

Addressing Post-traumatic Stress and Aggression by Means of Narrative Exposure: A Randomized Controlled Trial with Ex-Combatants in the Eastern DRC

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Former child soldiers and ex-combatants are at high risk of developing trauma-related disorders and appetitive aggression, which reduce successful integration into peaceful societies. In a randomized controlled clinical trial, we offered Narrative Exposure Therapy for Forensic Offender Rehabilitation (FORNET) to 15 ex-combatants with the goal of reducing traumatic stress and appetitive aggression compared to “treatment as usual.” Measures included the PTSD Symptom Scale-Interview and the Appetitive Aggression Scale assessed prior to treatment and 2 weeks and 6 months after the treatment. We also assessed closeness to combatants as an index of reintegration. The treatment

We wish to thank the former combatants and former child soldiers who participated in this study and the Congolese translators. We also want to thank the very motivated and reliable staff of the reintegration center, especially Pascal Badibanga Zagabe, Leonce Kyakimwa, Lydie Mirimo Ajua, David Ngufu, and Matata Banyene. Furthermore, we want to thank Charlotte Salmen for conducting the follow-up interviews and James Moran for conducting the follow-up interviews as well as proofreading the manuscript. Sources of support: Deutsche Forschungsgemeinschaft (DFG), vivo international. Trial registration clinicaltrials.gov Identifier: NCT01625117

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group reported reduced PTSD symptoms and less contact with combatants. Appetitive aggression decreased substantially in both groups. The results indicate that it is feasible to add psychological treatment to facilitate the reintegration process.

KEYWORDS *appetitive aggression, child soldiers, DR Congo, ex-combatants, FORNET, integration, NET, PTSD*

Experiences of war and armed conflict have a massive impact on the mental health of humans (Betancourt et al., 2010; Guy, 2009b; Hoge, 2011). Young men and boys who participate in combat often suffer from being both victims and perpetrators in armed conflicts (Betancourt, Simmons, Borisova, & Brewer, 2008; Maclure & Denov, 2006; Medeiros, 2007; Schauer & Elbert, 2010). In the ongoing conflict in the eastern Democratic Republic of the Congo (DRC) among foreign armed groups, local militias, and the Congolese governmental army, young men and boys are involved in frequent fighting (Guy, 2009b). As a consequence of the extreme forms of violence that they experience, they are at high risk of suffering from trauma-related disorders, such as post-traumatic stress disorder (PTSD; Annan, Brier, & Aryemo, 2009; Elbert, Rockstroh, Kolassa, Schauer, & Neuner, 2006; Ertl, Pfeiffer, Schauer, Elbert, & Neuner, 2011; Hill & Langholtz, 2003; Stott, 2009).

In addition to mental health problems, living in a violent environment can also result in higher rates of aggressive behavior (Betancourt et al., 2010; Schauer & Elbert, 2010) independent of PTSD. Young men formerly associated with armed groups often report that they got used to perpetrating violence and even started to perceive violence as fascinating and appealing (Elbert, Weierstall, & Schauer, 2010; Maclure & Denov, 2006). Based on our research with former child soldiers in Uganda, we introduced the concept of *appetitive aggression*, defined as perceiving aggressive behavior toward others as positive and fascinating, without gaining any immediate external benefit (Elbert et al., 2010; Hecker, Hermenau, Maedl, Elbert, & Schauer, 2012). Studies with different samples in Uganda, Rwanda, and the DRC showed that appetitive aggression can buffer the risk of developing PTSD under certain conditions and was related to higher rates of perpetrated violence (Hecker et al., 2012; Weierstall, Schaal, Schalinski, Dusingizemungu, & Elbert, 2011; Weierstall, Schalinski, Crombach, Hecker, & Elbert, 2012).

Child soldiers (defined as children associated with armed forces under the age of 18) in particular seem to be at risk of developing PTSD and appetitive aggression as a response to the violent environment (Guy, 2009a; Hermenau, Hecker, Maedl, Schauer, & Elbert, 2013; Hill & Langholtz, 2003; Weierstall, Banholzer, Haer, & Elbert, in press). Appetitive aggression can be seen as advantageous in a violent environment such as an armed group

(Weierstall et al., in press) and was related to higher ranks in child soldiers (Crombach et al., 2013; Hermenau et al., 2013). These changes in the behavior and mental state of child soldiers that are caused by war experiences can pose a challenge to reintegration (Betancourt et al., 2010; Boyden, 2003; Medeiros, 2007).

Following disarmament and demobilization, integration of ex-combatants and child soldiers into civil society is implemented to stabilize countries after armed conflicts (Annan et al., 2009; Kingma, 1997; McMullin, 2004). Reintegration programs consist of different but equally important components (Stott, 2009; Williamson, 2006). One component is formal education and vocational training (Betancourt et al., 2008). Having a perspective for the future is essential for the reintegration of ex-combatants and former child soldiers (Annan et al., 2009; Betancourt et al., 2008; Boyden, 2003; Stott, 2009). If former child soldiers and ex-combatants see no perspective for the future, many might consider voluntarily rejoining armed groups (Stott, 2009). The success of the education and training can be blocked by mental health problems and aggression (Annan et al., 2009). PTSD symptoms like concentration problems, flashbacks, sleeping problems, and hyperarousal can lead to impaired functionality and a greater risk of dropping out of the program (Betancourt et al., 2008; Mogapi, 2004). Likewise, aggressive behavior that leads to interpersonal problems can cause discontinuation of reintegration programs (Boyden, 2003). If ex-combatants drop out of the reintegration programs, they are at high risk for violent and delinquent behavior. This is also true for sexual violence. In the eastern DRC, rates of reported rape committed by civilians (including ex-combatants) increased, whereas rates of reported rape committed by armed groups remained stable (Bartels et al., 2011; Kalisya et al., 2011). Bartels et al. (2011) concluded that one reason for the increase in civilian rape is probably the failed reintegration of ex-combatants. In a study with former Congolese child soldiers, we found that high appetitive aggression is related to repeated reenlistment in armed groups (Hermenau et al., 2013). Participants reporting high appetitive aggression had a long history of failed reintegration. Consequently, reintegration programs need to address mental health and aggression so that ex-combatants can fully profit from integration efforts (Hill & Langholtz, 2003). Furthermore, they need to find closure with their past as well as change their self-image from “combatant” to “civilian” (Boyden, 2003; Williamson, 2006). Even though some reintegration programs include a counseling or psychosocial component, they are often not evaluated and adjusted to the individual combatant’s needs (Hoge, 2011; Maedl, Schauer, Odenwald, & Elbert, 2010; Malan, 2000; Mogapi, 2004; Stott, 2009). Stott (2009) stated that reintegration programs shifted their focus from individual psychological help to a community level, neglecting that social reintegration can only be successful if individual psychological suffering is addressed as well. A combination of the essential components of reintegration, like community approaches and economic

support, with psychological support might be most effective in targeting successful reintegration (Betancourt et al., 2008; Mogapi, 2004; Stott, 2009).

Based on our working experience in Uganda, Rwanda, and the DRC, we developed an intervention to bridge this gap in reintegration programs. It broadly follows the logic of the evidence-based trauma-focused narrative exposure therapy (NET; Ertl et al., 2011; Hoge, 2011; Schauer, Neuner, & Elbert, 2011). However, we adapted it to address both traumatic experience and perpetrated violence. As Medeiros (2007) stated, it is crucial to overcome the dichotomy of victim and perpetrator to address the complexity of the former combatants' feelings and experiences.

The Narrative Exposure Therapy for Forensic Offender Rehabilitation (FORNET) aims to reduce both PTSD symptoms and appetitive aggression by recalling the experiences through narrative exposure. It helps the former combatant to anchor not only fearful and traumatic experiences, but also positive feelings that might have been linked to various forms of aggressive behavior in the past. The role change from a combatant to a civilian is specifically addressed and reinforced. Additionally, visions for the future are developed to foster successful integration into society. We conducted a pilot study in the eastern DRC with former combatants and child soldiers participating in a reintegration program offering vocational training and education. We hypothesized that the treatment with FORNET would reduce both PTSD symptoms and the level of appetitive aggression and, with it, aggressive behavior 6 months posttreatment. Furthermore, we predicted that FORNET would help ex-combatants find closure with their military past and foster integration into civil society.

METHOD

Sample

All interviews and therapies were conducted in a reintegration center led by a Congolese nongovernmental nonprofit organization for war-affected youth in Goma, DRC. Only male former combatants and child soldiers who reported combat experience were included in this study (from now on denoted as ex-combatants); the initial sample consisted of 58 participants. They were enrolled in a 1-year vocational training in different manual trades to foster their reintegration process. Additionally, the reintegration center offered them support through social workers. At the start of the treatment, these ex-combatants had already participated for 8 months in the vocational training.

Participants were on average 19.00 years old ($SD = 2.02$, range = 16–25) and reported on average 6.13 years of formal education ($SD = 3.98$, range = 0–14). They joined the first armed group with an age of 12.40 years ($SD = 2.65$, range = 5–18) and stayed on average 3.60 years with armed

groups ($SD = 3.98$, range = less than 1 year–10 years). They joined one to four ($M = 1.83$, $SD = 0.87$) armed groups belonging to a wide range of militia and self-defense groups, including the Forces démocratique pour la libération du Rwanda (FDLR [Democratic Forces for the Liberation of Rwanda]), Congès nationale du peuple (CNDP [National Congress of the People]), and several local Mai-Mai militia groups.

Design and Procedure

Out of a sample of 58 participants at the baseline assessment, we included all 38 participants who were present at the time of the pretest at the reintegration center and matched them into 19 pairs of ex-combatants (see Figure 1). We then randomly assigned one member of each pair to the treatment group and the other one to the control group. The series of random numbers was obtained via <http://www.random.org>. Matching criteria were symptoms of posttraumatic stress, assessed with the PTSD Symptom Scale-Interview (PSS-I), and appetitive aggression, assessed with the Appetitive Aggression Scale (AAS), at the baseline assessment (see Table 1). Thus, our treatment group and control group both contained not only extremely burdened ex-combatants but the full spectrum of severity. We had four dropouts in the treatment group: Two therapies could not be completed, one due to transferal into another program and one due to the participant's motivational reasons; a third participant had to be excluded due to inconsistent answers and the fourth participant could not be relocated for the follow-up assessment. For the analyses, we also had to exclude the matched controls of the dropouts. Thus, we included $n = 15$ matched pairs in the analyses (see Figure 1).

Participants were informed that their participation would be entirely voluntary and that no monetary compensation would be offered. All persons were willing to participate and provided their informed consent verbally. In addition, the head of the reintegration center gave his informed consent for underage participants, as their caregivers had either died or were not available. The Ethical Review Board of the University of Konstanz and the local authorities of the collaborating organization approved this study.

The authors and two additional interviewers, who were all psychologists from the University of Konstanz and had extensive work experience in East Africa, conducted the interviews and implemented the intervention. Three highly experienced interpreters, who were trained in the concepts of mental disorders, aggression, and FORNET, translated from English to Kiswahili and Kinyarwanda. As these interpreters have served on several occasions investigating gender-based violence and trauma in the eastern DRC since 2009, a refresher training describing the specific aspects of this study of 2 days proved sufficient. The translated instruments were already used in comparable studies (Hecker et al., 2012; Hecker et al., 2013). One of the authors speaks Kiswahili and thus could assure valid translation and supervise the

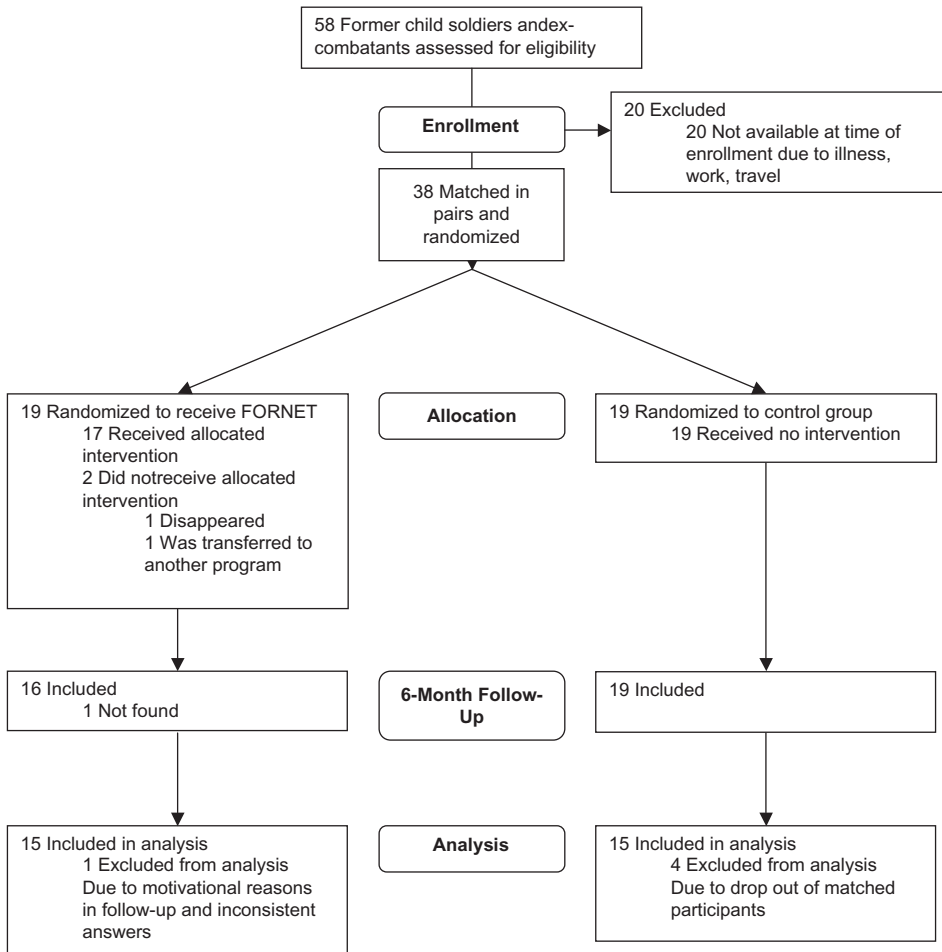


FIGURE 1 Flow of participants through the study.

work of the interpreters. With the help of an interpreter, each participant was interviewed individually in a calm, quiet setting. The pairing of interviewers and translators was continuously rotated. The interview took on average 1 hr.

First, we assessed PTSD and appetitive aggression at the baseline assessment (see Figure 1). Four months later, we conducted pretreatment interviews with all participants. Subsequently, the treatment group received FORNET. The sessions were usually scheduled every other day, which led to a total duration of about 2 weeks for every FORNET. Participants in both groups (FORNET and control group) were reinterviewed 1 to 2 weeks after the last FORNET session and 6 months later (follow-up). At follow-up, all former combatants had completed their vocational training, which marked the end of the support of the reintegration center. They received a certificate and started to look for work (i.e., their real reintegration challenge began).

TABLE 1 Changes in Post-traumatic Stress Disorder Symptom Severity, Levels of Aggression, and Closeness to Combatants across the Assessment Points in the Treatment and the Control Group

	Treatment group ^a		Control group ^a	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
PSS-I score baseline	10.20	5.92	10.47	7.42
PSS-I score pre	14.31	10.64	11.20	9.14
PSS-I score post	11.47	5.18	13.73	5.81
PSS-I score follow-up	8.93	7.61	16.53	12.46
AAS score baseline	32.20	12.77	32.73	13.93
AAS score pre	33.13	7.63	29.27	14.64
AAS score post	26.93	11.13	25.53	14.09
AAS score follow-up	11.93	8.62	10.93	9.67
Preparedness to rejoin pre	0.60	1.06	0.87	1.13
Closeness to combatants pre	3.53	1.77	3.07	1.79
Closeness to combatants post	2.07	1.28	2.73	1.83
Closeness to combatants follow-up	2.13	1.89	2.80	1.82

Note. PSS-I = PTSD Symptom Scale-Interview; AAS = Appetitive Aggression Scale.

^a*n* = 15.

At the same time, the conflict in the Kivu region intensified once more, as a part of the Congolese military deserted and armed groups could again gain important territories. Most of the participants were still living in Goma, but some of them were situated in other areas in the Kivu provinces. With the help of the reintegration center, we were able to relocate 33 participants. Blind interviewers conducted a follow-up interview with each of them. After the interview, each participant received US \$5 as compensation and—if necessary—transportation fees.

Measures

To reduce potential cultural bias, all instruments were applied as interviews by clinical experts and the same interview set was used at pre-, post-, and follow-up assessment, with minor changes to take the varying situational context of each assessment into account. In addition, a baseline assessment was conducted 4 months prior to the pretest and treatment. At the baseline assessment, only PTSD and appetitive aggression were assessed. The baseline data were used for the assignment to treatment and control group.

SOCIODEMOGRAPHIC DATA AND INFORMATION ABOUT THE DISARMAMENT, DEMOBILIZATION, AND REINTEGRATION (DDR) PROCESS (ONLY PREASSESSMENT)

The first part of the interview consisted of information about the age, place of birth, and level of education of the interviewee. Additionally, we asked about their experience of being in armed groups.

MENTAL HEALTH

Symptom severity of PTSD was assessed using the PSS-I (Foa, Riggs, Dancu, & Rothbaum, 1993). It consists of 17 items, in which each item corresponds to one PTSD symptom as specified in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [DSM-IV]; American Psychiatric Association, 1994). Each symptom is rated on a 4-point scale (0–3) in terms of the frequency of the symptom in the past 4 weeks. A PSS-I score (range = 0–51) was computed by totaling the frequency scores for all symptoms. The PSS-I was validated in the African Great Lakes region by Ertl et al. (2010). The Cronbach's alpha coefficient was $\alpha = .86$ and the interrater reliability .93 for the PSS-I sum score (Foa & Tolin, 2000). Cronbach's alpha for this study ranged between $\alpha = .67$ and $\alpha = .91$.

APPETITIVE AGGRESSION

Appetitive aggression was assessed with the 15-item AAS (Weierstall & Elbert, 2011), which has been validated with more than 1,600 ex-combatants and former child soldiers and has demonstrated good psychometric properties in comparable samples of former child soldiers and combatants (Hecker et al., 2012; Weierstall et al., 2011; Weierstall et al., 2012). Each item consists of a question regarding the perception of violence or appetitive aggression (e.g., Is it exciting for you if you make an opponent really suffer?; Once fighting has started, do you get carried away by the violence?; Is fighting the only thing you want to do in life?). The interviewer rates the level of the interviewee's agreement on a 5-point Likert scale. Cronbach's alpha coefficient of the sum score was .85 (Weierstall & Elbert, 2011). For this study, Cronbach's alpha ranged between $\alpha = .76$ and $\alpha = .87$. For the analyses, a sum score of all 15 items was computed, ranging from 0 to 60.

INTEGRATION

We asked six questions about current contact with combatants. This gave us a measure of the current closeness to military life, which conversely provided us with an index of level of integration into civil life. The questions included, for example, contact with active combatants, former commanders, and delinquent former combatants who are not successfully integrated into civil society (for details, see Table 2). We computed a sum score ranging from 0 to 6, in which a higher score stands for higher closeness to combatants and lower integration into civil life. For this study, Cronbach's alpha was $\alpha = .68$ due to the heterogeneity of the questions.

At preassessment, we assessed the preparedness to rejoin armed groups with the help of three questions. One question asked if the combatant would have a feeling of losing something if they rejoin an armed group (reversed

TABLE 2 Items to Assess the Current Closeness to Military Life

Closeness to combatants

-
- Have you spoken to or heard from your former unit during the last 4 weeks?
 Have you spoken to or heard from any current combatants in the last 4 weeks?
 Have you been offered a job as a soldier or combatant since you have left the last armed group or army?
 Do you know how to contact your former commander?
 Do you know any former comrades who have engaged in criminal activities in the last 4 weeks?
 Do you know any former comrades who left the armed group, but are now combatants again?
-

item). We also asked about the probability of joining an armed group again and specific plans to realize this. The total score ranged from 0 to 3, with a higher score representing a higher preparedness to rejoin armed groups.

Narrative Exposure Therapy for Forensic Offender Rehabilitation

The guidelines for FORNET have only been published in German (Elbert, Hermenau, Hecker, Weierstall, & Schauer, 2012), which together with an unpublished extension, served as the guiding manual. For clarity, we detail it in the following section. Several studies have shown that NET can be effective within four to six sessions (Neuner et al., 2008; Neuner, Schauer, Klaschik, Karunakara, & Elbert, 2004; Schaal, Elbert, & Neuner, 2009). The effectiveness as a short-term intervention is essential for implementing NET or FORNET in unstable environments like a refugee camp or a region of ongoing conflict like the eastern DRC. Correspondingly, the treatment in this study consisted of six sessions in total. Five of these were individual sessions and one was a group session. Each session lasted between one and two hours.

INDIVIDUAL SESSIONS

In the first session, after psychoeducation the client begins with the “lifeline” exercise. Following the logic of NET (Schauer et al., 2011) the ex-combatant lays out his path of life along a rope or string, which symbolizes the person’s life up until now. He places flowers on the string for happy major events and good times in life and stones for fearful and traumatic events. In addition, we introduced sticks to symbolize active involvement in violent acts. In this way, combat, participation in a massacre, rape, and other such events were not colored by a priori moral judgment. Using the stick as a symbol also avoids imposing any particular emotional valence on the violent acts. This is important, as these are frequently emotionally ambivalent situations. For

the violent acts in particular, the therapist focuses on the first time they perpetrated violence (e.g., first killing, first rape, first experience of looting). Additionally, the therapist asks about violent acts involving strong emotions, which are therefore easily cued by reminders (e.g., fight in which he felt most powerful, fight in which he felt most fear, fight in which a close friend was injured or killed). The entry into and the exit out of an armed group both mark important moments in the life of the combatant. Thus, the entry and the exit of each armed group should be marked or at least mentioned during the lifeline exercise. The client is free to choose symbols and also to combine them. Hence, sticks can also be combined with stones or flowers to emphasize the complex emotions felt during the active involvement in violent acts.

The following four sessions are closely based on the approach of NET, including the unconditional acceptance of every emotion. Both the recall of positive and of negative affective responses are encouraged even when the worst offenses are recalled. The therapist encourages the client to verbalize and relive all the feelings connected to perpetrated violent acts. It is essential that the therapist takes an accepting and supporting rather than judging position. The therapist also guides the client to contrast between now and then. Besides the feelings and cognitions of the past, the client's current view of the event, including his thoughts, feelings, and bodily sensations, is taken into account.

The therapist supports the client in following his lifeline chronologically from his birth to the present time. As in NET, the therapist has an active role and helps the client to relive the emotions, cognitions, and bodily sensations experienced during his most traumatic events (stones) and while perpetrating violent acts (sticks). The memorized feelings (e.g., then I was shocked and afraid) are contrasted with the feelings that arise in the here and now when the memories are recalled (e.g., when I think back, I get angry). In this way, the therapist helps the client to anchor the cognitions and emotions that are recalled with the event in the past. Both traumatic experiences and perpetrated violent acts become integrated into the memory. After the exposition of a violent act, an attribution of meaning from the client's current point of view can be elaborated. Moral judgments, especially by the therapist, should be avoided.

During the sessions, the therapist focuses on the most traumatic events and specific perpetrated violent acts that are connected to strong emotions and positive arousal (sensation of being powerful) or negative arousal (fear). The violent acts are commonly the first killing or attack of other humans, rape, or looting. In consideration of the limited number of sessions, it is essential to select, with the help of the lifeline exercise, the events that are most important to the client. A detailed description of the approach on different violent events can be found in Elbert et al. (2012). In the following, we describe a typical example of dealing with the first killing or injury: While

focusing on the first killing or injuring of another person by the client, the therapist should fully explore all emotions, both negative and positive, that were potentially linked to the first killing (primary emotions like disgust, fear, or joy and self-conscious emotions like guilt or pride), following the logic of NET. It is important to go through the first killing or injuring in great detail, to emphasize subsequent changes in the case of repeated violent acts. During the first killing or injuring, it often happens that the client becomes keenly aware of his or her own vulnerability. This cognition should be verbalized during therapy along with any sensations, including the description of the victim (What did the victim look like? Did he scream? Did he bleed?). Finally, the therapist and client focus on how the client overcame the inhibition threshold to kill or injure another person. The therapist concentrates on the cognitions (outgroup, enemy) and emotions that made the client overcome this threshold (e.g., fear, anger, feelings of hatred or revenge). Subsequently, the client is encouraged to mention his current thoughts, feelings about the event, and the meaning for him and his life.

Furthermore, the last exit out of an armed group is discussed in detail. The therapist and the client collect reasons for leaving the armed group and focus on the negative experiences as a combatant.

During the last individual session, the autobiography finally reaches the present and the narration of the most emotionally arousing events in chronological order is thus completed. With the help of the therapist, it is now possible for the client to understand his development. This provides a strong basis for discussing future developments. At the end of the therapy, the therapist and the client also elaborate hopes and wishes for the future.

GROUP SESSION

A group session follows these five individual sessions. In the group session, the role change from combatant to civilian is addressed and reinforced. A group consists of three to four clients and one or two therapists. The therapist structures and guides the discussion. He or she encourages the clients to hold and discuss different views and to be open to the experiences of others. Furthermore, the therapist encourages them to take responsibility for their own lives and to develop aims to foster successful reintegration into civil society.

At first, the clients review their own lives as a combatant and discuss the positive and negative aspects of being a combatant. At this point, the old role of a combatant is discussed in a broader sense, as clients might not wish to disclose specific experiences addressed during the individual sessions. Subsequently, the therapist focuses on the role change from combatant to civilian and on the connected feelings and emotions of the clients (e.g., How difficult was it to hand over your weapon? How did you feel when you actually did it—how do you feel about it right now?). In the following

part, the therapist directs the discussion to the current situation. The clients then have a discussion among themselves regarding positive aspects and difficulties in their current life as a civilian and collect advantages of being a civilian in comparison to being a soldier. The therapist encourages them to develop strategies together to overcome their difficulties. The group session ends with the future plans and wishes of each client and thoughts about the realization of these plans.

Data Analysis

No variable deviated significantly from normal distribution and variance–covariance matrices showed homogeneity. Therefore, we used parametric analyses including *t* tests, repeated-measures analysis of variance (ANOVA), and analysis of covariance (ANCOVA). Due to the directional hypotheses, analyses were computed one-tailed on an alpha level of $\alpha = .05$. Concerning the effect size, $\eta^2 \geq .01$ indicates a small effect, $\eta^2 \geq .06$ a moderate effect, and $\eta^2 \geq .14$ a large effect. Cohen's *d* was considered small with $d \geq 0.20$, moderate with $d \geq 0.50$, and large with $d \geq 0.80$. All analyses were performed with version 20 of the SPSS software.

RESULTS

Table 1 shows the symptom level of PTSD, levels of appetitive aggression, and closeness to combatants in the two groups for each of the baseline, pre-, post-, and follow-up assessments as well as preparedness to rejoin an armed group at preassessment.

Posttraumatic Stress Symptoms

We performed a repeated-measures ANOVA on the PSS-I scores of baseline, pre-, post-, and follow-up assessment. The independent variable was treatment group versus control group. The Mauchly Test indicated a violation of sphericity, so the Greenhouse–Geisser correction was applied. PSS-I scores showed no statistically significant main effect over the four points of assessment and no statistically significant main effect of the group variable was found. The PSS-I score varied between groups over the four points of assessment, $F(3, 84) = 2.61$, $p = .036$, with a moderate effect of $\eta^2 = .09$. A *t* test comparing pre- and follow-up PSS-I scores within each group revealed a tendency toward a difference between the pre- and follow-up score in the treatment group, $t(14) = 1.74$, $p = .052$, whereas the increase for the control group was not significant, $t(14) = -1.5$, $p = .078$, $d = 0.48$. Cohen's *d* indicated a moderate effect for the decrease

in the treatment group with $d = 0.58$. The ANCOVA for between-groups effects revealed that both groups differ significantly in their follow-up PSS-I scores while controlling for preassessment scores, $F(1, 27) = 4.70, p = .020$, with a large effect of $\eta^2 = .15$. As shown in Table 1, the treatment group reported less PTSD symptom severity than the control group at the follow-up assessment.

Level of Appetitive Aggression

We performed a repeated-measures ANOVA on the AAS scores of baseline, pre-, post-, and follow-up assessment. The independent variable was treatment group versus control group. We found a main effect of the AAS score over time, $F(3, 84) = 36.89, p < .001, \eta^2 = .57$. Both groups' AAS scores decreased over the four points of assessment (see Table 1). However, the groups did not differ significantly, nor did the AAS score significantly vary between groups over time, $F(3, 84) = .33, p = .402, \eta^2 = .01$.

Closeness to Combatants

To test the integration hypothesis, we conducted an ANCOVA on closeness to combatants scores of pre-, post-, and follow-up assessment. The independent variable was treatment group versus control group. Preparedness to voluntarily rejoin armed groups was entered as a covariate, as preparedness has been found to be related to failed reintegration (Stott, 2009). Following Tabachnik and Fidell (2007), we included the covariate to adjust the mean of the dependent variable to simulate the case that all participants would have scored equally on the covariate. The closeness to combatants score showed a statistically significant main effect over the three points of assessment, $F(2, 54) = 2.43, p = .049, \eta^2 = .08$. We found no statistically significant main effect of the group variable. The covariate interacted significantly with the closeness to combatants over time, $F(2, 54) = 3.68, p = .016, \eta^2 = .12$. The closeness to combatants score varied between groups over the three points of assessment, $F(2, 54) = 2.51, p = .046$, with a medium effect of $\eta^2 = .09$. A t test comparing pre- and follow-up scores within each group revealed a significant difference between the pre- and follow-up assessment score in the treatment group, $t(14) = 2.12, p = .026$, whereas we found no difference in the control group, $t(14) = 0.64, p = .268$. Cohen's d indicated a moderate effect for the decrease in the treatment group with $d = 0.77$ and almost no effect in the control group ($d = 0.15$). An ANCOVA with the preassessment score and the preparedness to voluntarily rejoin armed groups as covariates showed no significant difference between treatment and control group at the follow-up assessment, $F(1, 26) = 2.15, p = .078, \eta^2 = .08$. Means are displayed in Table 1.

DISCUSSION

Reintegration of young men formerly associated with armed groups can only be successful if the essential needs of the ex-combatants are considered (Mogapi, 2004; Stott, 2009). Psychological suffering has to be addressed in combination with other reintegration components like community approaches and education to ensure successful reintegration (Betancourt et al., 2008; Stott, 2009). In this study, we implemented FORNET in a reintegration center to address symptoms of post-traumatic stress as well as appetitive aggression. This intervention was hypothesized to help the participants to be able to profit entirely from the reintegration program. We hypothesized that the treatment group would show lower PTSD symptoms and appetitive aggression, and would be better reintegrated than the control group 6 months after the treatment.

The hypothesis that FORNET would be superior to a control group in reducing the severity of PTSD symptoms at follow-up assessment was supported. The treatment group differed significantly from the control group over time. In contrast to the control group, the treatment group showed a decrease in PTSD symptoms. The moderate effect is not surprising, as we included all ex-combatants (i.e., also those with limited PTSD symptoms and only a few presented with a full PTSD diagnosis). This seems to be justified given that symptoms might increase with time and in fact, controls showed a tendency toward increased severity of PTSD symptoms, potentially promoted by the unstable situation in the eastern DRC with increasing tension. The former combatants were confronted with insecurity and combat situations, which might act as potential triggers of their traumatic experiences. Despite these adverse conditions, we still observed an improvement in the treatment group. Although controlling for preassessment scores, the treatment group differed significantly from the control group at the follow-up assessment.

In general, the findings are consistent with other studies implementing NET (Ertl et al., 2011; Schauer et al., 2011) to reduce PTSD symptoms. Moreover, this pilot study shows that FORNET successfully reduces PTSD symptoms in former child soldiers and ex-combatants in a current conflict zone. Before this study, child soldiers were treated only as victims. In contrast, we addressed the whole range of experiences of former child soldiers and ex-combatants accepting their past as having been both victims and perpetrators. Besides the work with traumatic experiences, we demonstrated that it is also feasible to therapeutically reprocess with former combatants their experiences of perpetrating violence.

Our results do not support the hypothesis that FORNET is superior to the control group in reducing levels of appetitive aggression. Both groups decreased over time. This overall decrease might be due to the reintegration program in which the participants were enrolled. The reintegration center offered them not only vocational training and education, but also social support. During the reintegration program, participants learned how to act

and interact in a civil context. This might have supported a role change from combatant to civilian (Boyden, 2003; Williamson, 2006), which in turn produced a decrease in appetitive aggression. Therefore, it is possible that the reduction in aggression might mainly be a result of the comprehensive program of the reintegration center. Moreover, the AAS might not be sensitive enough to measure the subtle and complex changes in the mind of ex-combatants. The questions of the AAS are strongly related to armed conflict and might not fit the circumstances of civil life. This study cannot determine the influence of FORNET on appetitive aggression beyond the general decrease in reported appetitive aggression due to the reintegration program. Future research should investigate more closely the effect of FORNET not only on the subjective appetitive aggression but also on aggressive behavior in general by using self-report and reports by others as well as more objective measures (e.g., biological markers like the response or average levels of testosterone and cortisol). Furthermore, it would be helpful to include the participant's perspective on his perpetrated acts before and after the therapy to evaluate a possible change of perspective.

Concerning reintegration, we found that on average both groups reported being less close to combatants over time. This might be due to the support through the reintegration program. All participants started to change their role from combatant to civilian (Boyden, 2003; Williamson, 2006). However, the treatment group differed from the control group. Within-group comparisons of pre- and follow-up scores revealed that participants treated with FORNET reported significantly less closeness to combatants with a moderate effect, whereas the control group showed no significant difference between pre- and follow-up scores. The treatment group reported less contact with active combatants as well as delinquent ex-combatants. Through FORNET, they found closure with their military life and oriented more toward civil life. However, we did not find a significant difference between groups in the follow-up scores, controlling for preassessment scores and the readiness to rejoin armed groups. Other measures of reintegration were difficult to implement as the participants were at the end of the program and just starting to look for work. Therefore, we could not use common markers like work, marriage, or land ownership. Furthermore, the ongoing conflict in the eastern DRC poses additional challenges to young men struggling to reintegrate. Infrastructure and economy barely exist. Many ex-combatants stayed in Goma instead of going back to their villages due to the danger of combat in the villages and the risk of being forcibly recruited again. However, other studies stated that PTSD symptoms and aggressive behavior hinder the success of vocational training (Annan et al., 2009; Betancourt et al., 2008; Boyden, 2003) and that the transition from combatant to civilian is essential for efficient reintegration (Williamson, 2006). Using FORNET in combination with vocational training and social support, we addressed both successfully. It was possible to bridge the gap of reintegration programs even under the circumstances of ongoing conflict in the eastern DRC. This pilot study proved

the feasibility of FORNET, found the first evidence of a positive outcome, and highlighted the importance of addressing the whole range of experiences while treating former combatants. Further studies might investigate if it would be beneficial to increase the number of group sessions as well as to include other treatment modules such as anger management in the group sessions.

Some methodological aspects limit the generalization of these findings. We included a small sample recruited from only one reintegration center in the pilot study; therefore, the sample might not be representative for ex-combatants in the eastern DRC. Furthermore, all reintegration centers have slightly different programs. Although we had comparatively few dropouts, it is still important to keep in mind that two participants were excluded in the beginning of the treatment phase and two more during follow-up assessment. Moreover, the ongoing conflict in the eastern DRC might have influenced the ex-combatants in various ways. Although the majority of the participants stayed in Goma, some went back to their village and many still have relatives living in combat zones. The unstable situation might have influenced their mental health status in different ways. All in all, the former child soldiers and combatants talked very openly about their experiences and mental health. They appreciated the opportunity to share their own experiences. However, a potential bias, like social desirability, can never be entirely ruled out for subjective reports.

CONCLUSION

In this pilot study, we treated young men formerly associated with armed groups with FORNET to support them in their struggle for reintegration. By means of narrative exposure we were able to reduce posttraumatic stress and also closeness to combatants, relative to a matched control group. Ex-combatants treated with FORNET were more able to find closure with their past. Appetitive aggression decreased substantially in both groups. Despite the challenges in an ongoing conflict zone, we showed that it is feasible to implement psychological treatment in a reintegration center focusing on the whole range of experiences, thus bridging the gap in reintegration programs. To achieve successful reintegration of ex-combatants, it is desirable to combine economic and community-based approaches with psychological elements aiming to reduce traumatic stress and aggression in burdened ex-combatants.

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