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Posttraumatic Resilience in Former Ugandan Child Soldiers

Fionna Klasen
University Medical Center of Hamburg and University of Hamburg

Gabriele Oettingen
New York University and University of Hamburg

Judith Daniels
University Medical Center of Hamburg

Manuela Post and Catrin Hoyer
University of Hamburg

Hubertus Adam
University Medical Center of Hamburg

The present research examines posttraumatic resilience in extremely exposed children and adolescents based on interviews with 330 former Ugandan child soldiers (age = 11–17, female = 48.5%). Despite severe trauma exposure, 27.6% showed posttraumatic resilience as indicated by the absence of posttraumatic stress disorder, depression, and clinically significant behavioral and emotional problems. Among these former child soldiers, posttraumatic resilience was associated with lower exposure to domestic violence, lower guilt cognitions, less motivation to seek revenge, better socioeconomic situation in the family, and more perceived spiritual support. Among the youth with significant psychopathology, many of them had symptoms extending beyond the criteria for posttraumatic stress disorder, in keeping with the emerging concept of developmental trauma disorder. Implications for future research, intervention, and policy are discussed.

I want to get married, buy a bicycle, and put up a building. (13-year-old boy, former child soldier)

I want to get a sewing machine so that I keep on making clothes and sell them to get some money. (15-year-old girl, former child soldier)

I will be a person who is responsible in the community; I will be an honest person; I will be a person who helps people. (16-year-old boy, former child soldier)

Note. Quotations stem from the interviews of the present study.

Millions of children around the globe suffer the consequences of armed conflicts. One of the most complex and severely traumatized group of war-affected children are child soldiers. Despite international bans, more than 250,000 children and adolescents are exploited as soldiers worldwide, almost half of them in Africa (Office of the Special Representative of the Secretary-General for Children and Armed Conflict, 2006). The term *child soldier* refers to any person under 18 years of age associated with an armed force or armed group in any capacity ranging from combatants to cooks (United Nations Children's Fund [UNICEF], 2007). During their time as soldiers, these youth are brutalized and cruelly abused by armed groups, and often forced to commit atrocities themselves. The literature on the psychological consequences of child soldiers' experiences is only now emerging and consists mainly of interview-based, ethnographic case studies (Betancourt et al., 2008). The ideological commitment of child soldiers (Kanagaratnam, Raundalen, & Asbjornsen, 2005), the situation of girl soldiers (McKay, Robinson, Gonsalves, & Worthen, 2006), the reintegration and psychological rehabilitation (Betancourt et al., 2008; Medeiros, 2007), and mental health status of former child

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Correspondence concerning this article should be addressed to Fionna Klasen, Department of Child and Adolescent Psychiatry and Psychotherapy, University Medical Center Hamburg, Martinistrasse 52, 20246 Hamburg, Germany. Electronic mail may be sent to f.klasen@uke.uni-hamburg.de.

soldiers (Bayer, Klasen, & Adam, 2007; Derluyn, Broekaert, Schuyten, & De Temmerman, 2004; Kohrt et al., 2008) have been investigated.

One of the most impressive phenomena of child development is the ability of many children to develop into healthy, well-adapted adults despite adversity and trauma. The current research addresses this underresearched phenomenon of positive adaptation following exposure to extremely adverse conditions of armed conflict and domestic violence.

Traumatic Experiences in Children and Adolescents

Many experiences of children in armed conflict can be classified as traumatic. A stressor is defined as traumatic when it threatens an individual's life or physical integrity and elicits a subjective response of fear and helplessness (American Psychiatric Association, 2000). This definition includes both objective characteristics of the event and subjective responses on the victim's side. Terr (1991) proposed a framework for childhood trauma that distinguishes between single-incident trauma (Type I) and repeated or prolonged trauma (Type II). These Type II traumas have been also termed *complex trauma* (Herman, 1992; van der Kolk, 2005) and describe the ''experience of multiple, chronic and prolonged, developmentally adverse traumatic events, most often of an interpersonal nature (e.g., sexual or physical abuse, torture) and early-life onset'' (van der Kolk, 2005), which are characteristic of the experiences of child soldiers.

Such experiences have detrimental effects on children's development. When exposed to unpredictable and uncontrollable danger, a child will immediately react to frightening stimulus with fight, flight, or freeze response without being able to learn from the experience. Resources normally dedicated to growth and development are allocated to survival instead (van der Kolk, 2007). This means they may not be able to complete developmental tasks, for example, the development of secure attachment relationships, of a stable and integrated self-concept, and of the competence to self-regulate emotion and behavior (van der Kolk, 2005).

Multiple Posttraumatic Outcomes in Children and Adolescents

Psychopathological Outcome

Children exposed to traumatic events are at risk of developing psychopathological symptoms (Pynoos, Steinberg, & Wraith, 1995; Yule, 2002). Terr (1991) described four characteristics related to childhood trauma that appear to last for long periods of time, regardless of the diagnosis. These are: repeatedly intrusive memories of the traumatic event, repetitive behaviors, trauma-specific fears, and altered attitudes toward people, life, and the future. The introduction of a new psychiatric disorder termed *posttraumatic stress disorder* (PTSD) in 1980 was an attempt to establish a diagnostic category to describe trauma reactions in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders*, 3rd Edition (*DSM–III*; American Psychiatric Association, 1980). The symptoms include repeated and unwanted reexperience of the event, hyperarousal, and avoidance of stimuli that could remind of the event. PTSD rapidly became the most frequently used outcome measure in the trauma literature.

Regarding prevalences of PTSD in former Ugandan child soldiers, two recent studies found that about one third (27%–34.9%) of Ugandan child soldiers developed the disorder according to *DSM–IV* criteria (Bayer et al., 2007; Okello, Onen, & Musisi, 2007). Other studies measured posttraumatic stress symptoms (PTSS) and indicated that almost all former Ugandan child soldiers (97%–98%) suffer from clinically significant PTSS (Amone-P'Olak, Garnefski, & Kraaij, 2007; Derluyn et al., 2004). These numbers seem much higher than the above reported prevalence rates on PTSD as they also include child soldiers with only moderate levels of symptoms. Even if not as thoroughly investigated as PTSD, other psychiatric sequelae are also common in war-affected children, particularly depression and anxiety disorders, dissociation, somatic complaints, as well as behavioral problems like aggressive and disruptive behavior (Qouta, Punamaki, Miller, & El-Sarraj, 2008; Shaw, 2003; Thabet, Abed, & Vostanis, 2004). Some studies on child soldiers concentrated solely on PTSD symptoms (Bayer et al., 2007; Derluyn et al., 2004), but recent research also indicates high prevalence rates for depression and anxiety (Kohrt et al., 2008; Okello et al., 2007).

When investigating war-traumatized children, two debates in the trauma literature are of crucial relevance. First, the diagnosis of PTSD might not integrate the full range of psychological sequelae following prolonged and repeated complex traumatic exposure (Herman, 1992), and second, the diagnosis of PTSD might not be developmentally sensitive (van der Kolk, 2005). Referring to both arguments, van der Kolk (2005) proposed the concept of developmental trauma disorder (DTD). This concept is close to what has been also described as *complex*

PTSD (Herman, 1992) or disorders of extreme stress not otherwise specified (DESNOS; Pelcovitz et al., 1997). Key features of DTD are emotional dysregulation, disturbed attachment patterns, behavioral reenactment (e.g., aggressive behavior), and persistently altered attributions and expectancies. Diagnostic criteria for DTD have been proposed by the Complex Trauma Task Force of the National Child Traumatic Stress Network (van der Kolk, 2007), but valid self-report measurements have yet to be developed. For assessing DTD, the Complex Trauma Task Force recommends a combination of PTSD measures and other measures of childhood psychopathology (e.g., Youth Self-Report [YSR]; Achenbach, Cook, Blaustein, Spinazzola, & van der Kolk, 2003). DTD has been proposed as new childhood trauma diagnosis for *DSM–V* (van der Kolk, 2005).

Resilient Outcome

Even in the face of severe adversity, some individuals show no signs of psychopathology. Already during the 1970s, the seminal work of Norman Garmezy, Michael Rutter, and Emmy Werner pointed out that a considerable proportion of children showed no pathology and high levels of competence, despite suffering risk experiences that would be expected to produce serious sequelae (Garmezy, Masten, & Tellegen, 1984; Rutter, 1987; Werner & Smith, 1982). This phenomenon is referred to as *resilience*.

There is an ongoing debate on whether resilience should be conceptualized as a personality trait or a mental health outcome (Luthar, Cicchetti, & Becker, 2000; Masten, 2007). Even when resilience is conceptualized in terms of outcome, conceptualizations vary in defining resilience as the absence of negative outcome, presence of positive outcome, or a combination of both. Recent approaches go even further and conceptualize resilience as a dynamic process when analyzing how risk and protective factors corroborate in modulating the impact of traumatic experiences on mental health outcome (Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2003; Rutter, 1987).

In the face of highly adverse risk factors such as traumatic events, the absence of pathology is remarkable and may serve as the definition of resilience (Hoge, Austin, & Pollack, 2007; Vanderbilt-Adriance & Shaw, 2008). To date, only a few studies have been published examining resilience in trauma populations (Bonanno & Mancini, 2008). Instead, many studies on resilience investigated normative birth cohorts (Werner & Smith, 2001) or American middle-class samples (Criss, Pettit, Bates, Dodge, & Lapp, 2002). To understand resilience, however, it is also essential to focus on severely exposed samples, as resilience is not defined as a positive adjustment per se, but rather a positive adjustment in the context of high levels of adversity (Masten, 2001).

Due to heterogeneity in the operational definitions of adversity, adaptation, and resilience, the prevalence of resilience in high-risk samples is difficult to estimate. Vanderbilt-Adriance and Shaw (2008) concluded in their review that resilient outcomes above 25% are rare in higher risk samples (e.g., multiple risks, low socioeconomic status [SES]). In contrast, Bonanno, Galea, Bucciarelli, and Vlahov (2006) showed in a recent study that the prevalence of resilience in trauma survivors varied from 33% to 54% across different exposure categories.

Relating to these investigations, we emphasize the use of a relatively new term, *posttraumatic resilience,* to describe trauma survivors with a positive posttraumatic mental health outcome. A search of the PsychINFO database in June 2008 yielded 14,969 items referring to posttraumatic stress compared to only two items referring to posttraumatic resilience. In the absence of a definitive resilience research paradigm, Yehuda and Flory (2007) argued that investigators must clearly outline their definition of resilience. For the current research we defined posttraumatic resilience as the absence of clinically significant psychopathology in the aftermath of severe trauma exposure.

Risk and Protective Factors for Posttraumatic Mental Health Outcome

Masten, Cutuli, Herbers, and Reed (2009) distinguish between risk factors, promotive factors, and protective factors. A *risk factor* is defined as a measurable characteristic of a group of individuals or their situation that predicts negative outcome on a specific outcome criterion. *Promotive factors* and *protective factors* are defined as measurable characteristics of a group of individuals or their situation that predict positive outcome with respect to a specific criterion. While the first applies to factors that predict positive outcome in similar ways across risk levels, the latter refers to factors that predict positive outcome specifically in the context of risk or adversity. Although the predictors analyzed in the present research may predict better outcome in general, they appear to be particularly important under conditions of higher risk or adversity. We therefore refer to them as protective factors. Factors may relate to diverse domains (e.g., biological, psychological, sociological) and different levels within a domain

(e.g., cognitive processes, personality traits; Kazdin, Kraemer, Kessler, Kupfer, & Offord, 1997).

In addition to trauma severity, female gender, low SES, and previous trauma or other childhood adversity are risk factors for posttraumatic psychopathology in children and adults (Brewin, Andrews, & Valentine, 2000; Pfefferbaum, 1997). In the absence of a posttraumatic resilience paradigm, variables can be drawn from two sets of research findings in the search for additional predictors. The resilience literature yields dispositional and social protective factors predicting positive outcomes and the trauma literature adds responses to trauma that are risk factors, as well as social support variables as protective factors for psychopathological outcomes.

Dispositional factors. Resilience research has a long-standing tradition of investigating dispositional attributes of well-adjusted children in the face of adversity (see Masten et al., 2009, for a review). Among other attributes, internal locus of control, a sense of meaning, social problem-solving skills, and strong self-esteem often have been implicated as protective factors for resilience (Masten et al., 2009; Rutter, 1985; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). The concept of *hardiness* integrates many of these characteristics. It describes individuals who are committed to finding meaningful purpose in life, believe that one can influence one's surroundings and the outcome of events, and trust that one can learn and grow from both positive and negative life experiences (Kobasa, Maddi, & Kahn, 1982). Hardiness is associated with posttraumatic adjustment (King, King, Fairbank, Keane, & Adams, 1998). Furthermore, a positive orientation toward the future, comprising optimism and goal orientation, also is associated with good psychological adjustment in the context of adversity (Masten et al., 2009). Optimism is defined as the global expectation that the future will bring good things (Peterson, 2000). These globally positive expectancies are considered a major determinant of whether people continue to pursue valued life goals against the backdrop of adversity.

Parents and relationships. The resilience literature also strongly implicates the protective influence of parents and other supportive relationships for resilience in children and youth (Luthar, 2006; Masten et al., 2009). In the context of exposure to severe adversity, children in close proximity to effective caregivers fare better and young people who lose their parents are more vulnerable to psychopathology. Positive relationships with parents and other adults appear to provide emotional security as well as many forms of direct assistance during severe adversity. As children grown older, relationships with friends and romantic partners increase in importance. One of the most devastating effects of adversity is the destruction or loss of the fundamental protections afforded by caring adults and friends, such as when parents are killed.

Responses to trauma and perceived social support factors. Cognitive trauma theorists have focused on cognitive risk factors to explain the development and maintenance of posttraumatic psychopathology in adults and children (Ehlers & Clark, 2000; Ehlers, Mayou, & Bryant, 2003). The experience of traumatic events often changes the victim's thoughts and beliefs. For example, trauma survivors frequently experience guilt and self-blame (Kubany, 1994; Kubany et al., 1996). This guilt cognition can be related to having survived while others did not. It may also arise from a lack of justification of certain behaviors enacted during traumatic situations (Kubany, 1994). Guilt has been identified in trauma survivors such as victims of rape, battered women, and combat veterans (Kubany, Abueg, Kilauano, Manke, & Kaplan, 1997). Trauma survivors may also become preoccupied with feeling of unfairness and injustice, which may provoke rumination focusing on revenge (Orth, Montada, & Maercker, 2006). These responses can act as a block to cognitive change and thus serve to maintain PTSD. Further, aspects of the peritraumatic psychological response, predominantly dissociations, have been shown to be risk factors for posttraumatic outcome in adults and children (Brewin et al., 2000; Cook et al., 2003; Diseth, 2005; Ozer, Best, Lipsey, & Weiss, 2003). Finally, *perceived social support* has been described as a crucial protective factor for posttraumatic outcome (Bonanno, Galea, Bucciarelli, & Vlahov, 2007; Ozer et al., 2003). Perceived social support refers to the belief that specific transactions such as helping behavior would be provided by others if needed (e.g., by parents, teachers, friends). In the aftermath of trauma, perceived social support seems to serve an important secondary prevention role (Ozer et al., 2003).

The Present Research

Since the late 1980s Northern Uganda has been ravaged by the rebel terror of the Lord's Resistance Army (LRA). Eighty percent (1.4 million) of the population lives in camps for internally displaced people, many have been killed or tortured, and an estimated 25,000 children and adolescents have been forcefully recruited into the rebel forces (Coalition to Stop the Use of Child Soldiers, 2008). An

estimated 24% of them are girls (Pham, Vinck, & Stover, 2007). Peace talks between the Ugandan government and the LRA began in July 2006 in southern Sudan. In November 2006, when this research was carried out, the atmosphere was tense with both hope for peace and fear of another failure in attaining a truce. While the total number of remaining LRA fighters is unknown, up to 2,000 women and children are believed to still remain with the rebel fighters (Coalition to Stop the Use of Child Soldiers, 2008).

In this study, we address several gaps in the literature on child soldiers. There is very little empirical research on adaptation and resilience in child soldiers, particularly with a focus on multiple risk and protective factors. We distilled four clusters of risk and protective factors both from resilience and trauma literature that may explain posttraumatic outcome over and above trauma severity during abduction. First, additional trauma and life stressors have been shown to be significant risk factors for posttraumatic outcome (Brewin et al., 2000). We therefore assessed the most critical additional trauma and life stressors for our sample, namely the loss of parents and exposure to domestic and community violence. Second, we addressed dispositional factors, such as hardiness and optimism, that are presumed to promote posttraumatic resilience (Kobasa et al., 1982; Scheier & Carver, 1992). Third, according to the trauma literature and previous research on child soldiers, dissociation, guilt, and revenge are presumed to have an impact on posttraumatic outcome (Bayer et al., 2007; Diseth, 2005). Finally, in addition to the assessment of social support, a known protective factor in trauma populations (Ozer et al., 2003), we assessed perceived spiritual support during crisis. As resilient individuals may experience some form of transient stress reaction following trauma exposure, we investigated former child soldiers living in the safe environment of a boarding school, protected from rebel attacks and domestic and community violence for 4 months prior to data collection.

Hence, we had four hypotheses for this study. First, we expected that a considerable proportion of the investigated child soldiers would be resilient according to our operational definition of resilience based on their mental health status: (a) not meeting criteria for PTSD, (b) not meeting criteria for depression, or (c) scoring below the multicultural cutoff for behavioral and emotional problems. Second, we hypothesized that trauma severity during abduction would be a significant risk factor for posttraumatic outcome. Third, we hypothesized that loss of parents and domestic and community violence significantly would predict posttraumatic outcome. Finally, we hypothesized that person variables (dispositional variables, responses to trauma, perceived external support) would predict posttraumatic outcome over and above what can be predicted from trauma severity.

Method

Participants

The sample of this cross-sectional field study consisted of 330 former Ugandan child soldiers (48.5% girls). Children were on average 14.44 years old (SD = 1.57, range = 11–17 years). The children's ethnicity was mainly Acholi (61.5%) and Langi (38.2%), and they originated from the five war-torn northern districts of Uganda (Apac 18.2%, Gulu 21.8%, Kitgum 17.3%, Lira 20.6%, Pader 20.6%, Other 1.2%). Luo was the first language of all children. Ninety-eight percent of the children were Christians. Their fathers' occupations were mainly subsistence farmer (63.6%), trader (17.1%), or security and military servant (12.0%). Children had on average five biological siblings (range = 0–12).

Procedures

We recruited participants from a boarding primary school in Gulu Town in Northern Uganda, a special-needs school designed to support war-traumatized children, established by the government of Uganda. The only one of its kind in the entire country, the school aims to help war-traumatized children reach the same curriculum level as students in the public school system. Due to financial problems, no specialized interventions, like psychosocial programs, could be started at the school prior to our data collection. The selection of children for admission at the school required the assessment of traumatic war experiences and related symptoms with a questionnaire carried out by trained assessors, giving priority to extremely war-affected children. Community leaders confirmed war involvement of children during the selection process. Children were picked in almost equal proportions from the five war-torn northern districts of Uganda. The selection process required that 60% of the school population be female. The school opened in July 2006, meaning children had been in the safe environment of the boarding school, protected from rebel attacks and domestic and community violence for 4 months prior to data collection.

Written informed consent from the local authorities and oral informed consent from students and teachers were obtained for the study. Children were eligible if they had been a child soldier for at least 1 month, had returned from the armed group at least 6 months prior to the study, and were currently between 11 and 17 years of age. Children's abduction status was confirmed by teachers. Inclusion criteria were met by 358 students of the school. Three children declined to participate and were not asked to justify their decision. Children were assured that they were free to withdraw from the study at any point. None withdrew during data collection. Likert scales were explained and rehearsed in detail with all children. According to teachers' assessment, 45.9% of the children were illiterate. Questionnaires were read aloud to illiterate children by trained interviewers, while trained interviewers helped literate children fill out the questionnaires in class. The need for explanation and examples transformed the self-report method into an interview. Psychiatrists from Gulu Hospital were available to provide psychological support at all points of data collection, although support was never necessary. The school received books for a library as honoraria for supporting the assessment, while interviewers received payment. Data from 25 pupils could not be analyzed due to missing inclusion criteria or invalid data, resulting in a final population of 330 pupils for analysis.

The study was approved by the ethics committee of the Medical Association of Hamburg and by the Uganda National Council for Science and Technology.

Measures

Lacking well-validated concepts and measures based on research with Ugandan populations, we adapted concepts and measures from the trauma and resilience literature. The adaptability of these measurements was discussed with experienced mental health professionals and anthropologists originating from Uganda or who had done research in the country. All instruments were translated and back-translated into the local language (Luo) by linguists at the Institute of Languages at Makarere University in Kampala. The translators and the study director collectively resolved problems in the translated version by comparing the original English version with the back-translation. The administration of all materials was tested in a pilot phase for acceptance, adequacy, and applicability.

Sociodemographic Variables

We assessed age, gender, and SES of the participant's families. SES was operationalized by parents' educational levels and families' material resources. Items were taken from the Child War Trauma Questionnaire (CWTQ; Macksoud, 1992). Educational level of each parent was assessed by one item scored 0 (*can't read or write*), 1 (*has had some schooling*), 2 (*has completed primary school*), 3 (*has completed secondary school or vocational school*), or 4 (*holds a college degree*). Family material resources were assessed by four items pertaining to four categories of resource (i.e., food, shelter, clothing, and income) rated on scale from 0 (*very poor*) to 4 *(very rich*). These six items were added to a sum score. Higher scores indicate higher SES. The internal consistency for the current sample was Cronbach's alpha = .78. These simple measures of SES and educational level were discussed with experts in the field and seemed to have high face validity for the current sample.

Trauma Severity During Abduction

By definition, children who were abducted to serve as child soldiers experienced a traumatic event. To quantify trauma severity during abduction, we measured the reported number of traumatic events. We define both the experience of being a victim as well as that of being a perpetrator of violence as traumatic events, as children were forced to commit atrocities. Our Child Soldiers Trauma Questionnaire (CSTQ) is a 19-item yes–no statement questionnaire based on our own previous research on Ugandan child soldiers (Bayer et al., 2007) and the CWTQ (Macksoud, 1992). The CSTQ consisted of two subscales: The 13-item Victim Subscale (i.e., abduction; exposure: shooting, bomb explosion, massacre, air raid; deprivation: food, water; witness: injury, killing; victim: death threats, beatings, injury, rape) and the six-item Perpetrator Subscale (i.e., perpetrator: fighting, looting, abduction, torture, injury, killing). The internal consistency for each subscale was high (Cronbach's alpha = .73 for the Victim Subscale and Cronbach's alpha = .76 for the Perpetrator Subscale).

Posttraumatic Mental Health Outcome

To assess *PTSD* and *depression* we used the two accordant modules of the MINI-KID. The MINI-KID is the child and adolescent version of the Mini International Neuropsychiatry Interview (MINI; Sheehan et al., 1998), a short structured interview

with axis 1 diagnostic categories of the *DSM–IV*. The MINI showed good reliability and validity coefficients compared to the Composite International Diagnostic Interview and to the Structured Clinical Interview for *DSM–IV* (Sheehan et al., 1998) and has recently been used for the first time in a study in Uganda (Okello et al., 2007). In addition to PTSD and depression we screened for a broad variety of *behavioral and emotional problems* using the YSR (Achenbach & Rescorla, 2001). The YSR is a widely used self-report instrument containing 105 problem items (e.g., ''I worry a lot,'' ''I destroy things belonging to others''). The scale consists of the following syndrome clusters: anxious-depressed, withdrawn-depressed, somatic complaints, social problems, thought problems, attention problems, rule-breaking behavior, and aggressive behavior. Items are rated 0 (*not true*), 1 (*somewhat or sometimes true*), and 2 (*very true or often true*) on the basis of the preceding months. All items summed up form a Total Problems score. The YSR has been shown to have excellent psychometric qualities (Achenbach & Rescorla, 2001). The YSR has been used in over 6,000 publications reporting findings from 65 countries (Achenbach & Rescorla, 2007). The multicultural application of the YSR is based on the vast amount of multicultural research and enables users to display problem scale scores in relation to sets of norms based on societies that were found to have relatively low scores (Group 1), medium scores (Group 2), or high scores (Group 3; Achenbach et al., 2008). Group 2 of the multicultural norms, which are also labeled *standard norms*, are recommended if norms for a certain population are missing (Rescorla et al., 2007). The only published African norms for the YSR are for Ethiopia, which are allocated to Group 2 (Mulatu, 1997). We used Group 2 norms based on the above arguments. Cronbach's alpha for the current sample was .95 for the Total Problems score.

Operationalization of Posttraumatic Resilience

As noted earlier, posttraumatic resilience was defined by the absence of psychopathology operationalized by (a) not meeting criteria for PTSD, (b) not meeting criteria for depression, and (c) scoring below the multicultural cutoff for behavioral and emotional problems (YSR).

Additional Trauma and Life Stressors

Loss of parents was assessed by asking whether parents were deceased. Thus, *loss of parents* was defined as losing mother, father, or both parents through death, no matter what the cause.

Exposure to *domestic and community violence* was assessed with a self-developed checklist based upon a recent report on violence against children in Uganda (Naker, 2005). This report refers to experiences and perspectives on violence against Ugandan children of 1,406 children and 1,093 adults based on a survey using complementary research methods (i.e., questionnaires, focus group discussions, narrative role plays, key informant interviews). Four main areas of violence against children were identified: physical, emotional, sexual, and economic. Our checklist contained 19 yes–no statements with 13 items pertaining to violence experienced at home (i.e., physical violence: caning, burning, locking up; emotional violence: shouting, insulting, threatening, ignoring; sexual violence: sexual insults, sexual touches, rape; economic violence: denying food, overworking, denying money for school fees and health care) and 6 items concerning violence experienced in the community including school (i.e., physical violence: caning, burning, locking up; sexual violence: sexual insults, sexual touches, rape). The internal consistency for the current sample was Cronbach's alpha = .82.

Dispositions

To assess *hardiness* we used the 10-item version of the Connor–Davidson Resilience Scale (CD–RISC; Connor & Davidson, 2003; Campbell-Sills & Stein, 2007). Items are rated on a 5-point Likert scale ranging from 0 (*not true at all*) to 4 (*true nearly all the time*), with higher scores reflecting greater abilities to tolerate experiences such as change, personal problems, illness, pressure, failure, and painful feelings (e.g., ''I am able to adapt when changes occur,'' ''I deal with whatever comes my way,'' ''I tend to bounce back after illness, injury, or other hardships''). The 10-item version displayed good psychometric properties and is highly correlated with the original 25-item version (r = .92; Campbell-Sills & Stein, 2007). Internal consistency for the current sample was Cronbach's alpha = .75.

To assess *positive future orientation* we used the Positive Future Orientation Subscale of the Adolescent Resilience Scale (ARS; Oshio, Kaneko, Nagamine, & Nakaya, 2003). It contains five items referring to optimism and goal orientation rated on a 5-point Likert scale (e.g., ''I feel positive about my future,'' ''I strive toward my future goals''). The subscale has been found reliable and valid in other

studies (Oshio et al., 2003). Internal consistency for the current sample was alpha = .73.

Responses to Trauma

To assess *peritraumatic dissociation*, the Peritraumatic Dissociative Experiences Questionnaire was used (RAND PDEQ; Marshall, Orlando, Jaycox, Foy, & Belzberg, 2002). The eight-item instrument, rated on a scale ranging from 0 (*not at all true*) to 4 (*extremely true*), asks respondents to what extent they experienced depersonalization, derealization, and altered sensations at the time of the traumatic events (e.g., ''What was happening didn't seem real, like I was in a dream or watching a movie''). The RAND PDEQ has demonstrated good internal consistency and test–retest reliability, as well as discriminant and convergent construct validity in both community violence survivors and individuals who experienced sexual abuse (Marshall et al., 2002). The internal consistency for the current sample was Cronbach's alpha = .82.

To assess cognitive aspects of *guilt* we used the 22-item Guilt Cognitions Scale of the Trauma-related Guilt Inventory (TRGI; Kubany et al., 1996). Items are scored on a 5-point scale ranging from 0 (*never* or *not at all true*) to 4 (*always* or *extremely true*; e.g., ''I blame myself for what happened''). The TRGI has high internal consistency and adequate temporal stability (Kubany et al., 1996). TRGI scales were significantly correlated with other measures of guilt in validity studies with Vietnam veterans and battered women (Kubany et al., 1996). The internal consistency for the current sample was Cronbach's alpha = .78 for the Guilt Cognitions Scale.

Participants' motivation to seek *revenge* against transgressors was measured by the Revenge Motivations Subscale of the Transgression-Related Interpersonal Motivations Scale (TRIM; McCullough et al., 1998). The revenge subscale comprises five items that measure motivation to seek revenge (e.g., ''I'll make him or her pay back''). Higher scores indicate higher revenge. The subscale has a high internal consistency (α = .90; McCullough et al., 1998) and evidence of construct validity (McCullough, Bellah, Kilpatrick, & Johnson, 2001; McCullough et al., 1998). The internal consistency for the current sample was Cronbach's alpha = .81.

Perceived External Support

Perceived social support during stressful situations was measured by the item ''I have at least one close and secure relationship which helps me when I am stressed.'' The item was rated on a 4-point scale, higher scores indicating higher support. We assessed *perceived spiritual support* by asking children to respond to the following item ''During stressful situations I wonder whether God has abandoned me.'' This item was taken from a measure of spiritual coping (RCOPE; Pargament, Smith, Koenig, & Perez, 1998). The item was rated on a 4-point scale and reverse coded. Hence, higher scores indicate higher perceived spiritual support.

Results

Descriptive Statistics

Experiences During Abduction

On average, children were abducted at 10.75 years of age (*SD* = 2.30, range = 5–16 years). All children in the sample were abducted by rebel attacks, one exception being a child born in captivity. Different tasks were assigned to children during their captivity: 41.8% were assigned primarily front-line tasks, for example, fighting, looting, abducting civilians (55% for boys and 26.8% for girls); 28% performed mainly logistic tasks, for example, carrying loads, spying, escorting commanders (34.3% for boys and 20.8% for girls); and 27.7% were assigned domestic chores, for example, cooking, caring for younger children (10.1% for boys and 47.7% for girls). The children experienced several traumatic events. For example, 90.6% of the children were beaten by armed forces, 87.9% witnessed murder, 86.4% were threatened with death, and 25.8% were raped by members of the armed group (22.4% for boys and 29.4% for girls). The average score on the Victim Subscale of CSTQ was 10.26 (*SD* = 2.30, range = 1–13). Many children were forced to commit atrocities. For example, 65.2% looted houses, 59.1% abducted other children, and 52.6% killed another person. The average score on the Perpetrator Subscale of CSTQ was 3.36 (*SD* = 2.00, range = 0–6).

The average time spent in abduction was 19.81 months (*SD* = 17.72, range = 1–108) and children had returned from the armed group 31.75 months prior to data collection (*SD* = 17.86, range = 6–105). Under the risk of capture and death, 81.2% of the children had escaped the rebel forces. More than one third (38.6%) of the children had been abducted more than once, in some cases up to five times.

Additional Trauma and Life Stressors

Before entering the boarding school, 97.2% of the children had lived with family members or relatives. Many children had lost one or both parent(s): 43.1% were double orphans and 36.7% were single orphans. Children reported frequent experiences of domestic and community violence (88.8%). On a scale of 19 experiences, children reported on average 5.43 violent acts (SD = 4.03, range = 0–19).

Posttraumatic Outcome

More than every fourth child (27.6%) showed a resilient mental health outcome. Thus, 72.4% showed significant symptoms of psychopathology at outcome, including 33% who met *DSM–IV* criteria for PTSD and 36.4% who met criteria for major depression (18.5% qualified for diagnoses of both disorders). Compared to multicultural norms, 61.2% of the children scored above the cutoff for behavioral and emotional problems. No significant gender differences regarding mental health outcomes were found, PTSD: $\chi^2(1, N = 330) = 0.04$, $p = .84$; depression: $\chi^2(1, N = 330) = 0.17$, $p = .73$; and behavioral and emotional problems: $t(328) = .11$, $p = .91$. We split the sample in two age groups: younger adolescents (11–13 years, $n = 92$) and older adolescents (14–17 years, $n = 234$). Younger adolescents displayed significantly lower rates of PTSD and depression than older adolescents, PTSD: 23.9% versus 36.8%, $\chi^2(1, N = 330) = 4.91$, $p = .027$; depression: 27.2% versus 39.3%, $\chi^2(1, N = 330) = 4.23$, $p = .04$.

Mean values and standard deviations of psychological predictors of posttraumatic outcome are presented in Table 1. Table 2 displays zero-order correlation among all key variables. To control for possible conceptual overlap between responses to trauma and posttraumatic outcome in this study, the guilt items were removed from the outcome scales. Correlations were virtually as strong as with the full scales, indicating that the correlation was not a methodological artifact.

Multivariate Analysis Predicting Posttraumatic Resilient Outcome

Risk and Protective Factors

Hierarchical multiple logistic regression analysis was used to test the association of risk and protective factors with posttraumatic status. The rationale for entry order was as follows: In Step 1, we tested the association of sociodemographic variables with posttraumatic outcome and controlled these variables for further analysis steps. In Steps 2 and 3, we tested the hypothesized association of trauma severity during abduction and additional trauma and life stressors with posttraumatic outcome. In Step 4, we tested whether person variables predict posttraumatic outcome over and above what can be predicted on the basis of sociodemographic variables and trauma severity.

Table 1
Mean Values and Standard Deviations of Trauma, Person, and Outcome Variables

	All (N = 330)		Clinical group (n = 239)		Resilient group (n = 91)		
Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*	*p* value[a]
Trauma severity—Victim [0–13]	10.26	2.30	10.52	2.14	9.57	2.57	.001
Trauma severity—Perpetrator [0–6]	3.36	2.00	3.55	1.99	2.87	1.95	.005
Domestic and community violence [0–19]	5.43	4.03	6.22	4.07	3.36	3.10	< .001
Hardiness [0–40]	22.66	8.28	23.12	7.81	21.46	9.33	.083
Positive future orientation [5–25]	21.29	3.52	21.03	3.68	22.00	2.99	.045
Peritraumatic dissociation [8–40]	24.21	8.04	25.33	7.91	21.26	7.69	< .001
Guilt cognitions [0–88]	39.51	14.50	41.47	13.27	34.34	16.31	< .001
Revenge motivation [5–25]	13.01	5.76	13.90	5.86	10.66	4.74	< .001
Perceived social support [0–4]	1.76	1.06	1.65	1.05	2.05	1.04	.001
Perceived spiritual support [0–4]	1.58	1.30	1.35	1.25	2.18	1.23	< .001
PTSD symptoms [0–16]	8.89	3.37	10.01	2.86	5.97	2.80	< .001
Depression symptoms [0–13]	6.54	3.26	7.69	2.86	3.54	2.13	< .001
Total Problems score (YSR) [0–210]	75.64	33.21	88.15	29.48	42.78	15.07	< .001

Note. PTSD = posttraumatic stress disorder; YSR = Youth Self-Report.
[a]Differences between clinical and resilient group, Mann–Whitney *U* test.

Table 2
Zero-Order Correlations Among Key Variables

Measure	Measure																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Female gender																			
2. Age	−.29***																		
3. Family SES	.06	−.02																	
4. Age at abduction	−.13*	.31***	.00																
5. Length of abduction	−.02	.19**	−.13*	−.12*															
6. Trauma severity—Victim	−.12*	.23***	−.09	−.05	.26***														
7. Trauma severity—Perpetrator	−.25***	.11	−.04	−.01	.25***	.53***													
8. Time since return	−.10	.17**	.09	−.07	−.12*	−.08	.01												
9. Loss of parents	−.02	.20***	−.12*	−.09	.15**	.14**	.15**	.05											
10. Domestic and community violence	−.08	.17**	−.14*	.03	.01	.24***	.19***	.11*	.16**										
11. Hardiness	−.05	.12*	−.09	.06	.08	.15**	.12*	−.03	.10	.00									
12. Positive future orientation	.12*	−.01	−.08	−.06	.00	.12*	−.05	−.17**	−.02	−.13*	.30***								
13. Peritraumatic dissociation	−.05	.05	−.08	.06	.01	.19**	.24***	.01	.06	.20***	.26***	.11*							
14. Guilt cognitions	−.09	.04	−.12*	−.04	−.02	.20***	.27***	.04	.10	.20***	.22***	.20***	35***						
15. Revenge motivation	−.07	.14*	−.15**	.05	.05	.11	.02	.08	.00	.15**	.12*	−.05	.17**	.16**					
16. Perceived social support	.04	−.08	.11*	−.04	.02	−.04	−.00	−.08	−.09	−.16**	.16**	.28***	−.02	−.04	−.19**				
17. Perceived spiritual support	.04	.00	.05	−.06	−.02	−.12*	−.18**	−.03	.02	−.07	−.10	−.02	−.22***	−.20***	−.17**	−.06			
18. PTSD symptoms	−.05	.23***	−.14*	.03	.06	.28***	.24***	.12*	.21***	.32***	.23***	−.01	.33***	.27***	.21***	−.10	−.19***		
19. Depression symptoms	−.06	.19**	−.25***	.05	.04	.32***	.22***	.12*	.15**	.33***	.17**	−.01	.27***	.22***	.32***	−.11*	−.27***	.63***	
20. Total Problems score (YSR)	−.01	.20***	−.07	−.01	.03	.25***	.21***	.17**	.13*	.39***	.12*	−.08	.28***	.30***	.22***	−.12*	−.19**	.55***	.54***

Note. $N = 330$. Zero-order correlations are represented by Spearman correlations for continuous predictor variables and point-biserial correlations for dichotomous predictor variables. PTSD = posttraumatic stress disorder; SES = socioeconomic status; YSR = Youth Self-Report.
*$p < .05$. **$p < .01$. ***$p < .001$.

The regression model controlled length of time since returning from abduction.

Hence, in Step 1, gender, current age, family SES, age at abduction, and length of abduction were entered into the regression equation. These variables accounted for 10% of the variance, Nagelkerke $R^2 = .10$, $\chi^2(5, N = 330) = 13.94$, $p = .016$. In Step 2, we added trauma severity during abduction (i.e., number of traumatic events victim, traumatic events as perpetrator), which did not significantly improve the prediction of outcome, $R^2_{change} = .01$, $\chi^2_{change}(2, N = 330) = 2.36$, $p = .31$; $R^2 = .11$, $\chi^2(7, N = 330) = 16.30$, $p = .02$. In Step 3, we entered additional trauma and life stressors into the regression equation (i.e., loss of parents, domestic and community violence). The accuracy of prediction increased significantly to 24% variance explained, $R^2_{change} = .13$, $\chi^2_{change}(2, N = 330) = 20.37$, $p < .001$; $R^2 = .24$, $\chi^2(9, N = 330) = 36.67$, $p < .001$. In Step 4, we entered the person variables into the regression function: dispositional factors (i.e., hardiness, positive future orientation), responses to trauma (i.e., dissociation, guilt, revenge), and perceived external support (i.e., social, spiritual support). Step 4 resulted in a significant increase in explained variance to 43%, $R^2_{change} = .19$, $\chi^2_{change}(7, N = 330) = 34.18$, $p < .001$; $R^2 = .43$, $\chi^2(16, N = 330) = 70.86$, $p < .001$.

Most Critical Predictors

Searching for the most critical predictors, six variables of the regression model proved to be significant predictors of posttraumatic resilience. Controlling for all other variables, higher age was a risk factor (OR = 0.72) and high family SES was a protective factor (OR = 1.11). Domestic and community violence was a risk factor (OR = 0.81) as were strong guilt cognitions and revenge motivation (guilt: OR = 0.96; revenge: OR = 0.92). Finally, children's perceived spiritual support was a protective factor and almost doubled the odds of resilience as defined in this study (OR = 1.91). Regression coefficients of all predictors are displayed in Table 3.

Interaction Effects

A second hierarchical multiple logistic regression analysis was used to test for the interaction effect between gender and age, the interaction effect between trauma severity and age, as well as the interaction effects between trauma severity and each of the most important hypothesized protective factors (i.e., hardiness, positive future orientation, perceived social support, and perceived spiritual support) in the prediction of posttraumatic mental health outcome. To compute these analyses, we

Table 3
Hierarchical Multiple Logistic Regression Predicting Posttraumatic Resilient Outcome

Predictor	*B*	*SE*	Wald	*p* value	OR	95% CI for OR
Sociodemographic variables						
Gender	−.56	.46	1.49	.22	0.57	0.23–1.40
Age	**−.32**	**.15**	**4.41**	**.04**	**0.72**	**0.54–0.98**
Family SES	**.11**	**.05**	**4.15**	**.04**	**1.11**	**1.00–1.23**
Age at abduction	.06	.10	0.40	.53	1.07	0.88–1.29
Length of abduction	.01	.01	0.54	.46	1.01	0.98–1.04
Trauma severity during abduction						
Trauma severity—Victim	.10	.13	0.62	.43	1.11	0.86–1.42
Trauma severity—Perpetrator	−.07	.13	0.27	.60	0.93	0.72–1.21
Additional trauma and life stressors						
Loss of parents	.10	.52	0.04	.85	1.10	0.40–3.04
Domestic and community violence	**−.21**	**.06**	**12.17**	**.00**	**0.81**	**0.72–0.91**
Person variables						
Hardiness	.03	.03	0.85	.36	1.03	0.97–1.08
Positive future orientation	.04	.07	0.33	.57	1.04	0.91–1.19
Peritraumatic dissociation	−.01	.03	0.05	.82	0.99	0.94–1.05
Guilt cognitions	**−.04**	**.02**	**5.32**	**.02**	**0.96**	**0.93–0.99**
Revenge motivation	**−.08**	**.04**	**4.16**	**.04**	**0.92**	**0.85–1.00**
Perceived social support	.07	.22	0.10	.76	1.07	0.70–1.64
Perceived spiritual support	**.65**	**.17**	**14.22**	**.00**	**1.91**	**1.37–2.68**

Note. Model fit: $\chi^2(16, N = 330) = 70.86$, $p < .001$, Nagelkerke $R^2 = 43.2\%$. Controlled for time since return. Significant predictors ($p < .05$) indicated in boldface. SES = socioeconomic status.

composed an overall trauma severity measure of trauma during abduction, loss of parents, and domestic and community violence (Cronbach's alpha = .85). All continuous variables were centered prior to forming interaction terms. After controlling for main effects, we tested for interaction effects: first, the interaction of gender and age; second, of trauma severity and age; and third, of trauma severity and the four protective factors respectively, predicting posttraumatic outcome. None of the interaction terms was significantly associated with posttraumatic outcome.

Discussion

Child soldiers are one of the most severely traumatized populations of children and adolescents. Despite the extremely high level of adversity exposure, close to 30% of children showed a posttraumatic resilient outcome according to our operational definition. The prevalence rate of PTSD found in the presented study is consistent with other recent studies on child soldiers (Bayer et al., 2007; Okello et al., 2007). In addition to PTSD, results indicated high rates of depression and emotional and behavioral problems in these former child soldiers. These results, in line with growing evidence in the trauma literature, suggest that the concept of PTSD does not fully capture the reaction to repeated and prolonged interpersonal trauma of child soldiers and may be better described by concepts such as developmental trauma disorder (van der Kolk, 2005). Consideration of risk and protective factors added substantially to the prediction of posttraumatic status among these child soldiers, over and above sociodemographic variables and trauma severity during abduction. These findings show convergence and divergence with findings on resilience in Western populations.

Demographic and Trauma Variables

When controlling for all other variables, gender did not relate to resilience. This finding applied to all mental health outcome measures, that is, PTSD, depression, and behavioral and emotional problems. In contrast, most epidemiological studies in Western population samples indicate female gender as a risk factor for pathology in adolescents whether the samples were traumatized (Breslau & Anthony, 2007; Giaconia et al., 1995) or nontraumatized (Rescorla et al., 2007; Twenge & Nolen-Hoeksema, 2002). There is ongoing controversy on whether these gender differences are due to gender-based response tendencies, intrinsic vulnerability among females, or whether it might be explained by gender differences in type and extent of trauma exposure, especially referring to sexual trauma (Breslau, Chilcoat, Kessler, Peterson, & Lucia, 1999; Cortina & Kubiak, 2006).

Older children showed more mental health problems than younger children. This observation is in line with the literature on Western population samples, both traumatized and nontraumatized, also showing higher rates of symptoms in older than in younger children (Green, Korol, Grace, & Vary, 1991; Rescorla et al., 2007). Taken together, these findings might indicate a normative trend independent of trauma exposure. We did not find a significant Gender × Age interaction effect. This finding contrasts with findings of larger increases of symptoms with age for girls than boys in Western population samples (Rescorla et al., 2007; Twenge & Nolen-Hoeksema, 2002). Finally, in line with the literature on Western samples, children originating from families with higher SES were more likely to fall in the resilient group (Bonanno et al., 2007; Masten et al., 2009).

Based on the earlier literature on war-affected children, we expected trauma severity during abduction would be a crucial predictor of posttraumatic outcome (Mollica, McInnes, Poole, & Tor, 1998). However, both in our sample and in previous research on child soldiers, this was not the case (Bayer et al., 2007). Future research is required to investigate whether the assumed dose–response relation between trauma severity and posttraumatic outcome may not hold true for extremely exposed populations. This could be described as a threshold effect after which dose is so high that variation in dose no longer matters. In line with previous research on child soldiers, age at abduction and length of abduction were not significant predictors of posttraumatic outcome (Bayer et al., 2007; Derluyn et al., 2004).

Regarding additional trauma and life stressors, loss of parents was not a significant risk factor for resilience. Whether African extended family systems compensated for the loss of parents remains an open question. Domestic and community violence was identified as a significant risk factor for posttraumatic resilience. The return of children from the often extremely traumatizing experiences with the rebels to a violent and rejecting home environment may have led to an ultimate loss of trust in other people. There is some evidence that the exposure to war violence might brutalize

societies and facilitate domestic abuse (Catani, Jacob, Schauer, Kohila, & Neuner, 2008). Therefore, violent behavior within families and communities might emerge as a long-term effect of warfare lasting beyond the end of armed conflict. Further research in domestic violence inflicted on children in postconflict countries is needed.

Person Variables

The frequent experiences of domestic and community violence may explain why perceived social support was not a significant predictor of posttraumatic resilience. In contrast, perceived spiritual support was a significant factor pertaining to resilience. Children who did not feel abandoned by God during crises showed significantly fewer symptoms. Spirituality and Christian religion are deeply rooted in social and cultural life of Northern Ugandans and may therefore be an important source of healing and reconciliation (Harlacher, Okot, Obonyo, Balthazard, & Atkinson, 2006). The LRA rebels target young children also because they are easily indoctrinated through redirecting their faith toward the rebels' aims (e.g., promising the children bulletproofing through spiritual rituals or forcing the children to commit atrocities while saying the name of God). The perception of God in Ugandan youth and the relevance of religion for coping with trauma need to be further investigated.

Dispositions (i.e., hardiness and positive future orientation) did not assist in explaining the variance in posttraumatic outcome. We employed a 10-item version of the CD–RISC (Campbell-Sills & Stein, 2007). Items such as ''I can deal with whatever comes my way'' are perhaps unsuitable for extremely exposed individuals such as child soldiers. It also is possible that the items of this scale may not reflect successful adaptation in children embedded in the Northern Ugandan culture.

Despite their severe trauma, children displayed high average scores of positive future orientation. This is noteworthy, as a negative future orientation (e.g., does not expect to have a career or a normal life span) has been described as an indicator of pathological trauma response (American Psychiatric Association, 2000). Although research is scarce, there are some indications of higher dispositional optimism in African populations (Eshun, 1999). Positive future orientation did not appear to play a protective role with respect to posttraumatic resilience.

Peritraumatic dissociation was not a significant risk factor for posttraumatic outcome. Understanding the function of dissociation in the process of trauma response in child soldiers requires further investigation. Dissociation is mostly used as a clinical concept and a predictor of subsequent PTSD (Diseth, 2005). Recent research, however, indicates that so-called emotional dissociation may protect extremely exposed individuals (Bonanno, 2004; Coifman, Bonanno, Ray, & Gross, 2007).

Our finding that revenge motivation was a risk factor for worse posttraumatic outcome is consistent with other research on child soldiers (Bayer et al., 2007). Moreover, when ruminating about someone who has caused them harm, people become more aggressive, which may translate into violent behavior (McCullough, Bono, & Root, 2007). Revenge motivation has been shown to be negatively associated with openness to reconciliation and forgiveness, also in child soldiers (Bayer et al., 2007; McCullough et al., 2001). Overcoming revenge motives may therefore be a crucial step toward sustainable peace building processes.

Further, children indicated that they frequently suffered from guilt, expressing that the time spent with the armed group caused them pain and suffering, and reported recurrent thoughts of their own acts being unjustified and unforgivable. In addition, survivor guilt may have played a role (e.g., guilt about surviving when others did not; American Psychiatric Association, 2000). Importantly, guilt was related both to being a victim of violence as well as to being a perpetrator (Table 2). Children had frequently been forced to torture or kill other individuals, sometimes even their relatives, to survive. The will to survive, obedience to orders, normalization of violence, and ideology may be the underlying psychological processes that enable children to become perpetrators (Wessells, 2006). Whether different psychological processes lead to guilt in victims versus in perpetrators is an interesting objective for future research. Responses to trauma, such as revenge and guilt, might sustain posttraumatic psychopathology in child soldiers as conceptualized in the cognitive model of the maintenance of PTSD by Ehlers and Clark (2000).

Limitations and Directions for Future Research

While the school presented a rare opportunity to assess a relatively large number of traumatized child soldiers in relation to potential risk and protective factors, the study had a number of limitations. We discuss six limitations, which may set directions for future research in this difficult environment.

First, we were not able to include positive behavioral outcome measures due to several methodological issues and logistic problems. For example, we had wanted to include academic achievement, but reports or remarks on students did not exist. Further, we were not able to obtain multiple perspectives on children's functioning, as parents were scattered throughout the northern part of Uganda and traveling was too dangerous. Teacher's perspectives could not be obtained as the classes were too big (60 students) to result in reliable data. Therefore we had to operationalize resilience, relying exclusively on the absence of symptoms. Clearly, our measures did not fully capture the individual differences in adaptation, motivation, and hope that we observed in these young people and that also are evident in the quotations we have included. Future studies should try to include positive indicators of adjustment (e.g., getting along with people, meeting expectations for chores or school, contributing to the community) and further investigate what defines resilience or an adaptive developmental outcome in ongoing- or postconflict contexts. Such a perspective needs to incorporate specific criteria for positive outcome for the various stages of child development (infancy and early childhood, middle childhood, and adolescence). In the developmental literature, positive outcome is often defined by successfully meeting age-related developmental tasks (e.g., early childhood: attachment to caregivers; middle childhood: school adjustment; adolescence: forming close friendships; Masten & Coatsworth, 1998). Suffering from posttraumatic psychopathology such as intrusive thoughts or depressive symptoms might hinder children in completing developmental tasks and therefore cause further psychological and social maladaptation.

Second, our study was cross-sectional, and we are not able to make any conclusions regarding stability and change in psychological well-being over time. Therefore, we could not distinguish between resilience, recovery, and delayed onset (Bonanno, 2004). Moreover, the onset of psychopathology may have not been posttrauma in some of the participating children. However, the duration and magnitude of symptoms within the different posttraumatic trajectories need further empirical investigation. Longitudinal research on child soldiers is urgently needed to answer these open developmental questions.

Third, for feasibility reasons, we used a convenience sample of former child soldiers. Having chosen a special-needs school for war-traumatized children might have biased the sample toward an overestimation of symptoms in child soldiers, as the admission process gave priority to extremely war-traumatized children. On the other hand, the special school may have boosted the prevalence of resilience in some of these young people. Additional research is needed with more representative samples and control groups.

Fourth, there were limitations in our assessment tools. We had to rely on Western-oriented questionnaires due to the lack of locally developed instruments. Another weakness was the single-item measurement of social and spiritual support, which presumably did not cover the constructs as a whole. It also was not feasible to include a full diagnostic assessment, and measures were limited to selected modules of the MINI–KID and the YSR. Thus, it is possible that some of the young people had symptoms and disorders that were not assessed by the measures used. Our research indicates the need for development and validation of cultural and context-sensitive measurements suitable for use in highly exposed populations. Assessment of cross-culture validity and reliability of standard psychiatric measurements are needed even without the usual ''gold standards'' (Bolton, 2001).

Fifth, our study focused on person variables. Certainly, familial (e.g., attachment, parenting) and social (e.g., friends) variables, as well as cultural factors (e.g., reconciliation ceremonies), may also be important influences on posttraumatic resilience. As recently suggested by Betancourt and Khan (2008), posttraumatic resilience needs to be understood from an ecological, developmental perspective that includes family, peers, schools, communities, and cultural and political belief systems. Within this approach, the roles of attachment relationships, caregiver health, resources and connection in the family, and social support available in peers and extended social networks need to be examined in war-affected children. Restoring damaged social ecology is fundamental to child development and psychological rehabilitation for war-affected children. Future research needs to integrate an ecological perspective.

Finally, it was not feasible to study resilience beyond the behavioral level. To understand the factors maintaining posttraumatic psychopathology, the neuroscience of posttraumatic stress may be important. Most research on the neurological underpinnings of PTSD identify the amygdala and hippocampus as key brain areas involved in the registration of potentially dangerous situations and in the later formation of memories of such events and cite the hypothalamic–pituitary–adrenal axis as

a central agent in both the development of PTSD and its maintenance (Bremner, Elzinga, Schmahl, & Vermetten, 2008; Yehuda & LeDoux, 2007). Differentiating neurobiological correlates of PTSD and resilience following trauma exposure could contribute to explaining interindividual differences in trauma responses (Yehuda & Flory, 2007).

Implications for Interventions

Resilience research has a pragmatic mission, namely to provide principles of healthy development for successful intervention and treatment approaches (Masten & Coatsworth, 1998). Therefore, despite the scientific challenges posed by political instability in armed conflict situations, research is sorely needed to develop adequate measurements and tailored interventions. Our findings provide initial clues on factors to address in such programs. Domestic and community violence appeared to have a detrimental effect on the children's mental health over and above the traumatic events during abduction. Further, responses to trauma, such as guilt cognition, were negatively related to posttraumatic resilience. Moreover, it may be important to address revenge motives to break through the cycle of violence and work toward reconciliation.

While we focused on resilience, it is important to note that three in four child soldiers in our study were suffering significant levels of posttraumatic psychopathology. Interventional research in conflict areas is still scarce but very much needed. Cognitive behavioral treatment modules for the children (Onyut et al., 2005) as well as family-focused stress management programs may have beneficial effects on children and their family systems.

Our findings have implications for training and policy as well, because high levels of posttraumatic psychopathology in former child soldiers contrast with a psychiatrist-to-population ratio of 1:1.3 million in Uganda (Ovuga, Boardman, & Wasserman, 2007). Therefore, training of mental health professionals and a structural basis for sustainable intervention programs for children and adolescents in the region are urgently needed. Such programs should be based on knowledge on how to strengthen and sustain resilience in traumatized children.

Conclusions

Our findings indicate that despite severe trauma exposure, a critical proportion of former child soldiers showed a posttraumatic resilient outcome. Domestic and community violence, guilt cognitions, revenge motivation, and perceived spiritual support explained a substantial degree of variance in posttraumatic resilience over and above trauma severity during abduction. Knowledge of these factors provides initial clues on how to create interventions toward strengthening resilience in former child soldiers.

The present research benefited from two lines of research in the literature—one on resilience and one on trauma—that have not been fully integrated in research to date. Future research on severely traumatized children and adolescents would benefit from further integration of these perspectives, with the goal of an integrated paradigm of posttraumatic adaptation and resilience in ongoing- or postconflict contexts. Only through continued research on the processes leading to positive outcome can a full understanding of posttraumatic resilience be reached to inform intervention programs. The ongoing goal of research on posttraumatic resilience is to learn more effective strategies for protecting children and promoting their recovery from the developmental threats of trauma and violence.

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