Haunted by ghosts: Prevalence, predictors and outcomes of spirit possession experiences among former child soldiers and war-affected civilians in Northern Uganda

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\textbf{ABSTRACT}

Phenomena of spirit possession have been documented in many cultures. Some authors have argued that spirit possession is a type of psychopathology, and should be included as a category in diagnostic manuals of mental disorders. However, there are hardly any quantitative studies that report the prevalence of spirit possession on a population level and that provide evidence for its validity as a psychopathological entity. In an epidemiological study that was carried out in 2007 and 2008 with $N = 1113$ youths and young adults aged between 12 and 25 years in war affected regions of Northern Uganda we examined the prevalence, predictors and outcomes of cen, a local variant of spirit possession. Randomly selected participants were interviewed using a scale of cen, measures of psychopathology (PTSD and depression) as well as indicators of functional outcome on different levels, including suicide risk, daily activities, perceived discrimination, physical complaints and aggression. We found that cen was more common among former child soldiers then among subjects without a history of abduction. Cen was related to extreme levels of traumatic events and uniquely predicted functional outcome even when the effects of PTSD and depression were controlled for. Our findings show that a long lasting war that is accompanied by the proliferation of spiritual and magical beliefs and propaganda can lead to high levels of harmful spirit possession. In addition, we provide evidence for the incremental validity of spirit possession as a trauma related psychological disorder in this context.

\textbf{Introduction}

Spirit possession refers to altered states of consciousness that involve experiences of being under the control of a powerful entity, such as a god, a demon, a devil or a ghost. A common feature of possession states is that the person feels and acts like his identity has been replaced by the spirit (Boddy, 1994). While episodes of spirit possession may occur strange and exotic to observers from western cultures variants of such states have been documented in many resource poor as well as industrialized countries (Boddy, 1994; Bourguignon, 1973).

In some cultures spirit possession is considered as a normal and sometimes even desirable condition (Boddy, 1992, 1994; Lewis Fernandes, 1992; Somasundaram, Thivakaran, & Bhugra, 2008). However, other variants of possession experiences have been interpreted as abnormal phenomena that are associated with suffering and dysfunction and may require some form of treatment (Castillo, 1994a; Gaw, Ding, Levine, & Gaw, 1998; Kua, Chew, & Ko, 1993). Commonly, clinical researchers have interpreted such forms of spirit possession as psychopathology that is shaped by cultural norms and traditions (Cardeña, 1992; Somer, 2006). Since spirit possession resembles dissociative states that can be found in industrialized countries (Cardeña, 1992), forms of spirit possession that are considered to be pathological have been interpreted as cultural variants of dissociative disorders. Thus, the current version of the Diagnostic and Statistical Manual (DSM IV; American Psychiatric Association, 1999) allows the classification of spirit possession as dissociative disorder not otherwise classified or as dissociative trance disorder in the research criteria appendix. According to this definition, possession trance must be evidenced...
either by behaviors or movements controlled by the agent or by amnesia for the possession state, must not be accepted as normal part of a collective and cultural or religious practice, must cause significant distress or impairment in functioning and must not be explained by other conditions. The currently proposed revisions of the DSM suggest promoting the criteria for possession states from the research appendix to the standard axis I disorders by classifying possession states as variants of dissociative identity disorder. In the current version of the International Classification of Diseases ICD 10 (World Health Organization, 1992) spirit possession phenomena can be classified as trance and possession disorders, which is also categorized under dissociative disorders.

The inclusion of cultural variants of dissociative disorders is supported by research that consistently showed that the current DSM IV category of dissociative disorder needs to be further developed as it does not fit to the commonly reported phenomena of altered states of consciousness, including possession phenomena, in resource poor countries such as Uganda and India (Das & Saxena, 1991; van Duijl, Cardena, & De Jong, 2005; Saxena & Prasad, 1989). However, acceptance of spirit possession as a diagnostic category can be problematic not only because of the criticism related to the cultural interpretation of spirit possession (Boddy, 1992; Bourguignon, 1992), but also because empirical evidence for the validity of possession states as a psychopathological phenomenon is still scarce. In an exceptional study, Igreja and colleagues (Igreja et al., 2010) have recently found that spirit possession might be much more common than formerly assumed as more than 18% of the unsolicited respondents of a community survey in a war affected region in Mozambique reported spirit possession experiences. In support of the clinical interpretation, spirit possession was related to some indicators of dysfunction, in particular impairments of physical and reproductive health, and correlated with trauma related nightmares.

The interpretation of possession states as dissociative phenomena suggests that both phenomena share the same etiology. The most dominant current perspective of dissociation is that these phenomena present a protective but pathological adaptation to the experience of traumatic events (van der Kolk et al., 1996). Some anthropological researchers have observed that spirit possession may also be associated with traumatic experiences. In support of the clinical interpretation, spirit possession was related to some indicators of dysfunction, in particular impairments of physical and reproductive health, and correlated with trauma related nightmares.

In this study we investigated spirit possession in the context of an epidemiological survey of trauma related disorders in the war affected regions of Northern Uganda (Ertl, Pfeiffer, Schauer, Elbert, & Neuner, submitted for publication). Spirit possession in Uganda has been documented in a few recent articles and reports which illustrate that Uganda is a culturally diverse country with different forms of spirit possession in different regions (Annan et al., 2006; Betancourt et al., 2009; Odenwald et al., 2007). In the North East, spirit possession has been observed in the context of the civil war, which has plagued the northern territory for more than two decades. This war has been infamous for the widespread abduction of children and forced recruitment of child soldiers by the Lord’s Resistance Army (LRA) rebels and extreme levels of brutality against the civil population. Spirit phenomena have played an outstanding role in this war since the beginning of the first resistance movement Holy Spirit Mobile Forces initiated in 1985 by Alice Auma who later changed her name to Alice Lakwena as she claimed to be possessed by a Christian spirit (see Behrend, 1999, for a discussion of the impact of spirit beliefs on the origin of the insurgencies in North Uganda). The justification of this rebel movement has been based on a spiritual propaganda, and magical practices as well as complex initiation and purification rituals were essential parts of the warfare tactics. After her defeat, Joseph Kony, who claimed to be her cousin, took over the leading role in the fight against the government. His rebel movement, the LRA, was also characterized by a complex system of beliefs and rituals that referred to Christian, Islamic as well as ancient animist beliefs. He justified his claim to power by spirit possession and said to have supernatural abilities. It is reasonable to assume that this propaganda, which drew on widespread local beliefs, has been a fertile ground for the development of harmful forms of spirit possession in the local population, in particular former child soldiers. Next to studies showing high levels of trauma and PTSD among former child soldiers and civilians (Pham, Vinck, & Stover, 2009; Vinck, Pham, Stover, & Weinstein, 2007), a survey has found a local variant of spirit possession called cen in about 5% of the war affected youths (Annan et al., 2006). During a cen episode, the ghost of a deceased person visits the affected and replaces his or her identity. Among former combatants and child soldiers, the spirits are often the ghosts of the persons who were killed by them (Annan et al., 2006; Betancourt et al., 2009; Odenwald et al., 2007).

The aim of this study was to estimate the frequency of harmful spirit possession phenomena and to evaluate the validity of harmful spirit possession as psychological disorder in the case of Northern Uganda. The study was carried out in the context of a survey of a representative sample of 1113 youths and adults aged between 12 and 25 years. This study investigated the relationship of spirit possession to traumatic events as well as to mental health and outcome criteria such as suicidality and impairments in functioning. As a criterion for the justification of spirit possession as an independent psychopathological entity, we examined the incremental validity of spirit possession for the prediction of impairments in functioning by examining whether high levels of spirit possession were independently correlated with self reported negative outcome. We used a broad range of outcome criteria including scales that provided information on occupational and social dysfunction that were developed specifically for the context in Northern Uganda. Further measures assessed indicators of impairment that had been associated with child soldiers before, including aggression and perceived stigmatization (Betancourt et al., 2009).

Methods

Sample selection and participants

During July 2007 and April 2008 we carried out a representative face to face household survey of 1113 randomly selected youths and adults in three different Acholi regions of Northern Uganda. As there was neither any reliable census nor previous household survey data of the Northern Ugandan population available, we used a pragmatic sampling approach based on random selection of individuals and households within deliberately chosen study areas. The three survey areas (Awer, Padibe and Anaka) were chosen according to reports of varying degrees of exposure to the war and geographic position from the largest town in Northern Uganda, Gulu. Interviews were carried out in all IDP camps and new settlement sites within the study areas. Locations were sub divided into zones of about equal household and population size. Mainly community zones used by the local administration could be applied. Screening teams were assigned to these zones and randomly chose a sampling direction by spinning a pen from the zone center. Every sixth household was chosen as target household until the end of the assigned zone was reached and a new direction
was chosen repeating the procedure. Within each selected house, all adolescents and young adults between 12 and 25 who were sleeping and eating in the household were listed and the screeners were selecting the target person according to computer generated random digit lists for different household sizes. More details about the methods, instruments and study population can be found in Ertl et al. (2010) and Ertl et al. (submitted for publication). The final sample consisted of $n = 693$ girls and women and $n = 420$ boys and men. Among these, $n = 474$ individuals reported a history of abduction by the rebel army ($n = 208$ males and $n = 266$ females) with the duration of abduction ranging from several hours to more than ten years ($M = 6.22$ months, median $= .47$ months). According to the definition of UNICEF (2007) we refer to these children as former child soldiers, although 53% of them were abducted for less than one month and only the minority had been involved in combat. The average age at first abduction was 11 years (SD 3.72). The vast majority (98%) of subjects were of Christian denomination.

**Measures**

**Cen spirit possession**

In depth interviews with 20 child soldiers as well as community elders and healers preceded the construction of a scale for the assessment of harmful spirit possession in the Northern Ugandan context. Within these interviews we identified different forms of spirit possession phenomena in Northern Uganda. The term that is commonly used to refer to spirits in the local language Luo is jok (plural joggi). At least two types of joggi can be differentiated. Individual clan joggi are associated with single clans and their operating area is restricted to the region of a their chieftain. Clan joggi are generally good natured but they may cause minor illnesses in case of violations of a family’s moral standards. In contrast, the free joggi are more powerful as they may befall anyone and cause both, severe harm and death as well recovery from illnesses. Selected individuals, in particular ghost healers (ajwaka) can gain control over free joggi and apply their power for spiritual healing but also for witchcraft. Cen are a specific type of these free joggi and the most common and harmful spirit in the Northern Ugandan conflict region. They represent the spirits of dead persons, mostly those that have been murdered. Cen often possess the spirits of their killers in acts of revenge. However, they may also affect the killers’ clans as well as bystanders who happened to witness the killing or touch or pass by the death body. Cen can be appeased with cleansing rituals that are performed by healers in the community. We concentrated on the cen phenomenon as the informants of our study evaluated it as exceptionally harmful and frequent. Following the phenomenological descriptions gained in the pilot study we constructed the Cen Spirit Possession Scale that consisted of five items (see Table 1). These items were formulated to represent the reported characteristics of cen as well as the DSM IV research criteria of trance and possession disorder. As we aimed to assess current rather than lifetime experiences of spirit possession, the items were generally asked for the observation period of the last four weeks. As a fifth item we included the question “Did you ever seek help because ghosts haunted you”. The intention of this question was to assess whether the subjects associated cen experiences with suffering or dysfunction. As many respondents in the pilot study stated that they had ever sought help but given up over time we did not use a four weeks interval as observation period of this item. Response format for all items was yes/no. The number of items answered with yes provided the score for spirit possession.

**Poverty**

Economic status was estimated through household possessions by calculating the sum of assets in possession of the participant’s household weighted by the local market price in local currency.

**Trauma exposure**

The Violence, War and Abduction Exposure Scale (VWAES) is a 34 item checklist of potentially traumatic events that was developed especially for use in the Northern Ugandan context based on in depth interviews with 30 former child soldiers (Ertl et al., 2010). It consists of general event types, event types that characterized experiences in the rebel army including forced perpetration and four event types related to family violence. The trauma exposure score resulted as the sum of yes responses to the event types.

**PTSD**

The 17 items Posttraumatic Stress Diagnostic Scale (PDS; (Foa, 1995)) has been widely used for the assessment of PTSD and provides measures of overall and subscale symptom severity. A previous validation study in the Acholi population with subjects in the same age range (Ertl et al., 2010) showed that our local version of the PDS showed very good internal consistency (Cronbach’s $\alpha = .89$) and a good correspondence with expert diagnoses as gold standard (sensitivity $=.82$, specificity $.76$ and $\kappa = .54$).

**Depression**

Symptoms of depression were assessed with the 15 item depression section (DHSC) of the Hopkins Symptom Checklist (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974), which focuses on the severity of symptoms during the week prior to the interview. The DHSCL has been extensively used for the assessment of symptoms of depression across a wide variety of cultures including several East African populations. A validation study showed a very good internal consistency and construct validity of the Acholi version of the DHSCL (Ertl et al., 2010).

**Maladjustment**

Following interviews with key informants, including community elders, representatives of child soldiers’ parents’ organizations as well as in depth interviews with former child soldiers, we

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Table 1

<table>
<thead>
<tr>
<th>Characteristics of spirit possession (%)</th>
<th>Total</th>
<th>Abductees</th>
<th>Non-abductees</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within the past four weeks, were you haunted by ghosts of a deceased person?</td>
<td>14.4</td>
<td>21.3</td>
<td>9.2</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Within the past four weeks, did these spirits enter your body and replace your inner self?</td>
<td>10.3</td>
<td>17.3</td>
<td>5.2</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Within the past four weeks, during the time the spirit possessed you, did you show behavior or make movements that were not under your control, but controlled by the spirit?</td>
<td>9.0</td>
<td>15.4</td>
<td>3.9</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Within the past four weeks, did it occur that you had lack of memory for parts of the time or the whole time the spirit possessed you?</td>
<td>9.0</td>
<td>15.0</td>
<td>4.1</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Did you ever seek help because ghosts haunted you?</td>
<td>15.1</td>
<td>23.6</td>
<td>8.8</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Four or more characteristics (high spirit possession)</td>
<td>8.2</td>
<td>14.3</td>
<td>3.7</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>
identified different indicators for successful integration and maladjustment in the community. When available, we chose appropriate standardized instruments for assessing these constructs. In order to assess functional impairment in specific daily routines a local measure of functioning (Luo Functioning Scale: LFS) was developed (Ertl et al., 2010). Respondents were asked about the degree of difficulty they experienced in completing typical daily tasks or activities in the past month. Current physical health status was assessed by asking for the presence of 12 common diseases, complaints or symptoms (e.g. malaria, diarrhea, etc.) in the four weeks prior to the screening. Suicide risk was assessed with the module C of the Mini International Neuropsychiatric Interview (Sheehan et al., 1998). The Perceived Stigmatization Questionnaire (Lawrence, Fauerbach, Heinberg, Doctor, & Thombs, 2006) was shortened to a 12 item version representing the two factors “confused, staring and hostile behavior” and “absence of friendly behavior”. Respondents’ answers concerning the frequency of stigmatizing behavior during the four weeks prior to the screening were coded on a five point scale. Aggressiveness was assessed using a shortened version of the Aggression Questionnaire (Buss & Perry, 1992). Participants’ answers to 16 statements were coded on a five point scale ranging from zero, “extremely uncharacteristic of me” to four, “extremely characteristic of me”. 

Translations
Luo versions of all instruments were created using a translation and blind back translation procedure. Recommendations for cultural adaption, ensuring conceptual, functional and semantic equivalence were considered (Flaherty et al., 1988). Details of translation and adaption of instruments can be found in Ertl et al. (2010).

Procedure
Eighteen local screeners carried out the interviews after ten weeks of training. A comprehensive explanation of the study and obtaining written informed consent (signature or fingerprint) preceded the interviews. The average duration of an interview was about two hours. In cases where the participant was under age, a caretaker was informed about the study and consent was obtained from him or her. The Ethics Committee of the University of Konstanz, Germany as well as the Ethics Committee of the Mbarara University of Science and Technology, Uganda approved this study.

Data analysis
In absence of valid criteria for possession disorder or a gold standard instrument that could be used for validation, we determined a cut off score of 4 to divide the subjects into a group with low spirit possession (<4) and a group with high spirit possession (>3). Although this cut off may be arbitrary and possibly conserative as it excludes many subjects with considerable possession experiences, we postulate that the agreement of items with the proposed DSM criteria provides some face validity of this procedure. Furthermore, the visual inspection of the histogram of cen spirit possession tentatively showed a U shaped distribution (Fig. 1) with a minimum at three. As a consequence, we assumed that subjects reporting four to five symptoms may represent a distinct group with a pathological form of possession disorder. As the number of subjects selected from the regional clusters were chosen to represent the assumed distribution of their degree of war exposure in the total population of Northern Uganda, weighting of the data was not necessary. To estimate the association of spirit possession with child soldiering, cross tabulations were used. We compared the frequencies of the characteristics of spirit possession items as well as clinical and sociodemographic characteristics between subjects with a history of abduction with non abducted subjects. A logistic regression analysis was used to determine independent predictors of high levels of spirit possession. Hierarchical regression analyses were calculated to test whether spirit possession predicted indicators of impaired functioning while controlling for age, gender, PTSD symptoms and depression symptoms. In all regression analyses, location was entered as fixed factor to adjust to the requirements of cluster sampling. Data was analyzed using the JMP 8.0 software package (SAS Software, Cary, NC).

Results
Table 1 presents the frequencies of the characteristics of cen spirit possession reported by the whole group of adolescents and young adults as well as the subgroups of abductees and non abductees and the p values resulting from of χ² tests for the comparison. High levels of spirit possession, defined as four or more characteristics, have been reported by 8.2% (95% confidence interval: 6.7%–9.9%) of the total population, 14.3% of the abductees (12.3%–16.4%) and 3.7% (2.7%–5.0%) of the non abductees. Among those who had ever sought help for spirit possession, 15.2% had carried out the nyono tongwenso ritual (stepping on the egg in a cleansing ceremony), 7.9% moto apuit (reconciliation ritual after killing), 7.9% lwoko pik wang (washing away the tears), 31.5% other traditional interventions, mainly taking traditional herbs, and 70.2% sought help at a church or from a priest.

The cen spirit possession score was significantly correlated with psychopathology, i.e. PTSD symptoms (spearman’s rho \( < .001 \)) as well as with symptoms of depression (rho \( < .001 \)). The correlations with the intrusion, avoidance and hyperarousal subscales of the PDS were similar (\( < .001 \)). Among those with high levels of spirit possession, 44.5% also fulfilled criteria of PTSD, while the PTSD prevalence reached only 9.9% for those with low levels or no spirit possession.

Table 2 presents the bivariate correlates (odds ratios) with potential predictors of cen spirit possession, which was dichotomized using the cut off of four. The same predictor variables entered a logistic regression model for the explanation of high levels of spirit possession. Table 3 presents the resulting odds ratios and 95% confidence intervals. The adjusted \( R^2 \) of the full model was .17.

A multivariate regression model was calculated to examine the independent contribution of spirit possession to the prediction of
Logistic regression analysis of high versus low levels of spirit possession.

Table 3
Logistic regression analysis of high versus low levels of spirit possession.

<table>
<thead>
<tr>
<th>Low spirit possession n [%]</th>
<th>High spirit possession n [%]</th>
<th>Odds ratio (95% confidence interval)</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (≥18) 519 (56.8)</td>
<td>50 (54.4)</td>
<td>1.15 (.75 .177)</td>
<td>χ² 41; p .51</td>
</tr>
<tr>
<td>Gender (female) 624 (75.0)</td>
<td>69 (61.0)</td>
<td>1.91 (1.19 3.17)</td>
<td>χ² .692; p &lt; .01</td>
</tr>
<tr>
<td>Education (at least primary school) 159 (15.6)</td>
<td>7 (7.61)</td>
<td>.45 (.18 9.1)</td>
<td>χ² 4.26; p &lt; .05</td>
</tr>
<tr>
<td>Extreme poverty 81 (7.9)</td>
<td>22 (23.9)</td>
<td>3.65 (2.15 6.11)</td>
<td>χ² 25.7; p &lt; .001</td>
</tr>
<tr>
<td>Sexual trauma 381 (37.3)</td>
<td>60 (52.5)</td>
<td>3.15 (2.01 4.98)</td>
<td>χ² .275; p &lt; .001</td>
</tr>
<tr>
<td>Forced to kill 73 (7.15)</td>
<td>35 (38.0)</td>
<td>7.97 (4.80 12.9)</td>
<td>χ² 9.19; p &lt; .001</td>
</tr>
<tr>
<td>Abduction 406 (39.8)</td>
<td>86 (73.9)</td>
<td>4.91 (2.69 7.08)</td>
<td>χ² 40.2; p &lt; .001</td>
</tr>
<tr>
<td>Trauma Exposure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n event types &lt; 10 459 (45.0)</td>
<td>17 (18.5)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10 ≤ n event types &lt; 20 452 (44.3)</td>
<td>34 (36.9)</td>
<td>.55 (.30 1.01)</td>
<td></td>
</tr>
<tr>
<td>n event types ≥ 20 110 (10.7)</td>
<td>41 (44.6)</td>
<td>13.55 (7.26 27.3)</td>
<td></td>
</tr>
</tbody>
</table>

a Completed at least primary school.
b Estimated value of assets per person in household under 50 000 Ugandan Shillings (25€); equivalent to the lower 10th percentile.
c Items from the Violence, War and Abduction Exposure Scale.

different indicators of maladjustment. The sociodemographic characteristics gender and age as well as the scores for PTSD, spirit possession and depression were simultaneously entered. It was not possible to use age and gender for the prediction of impairments in functioning as the Luo Functioning Scale, as different instruments were used for age groups and sexes. Table 4 presents the coefficients (standard errors) for the independent variables. R² ranged between .13 (impairment in functioning) and .30 (suicide risk). In an equivalent logistic regression analysis we examined the prediction of high suicide risk according to the MINI Interview. The odds ratios and confidence intervals are presented in Table 5.

To test the robustness of our findings we calculated additional regression analyses using a cut off of 3 rather than 4 for high spirit possession. Although the size of the coefficients slightly changed the statistical significance of single predictors was not affected.

Discussion

In an exemplary study in Northern Uganda we found evidence that spirit possession is a highly prevalent and common phenomenon, especially among former child soldiers but not restricted to them. Spirit possession was related to war trauma and dysfunction, even when the effects of associated psychopathology were taken into account.

Our findings indicate that spirit possession can be a widespread and potentially underestimated phenomenon in some war affected populations. More than eight percent of our sample responded positively to four or more items in the Cen Spirit Possession Scale. As these items were tentatively compatible with the currently proposed criteria for possession states in the DSM V, and as the combination of four items would be sufficient to fulfill these criteria in most cases, it can be assumed that a possession state disorder would be among the most common mental diseases in adolescents and young adults. Our figures are consistent with recent findings from an unselected yet not representative sample from a war affected region in Mozambique (Igreja et al., 2010).

This study could also show that cen spirit possession predicted impairments in various indicators of functioning over and above the effects of depression and PTSD. The indicators of functioning were carefully selected to be valid and relevant in this context. In particular, the relationship with suicidal ideation and a high suicide risk warrants attention and shows that subjects with possession states may require assistance. In addition, cen predicted difficulties carrying out daily routines as measured in the Luo Functioning Scale that was developed specifically for this population.

Consistent with the well documented relationship between physical health and trauma related psychopathology (Schnurr & Green, 2003) we found that PTSD and depression predicted health complaints and that cen explained additional variance. Relating to the social dynamics of cen, we also found that the subjects affected by spirit possession felt more being discriminated against, although we can not directly attribute the discrimination to cen. The only outcome variable that did not correlate with spirit possession was aggression, which is surprising as it contradicts descriptions of cen as a highly aggressive form of psychosis (Betancourt et al., 2009). However, the association between aggression and cen has been based on the observation of obvious cases of spirit possession that had gained attention in the communities. It is plausible that this could lead to a bias towards the recognition of subjects with externalizing behavior, whereas the less aggressive subjects with cen might be hidden from the attention of researchers in the communities and the cen aggression link might in fact be an artifact.

Consistent with the proposed link between dissociative phenomena and trauma and the categorization of spirit possession as a dissociative disorder we found strong evidence that cen is related to trauma, and war trauma in particular. Although our data showed that cen is not restricted to former child soldiers, spirit possession experiences are much more common among formerly abducted children and adults, in particular those who were forced to kill others by the rebel army. As the interpretation of cen involves acts of revenge by the ghost of a killed person this relationship is not surprising. However, cen was also correlated with other trauma types. A logistic regression showed that the relationship to trauma experiences is not linear, but that it is the extreme levels of trauma that are associated with high levels of spirit possession. A previous case–control study from a relatively peaceful region in Uganda also

Table 4
Bivariate correlates of high levels of spirit possession.
found more traumatic event types among subjects who reported spirit possession (van Duijl et al., 2010), which argues that traumatic events may be a general risk factor for spirit possession. Second to the experience of traumatic events, we found that female gender, extreme poverty and low education predicted severe forms of spirit possession. These findings correspond with anthropological observations that spirit possession mainly affects marginalized subjects in the society (O’Connel, 1982).

This study has several limitations. The evidence documented here may be restricted to the unique context in Northern Uganda and it is premature to formulate universal characteristics and relationships about the nature of spirit possession. Spirit possession may depend on the cultural and social context more than other abnormal psychological phenomena. For decades, the intense propaganda spread by the Northern Ugandan rebel movements has been related to magical thinking and spirit possession. This propaganda, which was drawn from pre existing animistic and religious convictions, has probably created a fertile ground for the proliferation of harmful forms of spirit possession in the context of war related psychological and social destructions. This is particularly relevant for the cen phenomenon as it is obvious that this type of spirit is associated with an individual as well as a social response to major moral transgressions and may have an important role in the maintenance of the social regulations in times of severe conflicts. Although cen was not limited to former child soldiers, they reported higher rates of spirit possession, which may be related to the fact that they were more intensely exposed to the LRA belief system.

At the same time it has to be emphasized that spirit possession is usually not perceived as psychopathology within the local culture. Although our data is consistent with the association of cen with impaired mental health, a reduction of this phenomenon to mere psychopathology is inappropriate. The clinical perspective taken in this survey must be complemented by sociological, historical and anthropological studies investigating the cultural and social interpretation of this phenomenon (Baines, 2010).

In addition, comparative studies from different regions are required to understand potential specific as well as shared features of this phenomenon. We are aware that a cross sectional study can not infer causality. Longitudinal studies are needed to investigate the temporal relationship between possession states and impairments to ultimately confirm the incremental validity hypothesis. Ultimately, to increase the validity of the measurements, further studies should use outcome criteria that are based on peer reports or objective data instead of self report only. Although we used much effort to develop a scale that provides valid information on cen in the local context, the instrument used in this study is compromised by the lack of formal psychometric evaluation prior to this investigation.

In sum, the findings of our study are consistent with the assumption that spirit possession phenomena can be a trauma related psychopathological entity independent from PTSD and depression. It is likely that the characteristics of the long lasting war in Northern Uganda, that included the intense proliferation of spiritual and magical beliefs, have contributed to the widespread interpretation of psychological damages as transcendent phenomena. Although a mere psychopathological or clinical description of possession states should be avoided as it falls short of this historical and social background, the findings of our study support current efforts to include possession states into the category of dissociative disorders in diagnostic manuals. Our results also show that subjects with spirit possession may require some form of assistance or treatment. However, spirit possession is rarely systematically treated in Northern Uganda. It will be interesting to see whether spirit possession can be reduced by evidence based therapies for trauma related disorders (e.g. Neuner et al., 2004; Neuner et al., 2008) or by more specific and traditional treatments as recommended by other researchers (Igreja et al., 2010).

Acknowledgments

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### References


<table>
<thead>
<tr>
<th>Term</th>
<th>Suicide risk</th>
<th>Impairment in functioning</th>
<th>Perceived discrimination</th>
<th>Physical complaints</th>
<th>Aggression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (female)</td>
<td>.10***</td>
<td>n/a</td>
<td>.15**</td>
<td>.11***</td>
<td>.016</td>
</tr>
<tr>
<td>Age</td>
<td>-.02</td>
<td>n/a</td>
<td>.02</td>
<td>.18***</td>
<td>.034</td>
</tr>
<tr>
<td>PTSD symptoms</td>
<td>.10**</td>
<td>.14***</td>
<td>.12***</td>
<td>.09</td>
<td>.021</td>
</tr>
<tr>
<td>Spirit possession symptoms</td>
<td>.08**</td>
<td>.09**</td>
<td>.10***</td>
<td>.09**</td>
<td>.034</td>
</tr>
<tr>
<td>Depression symptoms</td>
<td>.43***</td>
<td>.21***</td>
<td>.34***</td>
<td>.28***</td>
<td>.40***</td>
</tr>
</tbody>
</table>

* p < .05, ** p < .01, *** p < .001

Table 4

Standard betas resulting from multivariate regressions of age, gender, clinical symptoms and spirit possession on outcome criteria.

Table 5

Logistic regression of age, gender, Diagnosis of PTSD and depression as well as high spirit possession on high suicide risk.


