomes. Model fit indices were the chi-square statistic ($\chi^2$), which should be non-significant, the comparative fit index (CFI) and root mean square error of approximation (RMSEA).
5.4 Results

5.4.1 Group comparisons and correlations

Based on complete data for 39 participants, there were no significant differences between conditions with regard to any of the pre-treatment and post-treatment variables relevant to the present model \((p > .05, \text{Mann-Whitney U-test})\), except for changes in PTSD symptoms \((p = .010)\), for which significantly greater improvement was found in the treatment condition \((M = 8.23, SD = 13.41)\) than in the control condition \((M = -2.84, SD = 12.12)\). There was a significant variance in age \((p = .010)\) between the treatment \((M = 23.64, SD = 4.68)\) and control conditions \((M = 20.89, SD = 4.53)\), and age was consequently included in the model.

Correlations between predictors and outcomes are shown in Table 5.1. Because family disapproval exhibited a significant correlation with changes in appetitive aggression, it was added as a control variable in the path analyses.
Table 5.1 Means, standard deviations (SD), and correlations (Spearman’s rho) between predictors and changes in PTSD symptom severity and appetitive aggression.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD) [range]</th>
<th>PSS-I change score</th>
<th>AAS change score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>traumatic event types</td>
<td>11.71 (6.09) [0 – 27]</td>
<td>-.41*</td>
<td>-.13</td>
</tr>
<tr>
<td>offense types</td>
<td>8.08 (4.90) [1 – 16]</td>
<td>-.23</td>
<td>-.35*</td>
</tr>
<tr>
<td>SAQ recognition</td>
<td>1.69 (.69) [0 – 3]</td>
<td>-.31</td>
<td>-.29</td>
</tr>
<tr>
<td>SAQ general disapproval</td>
<td>8.62 (3.69) [0 – 15]</td>
<td>-.48**</td>
<td>-.47**</td>
</tr>
<tr>
<td>SAQ family disapproval</td>
<td>6.85 (3.91) [0 – 14]</td>
<td>-.24</td>
<td>-.38*</td>
</tr>
<tr>
<td>Treatment/Control(^1)</td>
<td></td>
<td>-.38*</td>
<td>-.09</td>
</tr>
<tr>
<td>PSS-I change score</td>
<td>5.54 (13.88) [21 – 29]</td>
<td>1</td>
<td>.33*</td>
</tr>
<tr>
<td>AAS change score</td>
<td>3.72 (13.88) [33 – 39]</td>
<td>.33*</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. PSS-I = PTSD Symptom Scale-Interview, AAS = Appetitive Aggression Scale, SAQ = Social Acknowledgment Questionnaire. Change scores resulted from subtracting the post- from the pre-treatment score, such that a positive score represents symptom reduction. \(*p < .05, **p < .01\) (two-tailed), \(^1\)Point-Biserial Correlation Coefficient

5.4.2 Path analyses

Fit statistics for our hypothesized model were adequate: \(\chi^2 (2, N = 54) = 2.67, p = .263, CFI = .978, RMSEA = .080\) (90% confidence interval \([CI] = .000-.296\)). Paths from traumatic events
to changes in PTSD and appetitive aggression, from offenses to changes in appetitive aggression, and from recognition to changes in PTSD were non-significant. The path from age to changes in appetitive aggression showed a negative trend ($p = .054$). Non-significant paths and the remaining non-significant inter-correlation between treatment and general disapproval were excluded. The revised model is shown in Figure 5.1.

Adding family disapproval as another control variable did not significantly increase the explained variance, neither in the full model nor in the final model. For validation purposes, the hypothesized model was also calculated for the 39 participants with complete data, resulting in the same paths as described in the final model, with nearly identical fit values: $\chi^2 (3, N = 39) = 2.78, p = .426, CFI = 1.000, RMSEA = .000 (90\% CI = .000-.266)$.

Figure 5.1 Path model of relationships between general disapproval post-treatment, treatment (1) vs. control (0), and changes in PTSD symptom severity and appetitive aggression. Paths with arrowheads indicate directed associations. Standardized regression weights are shown. **$p < .01$. 

\[ \text{R}^2 = .34 \]

\[ \text{R}^2 = .18 \]
The final model accounted for 34% of the variance in reduction in PTSD and 18% for appetitive aggression. Considering the norms of a good-fitting model (Hu & Bentler, 1999), fit statistics were excellent: $\chi^2 (3, N = 54) = 2.80, p = .423, CFI = 1.000, \text{RMSEA} = .000 (90\% \text{CI} = .000-.226)$. The treatment condition exhibited greater changes in PTSD than the control condition ($b = 11.08$). General disapproval was negatively related to changes in both PTSD ($b = -1.61$) and appetitive aggression ($b = -1.59$).

Raw scores for PTSD severity ranged from 8 to 37 pre-treatment ($M = 18.96, SD = 7.83$) and from 0 to 39 post-treatment ($M = 14.62, SD = 12.46$), and those of appetitive aggression from 9 to 52 pre-treatment ($M = 25.78, SD = 11.83$) and from 0 to 47 post-treatment ($M = 24.00, SD = 15.17$). Consequently, the final model’s results indicate that although the means of both outcomes decreased after treatment, general disapproval impeded further changes in PTSD and appetitive aggression.

### 5.5 Discussion

This study investigated potential associations between changes in PTSD and appetitive aggression and intermediate traumatic events, offenses, general disapproval, recognition, and treatment condition from pre-treatment to post-treatment in high-risk individuals from poor communities in Cape Town. Consistent with results from Sommer et al. (2016), general disapproval was not only related to more severe PTSD symptoms (Forstmeier et al., 2009) but also negatively related to changes in PTSD after treatment and over time. This is in line with findings by Xu et al. (2016) indicating that a positive change in social acknowledgment is associated with reduced PTSD after treatment. Similarly, Nietlisbach and Maercker (2009) conclude that PTSD patients exhibit stronger negative responses to social exclusion than healthy individuals, which is linked to the exacerbation of mental impairments.

General disapproval was also negatively associated with changes in appetitive aggression,
which may indicate that feeling excluded from society could impede a possible reduction in appetitive aggression. Ex-gang members may experience rejection for their previous offenses; because such social exclusion could discourage them about the chances of making positive changes in their lives (Dorkins & Adshead, 2011), the environment of ex-offenders may influence their ability to abstain from violence (Serin & Lloyd, 2009).

The treatment condition exhibited greater changes in PTSD than the control condition (b = 11.08), indicating that trauma- and aggression-focused treatment can significantly reduce PTSD in South African victim-offender populations. With regard to changes in appetitive aggression, no significant relationship with treatment was found. This may be an age effect (participants in the treatment condition were older than those in the control condition), as changes in appetitive aggression were negatively correlated with age. However, including the interaction between treatment and age as a predictor of change in appetitive aggression did not significantly increase the explained variance in the final model.

Recognition from one’s environment was not significantly related to changes in PTSD. This is in line with research indicating that positive social reactions are not as influential as negative ones (Jones et al., 2006). Although intermediate traumatic events were negatively related to changes in PTSD in the correlation analysis, this relationship was non-significant in the overall model. The same holds true for the path from intermediate offenses to changes in appetitive aggression. One explanation for these findings could be that our data provided too little power; it is also possible that general disapproval ruled out other intervening variables.

The path from changes in PTSD to changes in appetitive aggression indicated a positive trend (p = .091), but a non-significant one. This result suggests that the alleviation of PTSD symptoms may not necessarily reduce the drive for appetitive aggression, which is promoted when moral inhibitions collapse, as may occur under extremely violent conditions (Elbert et al., 2010).
these moral inhibitions cannot be resurrected due to factors such as general disapproval – implying exclusion from society and thus an obstacle to reconnecting with its values (Dorkins & Adshead, 2011) – the restored psychosocial functioning may even lead to more violence perpetration.

5.6 Limitations

A larger sample size might have allowed more complex mapping in the proposed statistical models and thus greater statistical power. Tracking participants within South African victim-offender populations is challenging, as participants may be homeless, frequently intoxicated or in hiding due to gang-fights and thus inaccessible for follow-ups. Furthermore, the Social Acknowledgment Questionnaire measures subjective perceptions, which may differ to some extent from objective social interactions (Maercker & Müller, 2004) as PTSD symptoms may potentially bias a person’s perception of social support (Charuvastra & Cloitre, 2008). Because this measure only assesses three domains of social acknowledgment, it may not capture all the cultural nuances of this construct. Finally, as correlation does not imply causation, causal inferences should be drawn with caution.

5.7 Conclusions

With respect to intervention approaches, a focus only on the individual and only on the trauma can neglect external factors that may influence treatment outcomes, contributing to the limited effectiveness of individual psychotherapeutic approaches for PTSD (Maercker & Hecker, 2016). Social influences should thus be considered when treating PTSD (Maercker & Horn, 2013), and effective community-wide interventions are needed to improve social support (Kani-
Asstly & Norris, 2008), which has been shown to be essential in the successful reduction of appetitive aggression in combination with interventions like FORNET (Hermenau et al., 2013). Conversely, the lack of social support may contribute to environments that promote reoffending (Payne et al., 2010). Acknowledging ex-offenders instead of excluding them from society may lower appetitive aggression. Narratives in which offenders try to integrate their victimization and perpetration into a complete picture (Dorkins & Adshead, 2011), may represent one approach intended to promote understanding when shared with the community.

In the attempt to ensure sustainable psychological intervention effects in offender populations, it should be stressed that social acknowledgment – in particular, societal disapproval related to past violent experiences as both perpetrator and victim – may represent an important social factor that must be addressed in the treatment of PTSD and appetitive aggression. In addition to individual therapeutic interventions, the affected community should be targeted in the holistic management of offenders.

5.8 Acknowledgments

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6 General discussion

6.1 Overview and discussion of the results

In this thesis, the associations between violence exposure, violence perpetration, PTSD symptom severity and appetitive aggression were investigated by means of path analyses, in a sample of young males with victim and offender attributes living in low-income urban areas in South Africa. The impact of substance abuse and, for the first time, the role of the social acknowledgment of past violent experiences in the cycle of violence were examined. Further, the efficacy of FORNET was investigated in a longitudinal study in individuals living under continuous stress due to gang violence. Finally, the associations between treatment outcomes and potential intervening variables, such as post-treatment traumatic events, offenses and social acknowledgment were examined.

6.1.1 Relations between violence, PTSD and appetitive aggression

In the first and second articles, the number of different traumatic event types an individual has experienced was positively related to two different pathways: The first one was the likelihood of developing PTSD. This supports the building block effect, describing the positive association between the number of different traumatic event types and the severity of PTSD symptoms (e.g. Catani et al., 2008; Garieballa et al., 2006). The second pathway was the propensity towards aggression. The more individuals were exposed to severe violence and thus different traumatic event types, the higher their appetitive aggression, as in line with previous research (e.g. Mueller-Bamouh et al., 2016; Hecker et al., 2015).

Further, the relationship between committed offenses and appetitive aggression was investigated in the first and in the second articles, indicating a reciprocal relationship between the two variables: In line with recent research, it can be argued that either a heightened commission of violent acts leads to a stronger appetite for aggression (e.g. Hecker et al., 2012; Hecker et al.,
2013; Hermenau et al., 2013), or that a greater amount of appetitive aggression results in a higher number of committed offenses (e.g. Augsburger, Meyer-Parlapanis, Bambonye, Elbert, & Crombach, 2015; Dudeck et al., 2016; Hinsberger, Sommer et al., 2016; Mueller-Bamouh et al., 2016). One plausible interpretation is that both factors fuel each other in the cycle of violence.

The second and the fourth article examined the relationship between PTSD symptom severity and appetitive aggression, as a positive relationship between the two variables was indicated in a previous study with a similar South African sample (Weierstall et al., 2013). This finding was confirmed in the present thesis: A higher severity of PTSD symptoms predicted higher levels of appetitive aggression. Further, this relationship was confirmed by a positive trend in the treatment model, i.e. reduction in PTSD symptom severity was associated with reduction in appetitive aggression after treatment.

Appetitive aggression, however, has usually been shown to mitigate against the development of PTSD (e.g. Crombach & Elbert, 2014; Weierstall et al., 2012). Yet, research investigating the relationship between PTSD and other forms of aggression and aggressive behavior showed a positive association (e.g. Barrett, Teesson, & Mills, 2014; Stappenbeck, Hellmuth, Simpson, & Jakupcak, 2014). One explanation for the positive association between PTSD symptom severity and appetitive aggression in the South African context could be the gang-culture within low-income urban areas: Taking revenge for having experienced traumatic events, such as getting injured in a gang-fight or seeing a friend and gang member being killed, is a common rule within gangs (Kynoch, 1999). These previous traumatic experiences may have caused PTSD symptoms such as anger and hostility (DSM-5; American Psychiatric Association, 2013), and taking revenge may grow from an initially reactive aggressive response into a proactive development of appetitive aggression: Overcoming feelings of helplessness and victimization by violence perpetration may trigger positively associated feelings such as power and control and
thus satisfaction and joy with regard to violence perpetration, leading to a propensity towards violence (Crombach & Elbert, 2014).

6.1.2 Social acknowledgment

Further, relationships between social factors and PTSD symptom severity as well as appetitive aggression were investigated. In the first article of this thesis, the relationships between the three subscales of social acknowledgment, i.e. general disapproval, family disapproval and recognition, PTSD symptom severity as well as appetitive aggression were investigated. Using a sample of South African males with both victim and offender attributes, we demonstrated the significant role of the social acknowledgment of individuals’ violent experiences with regard to PTSD symptom severity and appetitive aggression.

The first article showed significant associations between general disapproval from the community and the severity of PTSD symptoms and appetitive aggression. General disapproval was further associated with reduced change in PTSD symptom severity and reduced change in appetitive aggression after treatment in the fourth article. The association between general disapproval and PTSD symptom severity is in line with previous research, which states that the disapproval of an individual’s traumatic experiences may hinder psychological adaptation processes to cope with traumatic incidents (e.g. Maercker & Müller; 2004; Wagner et al., 2012). The relationship between general disapproval from the community and appetitive aggression has not been investigated previously. However, the link between interpersonal rejection and aggression in general, not appetitive aggression in particular, is well-established and reasons for this association may be frustration, improved mood after aggressive behavior or the attempt to regain control amongst other potential explanations (for a review see Leary, Twenge, & Quinlivan, 2006). The results of this thesis demonstrate that this link can be extended to the more specific association of general disapproval by the community and appetitive aggression. It is also in line with findings indicating that social rejection is a factor predicting involvement.
in gangs (Cairns, Cadwallader, Estell & Neckerman, 1997). Once the individual is in the gang, the violent conditions that define gang life are likely to evoke or reinforce appetitive aggression. Family disapproval did not reach significance as a predictor of either PTSD symptom severity or appetitive aggression in the first article. Correspondingly, it was not related to change in either outcomes after treatment, as described in the fourth article. The finding that family disapproval and PTSD symptom severity are not significantly connected has been shown before in U.S. veterans who had experienced military trauma (e.g. Schumm et al., 2014). The relation between family disapproval and appetitive aggression has not been examined before. In the South African context, the non-significance of family disapproval may be due to the diminished influence families have on those who have turned towards gangs (Mathews, Jewkes, & Abrahams, 2011).

Recognition as a victim was positively associated with PTSD symptom severity in the first article, possibly indicating that with rising recognition, PTSD symptoms become augmented within a victim-perpetrator-sample, in which former offenders begin to reconnect with their own trauma history. In the fourth article, recognition showed no significant relationship with PTSD symptom severity after treatment. In both the first and the fourth article, recognition was not significantly associated with appetitive aggression.

In sum, the results of this thesis highlight the fact that the social acknowledgment of an individual’s violent past plays an important role in PTSD symptom severity and appetitive aggression, with general disapproval from the broader social environment being related to higher levels of PTSD symptom severity and appetitive aggression. Further, general disapproval by the community may hinder the effectiveness of treatment for PTSD symptom severity and appetitive aggression. However, as we conducted path analyses and data were correlational, it is not possible to determine the direction of these paths. Experimental studies would be needed in order to determine causality, yet, field research does not allow us to test causal relationships by
manipulating social factors. Laboratory experiments, however, provide evidence for causality, and show that induced social rejection and exclusion led to increased aggression (e.g. Buckley, Winkel, & Leary, 2004; Nietlisbach & Maercker, 2009).

Aggression as a consequence of social exclusion is strongly related to interpersonal violence, however, this consequence can be reduced or removed by positive social interactions, such as trust towards another person (Twenge et al., 2007). A major implication of this is that by establishing positive social interactions, one can potentially limit crime. Positive social interactions can abrogate or prevent the feelings of rejection and exclusion that can turn victims into perpetrators, or drive offenders to still worse acts of aggression.

Further, as gang membership provides social support for those within the gang (Wegner et al., 2016), reintegration into the community will only be effective if social support and social acknowledgment are provided by the community instead of the gang. This is especially important for preventing future violence, as gang membership has been shown to be the most predictive risk factor for severe violence commission among other factors like alcohol abuse and domestic violence. Gang members were in fact five times more likely to become life-course persistent offenders (Souverein, Ward, Visser, & Burton, 2016).

6.1.3 Substance abuse

The second article showed that substance abuse prior to acts of violence was related to higher appetitive aggression. This poses a risk for heightened violence commission: White et al. (2013) found a stronger relationship between alcohol consumption and aggressive behavior in males with positive views on violence and surrounded by a high-crime environment than in those without these attributes. This is confirmed by the second pathway presented in this thesis: Substance abuse prior to the commission of offenses was associated with a higher number of different committed violent acts, in line with previous studies (e.g. Hecker & Haer, 2015;
General discussion

Lundholm, Haggård, Möller, Hallqvist, & Thiblin, 2013; Stuart et al., 2013). Furthermore, substance abuse has been identified as one of the main risk factors for becoming a life-course persistent offender in South Africa (Souverein et al., 2016). It is argued that the disinhibition of maladaptive behavior due to substance abuse accounts for these associations (Giancola, Josephs, Parrott, & Duke, 2010). Negative affect, for example through provocation, may trigger a network of aggression-related feelings and memories (Berkowitz, 1990); and with a lack of ability to disinhibit, this negative affect may be acted out.

Thus, in order to prevent ongoing violence, treatment of drug using offenders deserves more consideration (Parry, Plüddemann et al., 2004). With regard to treatment options, it has been shown that FORNET leads to beneficial effects regarding drug dependency (Köbach, Schaal, Hecker, & Elbert, 2015). The authors argue that drugs may have been used in order to cope with trauma symptoms, and that a reduction of PTSD symptoms through FORNET thereby reduces the need for this coping mechanism. Both increased substance use and antisocial behavior have been shown to have originated from high levels of community violence in South Africa, rather than from general risk factors such as domestic violence and poverty (Waller et al., 2014). Accordingly, social integration in adolescence is potent in reducing the risk of substance use disorders in adulthood (Green et al., 2010).

6.1.4 Efficacy of FORNET in a South African victim-offender sample

In line with previous research (Köbach, Schaal, Hecker, & Elbert, 2015), the third article showed that FORNET significantly reduced PTSD in a sample of males with victim and offender attributes living in an environment of continuous stress at 8-months post-treatment. In contrast, there was no significant change in either appetitive aggression, or in committed offenses.

Although FORNET is only a short-term intervention, with only eight sessions conducted in the
study of the third article, it nevertheless demonstrates long-term effects of PTSD symptom reduction even under insecure living circumstances. The fact that there was no change in appetitive aggression, and concomitantly no change in committed offenses, may be age-related. This is suggested in the fourth article, which showed a negative trend between age and changes in appetitive aggression as described in the fourth article. The older the participants, the smaller the observed reduction of appetitive aggression. This may be explained by findings indicating that the amount of violence perpetrated in life is related to the extent of an individual’s appetitive aggression (Köbach & Elbert, 2015; Sommer et al., 2016): Older participants are likely to have committed more life-time offenses than younger ones, which raises their probability of having developed a stronger propensity towards violence. This becomes especially visible when considering the results of the fourth article of this thesis, which demonstrate that within six months, on average eight different offense types, ranging from shouting at and slapping a person to injuring and killing someone, have been committed by each individual from the study sample. Köbach and Elbert (2015) further highlighted sensitive periods for the development of a robust trait of appetitive aggression to lie between the ages of 16 to 17 years in Congolese combatants. The age of 16 years is also indicated as the starting point of serious offending in South Africa (Souverein et al., 2016). In comparison, participants of the therapy study presented in this thesis as well as in Köbach, Schaal, Hecker and Elbert (2015) were on average 22 and 23 years, respectively. Therefore, treatment may have shown greater effects in younger participants. Intense phases of development are related to periods of heightened behavioral and neuronal malleability and sensitivity to external influences during adolescence (Konrad, Firk, & Uhlhaas, 2013; Uhlhaas et al., 2009), and the development of appetitive aggression could well conform to this general developmental pattern. As such, interventions aiming to reduce appetitive aggression should be conducted as early as possible, when the development of aggression
is still flexible, risk factors have not cumulatively enhanced the probability of delinquent behavior, and behavior is thereby more susceptible to modification (Van der Merwe & Dawes, 2007).

FORNET is further a promising approach, as it can be effectively disseminated to lay-therapists (Jacob et al., 2014; Köbach, Schaal, Hecker, & Elbert, 2015). This is especially important, as financial resources for highly-skilled personnel are lacking in low- or middle-income countries such as South Africa: A low-cost approach is needed in order to provide treatment to as many affected individuals as possible (Souverein et al., 2016).

As indicated above, social acknowledgment may influence treatment effects and FORNET should thus be extended to account for this factor. Interventions aiming to change only individual behaviors may not be as successful as interventions trying to modify the environment from which violence arises (Frankish, 1993), as individual intervention approaches are likely to neglect the impact of social conditions on the affected person and may therefore miss the chance of an optimal benefit for the individual (Link & Phelan, 1995) and the community.

### 6.2 Implications for the future

Since crime stems from communities, the social justice system is dependent on the community to which former offenders return (Emmett, 2003). Imprisonment appears to be a major factor fueling the cycle of violence: Due to additional victimization through physical or sexual assault in South African prisons (Gear, 2007), young offenders may be even more traumatized and aggressive than before their incarceration, which may result in reintegration problems, once they return to society (Kiessl & Würger, 2002). It is thus important to consider which role communities could play in the improvement of mental health, also with regard to global mental health (Campbell & Burgess, 2012).
In the case of Sierra Leone, disarmament, demobilization, and reintegration (DDR) programs were conducted as former child soldiers returned to their home in order to achieve the goal of reintegration into the community. The programs were specifically successful concerning the former child soldiers’ perceived acceptance in their families and community (Humphreys & Weinstein, 2007). Acceptance may have been promoted via sensitization campaigns, which formed part of the DDR programs, and which addressed not only the former child soldiers but also the community. These campaigns explained the background of the former child soldiers to reduce absolute sense of blame, i.e. that their acts were entirely their fault, and helped to see the external factors that additionally compelled the former child soldiers to act this way, e.g. forced by commanders, threats of death and starvation – improved community acceptance, then again, was related to higher levels of prosocial attitudes and behavior in former child soldiers, irrespective of their past exposure to severe violence (Betancourt, Agnew-Blais et al., 2010; Betancourt, Borisova et al., 2010).

The United Nations development Programme (UNDP, 2004) promotes a community approach called “community conversations” to broaden understanding about the underlying factors, which contribute to the spread of HIV in Ethiopia, e.g. through story telling and active listening. A similar approach may be successfully applied with regard to victim-offender populations to promote social acknowledgment: Mutual understanding may be developed through the sharing of suffering. This helps individuals in society to see how they contribute to the suffering of others. Something similar was employed in the case of Hutus and Tutsis, who started a dialogue within a program promoting individual and community healing after a long history of genocide in Rwanda (King & Sakomoto, 2015). Studies indicate that such approaches are associated not only with reduced PTSD symptoms but also with a heightened acceptance of the members of former hostile groups and thus reconciliation between these groups (Staub, Pearlman, Gubin, & Hagengimana, 2005).
With regard to dialogues between different community members, terming a person as either a victim or a perpetrator may be too simplistic, as it polarizes and obscures the totality of a person (Govier & Verwoerd, 2006). This dichotomy could be countermanded by facilitating conversations between people who categorize others and those who are being categorized. For South Africans especially, it could be helpful to acknowledge the concept of Ubuntu, a traditional African perspective on life, which postulates that humanity is related to connectedness and unity and that duality in everything can be integrated, i.e. no division between “good” and “bad”, but inclusion of “good” and “bad” (Masina, 2000):

“A person is a person through other people” strikes an affirmation of one’s humanity through recognition of an ‘other’ in his or her uniqueness and difference. It is a demand for a creative intersubjective formation in which the “other” becomes a mirror (but only a mirror) for my subjectivity. This idealism suggests to us that humanity is not embedded in my person solely as an individual; my humanity is co-substantively bestowed upon the other and me. Humanity is a quality we owe to each other. We create each other and need to sustain this otherness creation. And if we belong to each other, we participate in our creations: we are because you are, and since you are, definitely I am. The “I am” is not a rigid subject, but a dynamic self-constitution dependent on this otherness creation of relation and distance. (Eze, 2010, pp. 190–191)

Realizing a culture of Ubuntu within the community, which encourages human kindness and connectedness, thus contributes to a strong support network for those affected by community violence (Benninger et al., 2016).

An important element in the practice of NET therapy, is that the therapist does not judge the patient (Crombach & Elbert, 2015). This same mechanism could be helpful in community meetings: It is necessary to distinguish between an act that is denounced as wrong since it violates someone else’s rights, and prejudging a whole person as “wrong” (Govier & Verwoerd, 2006).
Therefore, it may be helpful to have psychologists engage in the community meetings as mediators. This could also be realized by a group session within the FORNET as used in Köbach, Schaal, Hecker and Elbert (2015), in which the role change from a violent offender to a socially integrated individual is promoted (Hecker et al., 2015), and which could be extended in a form in which not only former offenders and psychotherapists, but also community members take part. Since NET is based on Testimony Therapy, the testimonies made during therapy, written down in the form of a narration, can also serve social purposes (Schauer et al., 2011): They may provide a common ground for the acknowledgment of the violent history of the former offender.

Still, when implementing such meetings, problems might occur. In fact, members of the community may refuse to take place in these meetings because of mistrust towards other members (Emmett, 2003) such as former offenders. Yet, understanding and reintegration of the “perpetrators” is essential in order to prevent re-victimization and re-offending (Govier & Verwoerd, 2006), especially since low neighborhood-attachment, for example through the perception of not being valued, forms a risk factor for (re-) joining gangs (for a review see Howell & Egley, 2005). Studies indicate that mediation programs have a positive influence on crime rates within the community: Former offenders who took part in a mediation program were less likely to reoffend (Bradshaw, Roseborough, & Umbreit, 2006) and if they reoffended, they committed less severe criminal acts (Nugent & Paddock, 1995). As indicated in this thesis, this positive effect may be due to a reduction of perceived general disapproval from the community towards the former offender, associated with a lower probability of appetitive aggression. Informing the community about these effects could serve as a motivation for the community to engage in these processes.

With regard to substance abuse, screening children and adolescents in school settings for the display of behavioral problems and drug use may be a useful first step in order to identify youth
vulnerable to substance abuse and involvement in violence, creating an opportunity for intervention (Plüddemann et al., 2010). As gang membership poses a common risk factor for both drug use and violence perpetration (Aldridge & Medina, 2008), community-based treatment programs should motivate adolescents and young adults to engage with and contract serious friendships with non-violent peers and further to resist pressures to follow deviant behavior patterns such as gang-related violence (Morojele & Brook, 2006), and drug use due to peer affiliation (Odejide, 2006). Conscious of the influence and importance of peers in the lives of South African adolescents and young adults, intervention programs should consider engaging non-violent peers as facilitators or leaders of violence prevention programs (e.g. Stevens, Wyngaard, & Van Niekerk, 2001).

6.3 Overall conclusions and future research

The establishment of community programs is vital in reducing violence and trauma in communities (Boone et al., 2003). Making sure these are truly effective requires an interdisciplinary approach. Early childhood interventions have shown promising effects with regard to young offender delinquency prevention (for a review see Zigler, Taussig, & Black, 1992).

With respect to treatment options, emphasis should be placed on therapy designs conceptualized to address both posttraumatic stress and aggressive behavior. The Narrative Exposure Therapy for Forensic Offender Rehabilitation (Crombach & Elbert, 2015) has provided promising but nevertheless preliminary results in this regard. Assistance for substance abuse or addiction should also be included (Hecker & Haer, 2015; Seedat et al., 2009). In addition, by acknowledging the violent history of an individual, and reducing disapproval from the society, crime may be reduced. We can reduce the likelihood that victims will become perpetrators, as well as halt the escalation of aggression by offenders who feel absolutely rejected by society.
Future research should compare PTSD- and aggression-related treatment outcome of (1) treatment as usual, (2) social inclusion and (3) social inclusion combined with short-term psychotherapeutic approaches such as FORNET. Dialogues between different members of a community, perpetrators as well as survivors or even those who have both attributes, may be difficult but enormously helpful to the healing process (Pasupathi et al., 2016).

The results of this thesis can be generalized to the global context with regard to the present worldwide refugee crisis: In traumatized populations, such as refugees, PTSD rates are very high (for a review see Fazel et al., 2005), and PTSD symptoms can be associated with explosive anger (Spiller et al., 2016). The marginalization of refugees by discrimination, hostility and general disapproval may promote the development of parallel societies and gang structures (Fletcher, 2009), and thereby enhance the likelihood of affected individuals becoming involved in a cycle of violence. Thus, proactive action in the form of social acknowledgment is vitally important. It would not only improve the well-being of traumatized persons, but also prevent potential victimization resulting from violence commission by violence- and war-affected individuals, and is ultimately a necessary step for the peaceful coexistence of all members of society.
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Appendix

SOCIAL ACKNOWLEDGMENT QUESTIONNAIRE (Maercker & Müller, 2004; adapted version; General disapproval; Recognition; Family disapproval)

Instruction: “When people went through difficult things the people around them react differently. Now I would like to ask you about how people reacted on violent things that happened to you in your life and violent things that you did to others.”

<table>
<thead>
<tr>
<th></th>
<th>Please indicate to which extent you agree or disagree with each of the following statements</th>
<th>Not at all</th>
<th>Slightly</th>
<th>Mostly</th>
<th>Completely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Most people cannot understand what I went through</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Somehow I am no longer a normal member of society since the violent incidents</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>The people where I live respect me more since the violent incidents</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>There is not enough sympathy for what happened to me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>The only people who really understand me are those who have been through something similar</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>My family/caregivers find my reaction to the violent incidents to be exaggerated</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Most people cannot imagine how difficult it is simply to continue with “normal” life</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>My experiences are underestimated by my family/caregivers</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>My family/caregiver feels that they have to protect me</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>My family/caregiver feels uncomfortable talking about my experiences with the violent incidents</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11</td>
<td>My family/caregiver showed a lot of understanding for my response to the violent incidents</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>My friends showed sympathy for the violent incidents that happened to me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13</td>
<td>The reactions of my acquaintances were helpful</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14</td>
<td>Usually, many people offered their help in the first few days after the violent incidents I experienced</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>Important figures of public life in my place of residence (e.g. priest) expressed their sympathy for me after the violent incidents</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16</td>
<td>My boss/superior showed full understanding for any absence of work after those incidents</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Not applicable □