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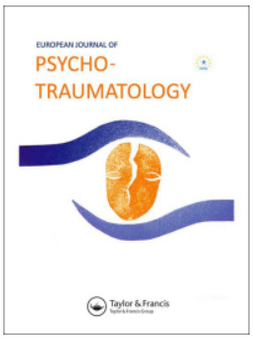

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BASIC RESEARCH ARTICLE

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Traumatised youth harbour feelings of revenge: investigating the association between PTSD symptomatology, vengeance, and willingness to forgive among the Congolese adolescent refugees in Uganda

Herbert E. Ainamani [a], Godfrey Rukundo [b], Nolbert Gumisiriza[a], Christopher Tumwine[a] and Jonathan Hall[c]

[a]Department of Mental Health, Kabale University School of Medicine, Kabale, Uganda; [b]Department of Psychiatry, Mbarara University of Science and Technology, Mbarara, Uganda; [c]Department of Peace and Conflict Research, Uppsala University, Uppsala, Sweden

ABSTRACT

Background: Prolonged conflicts in the Democratic Republic of Congo (DRC) have caused widespread psychological trauma among civilians leading to maladaptive coping strategies across generations. Despite this occurrence, empirical studies on the prevalence of trauma and its impact on attitudes towards revenge and forgiveness, particularly among the youth, are scarce. This study aims to clarify the relationship between Post Traumatic Stress Disorder (PTSD) symptom severity and the desires for forgiveness and revenge among Congolese adolescents residing in Uganda.

Methods: We analysed data from 269 adolescent refugees from the DRC living in the Nakivale refugee settlement in Southwestern Uganda. The assessment included exposure to war-related traumatic events and the MINI-KID for DSM-V PTSD symptom severity. The Heartland Forgiveness and Vengeance Scales measured willingness to forgive and feelings of vengeance.

Results: Exposure to war-related traumatic events was notably high in our sample, with severe deprivation of food (260 [97%]), exposure to armed combat (249 [93%]), witnessing bombing, burning, or destruction of houses (245 [91%]), disappearance of family members (239 [89%]), and seeing dead bodies (236 [88%]). PTSD symptom severity was negatively associated with willingness to forgive ($b = -0.48$; 95% CI −0.71–−0.25; $p < .001$) and positively associated with vengeance ($b = 0.18$; 95% CI 0.04–0.32; $p = .011$).

Conclusion: PTSD symptom severity reduces the willingness to forgive and increases the desire for vengeance among adolescent refugees. Mental health clinicians and policymakers should consider addressing maladaptive coping behaviours related to feelings of revenge and unwillingness to forgive in their support strategies for refugees.

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Adolescent; refugees; PTSD symptom severity; vengeance; forgiveness; Uganda

PALABRAS CLAVE

Refugiados adolescentes; gravedad de los síntomas de TEPT; venganza; voluntad de perdonar; Uganda

HIGHLIGHTS

- Children and adoscent refugees experience different traumatic events.
- PTSD symptomatology is positively associated with feelings of vengeance.
- PTSD symptoms severity negatively correlates with willingness to forgive.

Los jóvenes traumatizados albergan sentimientos de venganza: Investigación de la asociación entre la sintomatología del TEPT, la venganza y la voluntad de perdonar entre los adolescentes congoleños refugiados en Uganda

Antecedentes: Los conflictos prolongados en la República Democrática del Congo (RDC) han causado traumas psicológicos generalizados entre la población civil, lo que ha dado lugar a estrategias de afrontamiento desadaptativas a lo largo de generaciones. A pesar de ello, son escasos los estudios empíricos sobre la prevalencia del trauma y su impacto en las actitudes hacia la venganza y el perdón, particularmente entre los jóvenes. Este estudio pretende aclarar la relación entre la gravedad de los síntomas del Trastorno de Estrés Postraumático (TEPT) y los deseos de perdón y venganza entre los adolescentes congoleños residentes en Uganda.

Métodos: Se analizaron los datos de 269 adolescentes refugiados de la RDC que vivían en el asentamiento de refugiados de Nakivale, en el suroeste de Uganda. La evaluación incluyó la exposición a acontecimientos traumáticos relacionados con la guerra y el MINI-KID para la gravedad de los síntomas del TEPT DSM-5. Las escalas de Heartland para el perdón y la venganza midieron la disposición a perdonar y los sentimientos de venganza.

Resultados: La exposición a acontecimientos traumáticos relacionados con la guerra fue notablemente alta en nuestra muestra, con privación grave de alimentos (260 [97%]), exposición a combates armados (249 [93%]), presenciar bombardeos, incendios o destrucción de casas (245 [91%]), desaparición de familiares (239 [89%]) y ver cadáveres (236 [88%]). La gravedad de los síntomas de TEPT se asoció negativamente con la disposición a perdonar ($b = -0.48$; IC 95%: −0.71–0.25; $p < .001$) y positivamente con la venganza ($b = 0.18$; IC 95%: 0.04–0.32; $p = .011$).

CONTACT Herbert E. Ainamani hainamani@kab.ac.ug Department of Mental Health, Kabale University School of Medicine, P. O. Box 317, Kabale, Uganda

Conclusiones: La gravedad de los síntomas del TEPT reduce la voluntad de perdonar y aumenta el deseo de venganza entre los refugiados adolescentes. Los clínicos de salud mental y los responsables políticos deberían considerar abordar los comportamientos de afrontamiento desadaptativos relacionados con los sentimientos de venganza y la falta de voluntad de perdonar en sus estrategias de apoyo a los refugiados.

Abbreviations: PTSD: Post-Traumatic Stress Disorder; LMICs: Low- and middle-income countries; OPM: Office of the Prime Minister; DRC: Democratic Republic of Congo

1. Introduction

Background: The ongoing conflict in the Democratic Republic of Congo (DRC) has forced many individuals to seek refuge in neighbouring countries and beyond (Logie et al., 2023; Silove, 1999; Ssenyonga et al., 2013; Steel et al., 2002). During preflight and flight periods, refugees experience or witness potentially traumatic events (Mattonet et al., 2023).

Previous studies with refugee children (Agbaria et al., 2021; Attanayake et al., 2009; Back Nielsen et al., 2019; El-Khodary et al., 2020; Logie et al., 2023) and adults (Ainamani et al., 2020; Badri et al., 2012; Bahati et al., 2022; Farhood et al., 2006) show that refugees endure experiences such as witnessing injuries or dead bodies, the death of loved ones, torture, abduction and lack of food.

Such traumatic experiences consistently correlate with mental health problems, including Post Traumatic Stress Disorder (PTSD), depression, and substance use (Bahati et al., 2023; Burkle, 2001; Paardekooper, 1999). Other studies also show that PTSD symptoms 'severity increases with the number of experienced traumatic events' (Ainamani et al., 2017; Neuner et al., 2004). These negative mental health consequences of trauma have been linked to high levels of unwillingness to forgive and reconcile with the perceived perpetrators (Bayer et al., 2007; Langman & Chung, 2013). Specifically, a negative correlation exists between PTSD symptoms and both willingness to reconcile and forgive (Bayer et al., 2007). Higher forgiveness levels are associated with lower PTSD-related symptom scores (Cerci & Colucci, 2018). Additionally, individuals exposed to traumatic violent events are less likely to extend forgiveness to their perceived perpetrators (Lopez, 2003). This form of unforgiveness is characterised by resentment, bitterness, hatred, hostility, residual anger, and fear (McCullough et al., 2001). However, forgiveness in the affective and cognitive domains carries several benefits, such as decreasing negative emotional affect and mood caused by perpetrators (Kim et al., 2022; Mróz & Kaleta, 2023). The benefits of forgiveness are not only psychological but also improve the physical well-being of the survivor (Mróz & Kaleta, 2023; Raj et al., 2016) and may strengthen or heal interpersonal relationships (Kim et al., 2022; Li et al., 2021). Beyond unwillingness to extend forgiveness and reconcile with perceived perpetrators, traumatised individuals often harbour feelings of revenge, grudge, and anger (Cardozo et al., 2003; Orth et al., 2006). This correlation between trauma-related disorders, feelings of revenge, and anger was observed in a sample of 174 surviving victims of violence in Germany (Orth et al., 2006). Feelings of revenge arise when an individual perceives that severe harm caused by another person needs a payback with an increasing urge to retaliate. Studies investigating the motivations behind vengeful behaviour show that people engage in revenge to return what they believe perpetrators deserve, improving their self-esteem, and re-establishing balance or giving 'tit for tat' (McCullough et al., 2001). Maladaptive coping behaviours, such as persistent beliefs in achieving justice or revenge are documented in the cognitive model of PTSD (Ehlers & Clark, 2000). This supports the theory of revenge documented by various authors (Bies et al., 1997; Bradfield & Aquino, 1999). In this theory, the authors show that; revenge follows a pathway involving (1) the survivor's exposure to unpleasant experiences such as violations of norms and interpersonal abuse and, (2) the survivor's rumination on such experiences that elicits thoughts of holding the perpetrator accountable. Within this internal processing, the survivor has two options: (a) hold the perpetrator accountable and seek revenge or justice (b) extend forgiveness to the perpetrator. If the survivor chooses the former, anger increases and the likelihood of seeking revenge rises (Bies et al., 1997). These theoretical assumptions can be linked to research that shows how traumatic events shatter core assumptions of an individual's worldview resulting in symptoms of PTSD (e.g. emotional sadness, anger, intrusions) and re-experiencing the traumatic events (van der Kolk, 2000). As a function of maladaptive coping strategies, survivors of trauma are likely to experience excessive anger outbursts, self-blame, blaming others, and unwillingness to forgive oneself and others.

Despite forgiveness being an important aspect of mental health interventions among survivors of war (Kandemiri, 2019), our review of the literature shows that a few studies have examined the psychopathology related to the association between PTSD, willingness to

forgive, and vengeance among adult and young refugees in Africa. Most previous studies in this area of research within East Africa and Uganda in particular have examined trauma, aggressive behaviour, PTSD, or PTSD symptom severity in refugee or community settings (Ainamani et al., 2022; Hecker et al., 2015, 2017; Ssenyonga et al., 2013). The closest available study in Uganda examined the association between trauma, PTSD symptoms, willingness to reconcile, and feelings of revenge among former Ugandan and Congolese soldiers (Bayer et al., 2007). To fill this gap in the literature, an understanding of etiological factors associated with willingness to forgive and vengeance among adolescent refugees is essential. Our study sought to investigate the association between PTSD symptoms severity, willingness to forgive, and vengeance among children and adolescent Congolese refugees in Uganda. We also documented the types and frequencies of traumatic events experienced by these adolescents. We expected that (1) children and adolescent refugees would endorse having experienced various war-related traumatic events (2) PTSD symptom severity would negatively correlate with willingness to forgive (3) PTSD symptoms severity would positively associate with vengeance among the adolescent refugees living in Uganda.

2. Method

2.1. Study design and setting

This cross-sectional study was carried out in Nakivale refugee settlement among 269 adolescent refugees in Uganda between January and April 2024. As of 31st January 2022, Nakivale Refugee Settlement hosted approximately 142,232 refugees from Burundi, Eritrea, Ethiopia, Rwanda, Somalia, Southern Sudan and DRC (UNHCR, 2022). The refugee settlement has a total area of 185 sq km (71 sq mi). Congolese refugees comprise more than half (77,917) of the refugees in the settlement. More than half (54%) of this population is below 18 years of age (UNHCR, 2024). The government of Uganda supports the refugee settlement under the office of the Prime Minister (OPM) and United Nations High Commissioner for Refugees (UNHCR), which funds different partners and non-governmental organisations operating in the refugee settlement. In the past, individual families were provided with food rations (maize flour and beans) and non-food items like hoes, sickles, and basic household utensils. However, the provision of food rations has been replaced by cash while the chances of being allocated land for new refugees have significantly reduced (Namubiru et al., 2022). Allocation of land to each family for subsistence agriculture is used to support families in self-sufficiency and increase their livelihood without assistance. School-going youth experience several challenges, such as differences in curriculum and language barriers (Kemigisha et al., 2020). Tensions between refugees and host communities over limited resources have been previously documented (Bjørkhaug, 2020). However, the government of Uganda through the Office of the Prime Minister makes all efforts to mitigate all these challenges.

2.2. Ethical considerations

Ethical clearance to conduct this study was obtained from the Mbarara University of Science and Technology Research Ethics Committee (MUST-REC) and registered with the Uganda National Council for Science and Technology (UNCST). The study was further cleared by the office of the Prime minister (OPM) a governmental department that oversees the work and the welfare of the refugees in Uganda. Research instruments were translated into the languages spoken by the participants by an expert in Kiswahili and Kinyabwisha (the two languages spoken by refugees from DRC) and the blind copy was back translated by a clinical psychologist who speaks both languages before data collection. A written consent form was obtained from all participants with parents providing consent on behalf of the children. Additionally, an assent form was acquired from the children themselves. These forms explained the study's purpose and emphasised that participation was completely voluntary. Participants were assured of their confidentiality and the freedom to withdraw from the interview at any time without any negative consequences. Emotional sentiments related to their past unpleasant experiences were supported by the psychologists and references were made to health centres within the area for specialised management. Severe cases were referred to ALIGHT, an organisation based in Nakivale refugee settlement, for mental health clinical support. In this particular study, we included adolescents from the Democratic Republic of Congo who lived in the refugee camp for more than five years. The choice of this sample was because there has been an ongoing war in DRC that has severely affected individuals' mental health. Participants who could not communicate due to mutism or severe intoxication were excluded.

2.3. Primary predictors and outcomes

Post-traumatic stress disorder symptom severity was assessed using the MINI International Neuropsychiatric Interview 7.02 (MINI-KID). The MINI is a short, structured diagnostic interview compatible with the Diagnostic and Statistical Manual of Mental Disorders 5. It is designed for clinical practice, research in psychiatric primary care settings, and epidemiological

surveys (Sheehan et al., 2010). The MINI has demonstrated strong validity and reliability in assessing psychiatric disorders in different populations (Högberg et al., 2019). The assessment tool has also been used in similar settings in East African countries such as Uganda (Nalugya-Sserunjogi et al., 2016) and Kenya (Khasakhala et al., 2013). The semi-structured interview provides a categorical diagnosis as well as a measure of the severity of PTSD symptoms defined by DSM-V1 with 19 items, 17 of which correspond to the DSM-IV symptoms. DSM-V1 with 19 items, 17 of which correspond to the DSM-IV symptoms. For our analysis, we included a total score of all the 17 symptoms that relates to the DSM-IV PTSD subscales.

Vengeance: This was assessed using the Vengeance Scale English version [34]. The scale has been used to measure dimensional feelings of revenge in different settings and exhibits good psychometric properties (Uzun, 2018). The scale consists of 22 items, each assessed on a 5-point rating scale. This tool is further categorized into three forms of revenge or retaliation, i.e. emotional state, forgiveness and perception of self and others. Some of the questions within this tool included 'When I get angry with the people around me, my feeling of revenge grows, I do not like to get revenge, the desire for revenge reveals all the negative emotions in me, I have to take revenge to be happy, I take revenge for every wrong doing, I believe in the saying of an "eye for an eye"'. The scale collectively explains 44% of the variance with explained reliability measures of 0.77 and Cronbach's $\alpha = 0.75$. Internal consistency in the sample was good (Cronbach's $\alpha = .93$). For our analysis, we regressed the total score on our predictor variables. We calculated the dimensional sum (yes and no) for the analysis ranging from 0–22.

Forgiveness: The Heartland Forgiveness Scale (HFS) was used to assess the willingness to forgive in our sample of adolescent Congolese refugees (Barber et al., 2005). The scale includes 18 items assessing different forms of forgiveness, including forgiveness of self (e.g. 'with time I am understanding of the mistakes that I have made' [item 5]), forgiveness of others (e.g. 'If others mistreat me, I continue to think badly of them' [item 10]), and forgiveness of uncontrollable situation (e.g. I eventually let go of the negative thoughts about bad circumstances that are beyond any one's control).

Participants rate each item on a 7-point Likert scale ranging from 1 = 'almost always false of me' to 7 = 'almost always true of me.' The total score ranges from 18–126. The higher scores indicate how forgiving a person tends to be on forgiving self, others, and uncontrollable situations. Higher scores indicate low levels of forgiveness, and lower scores indicate low levels of forgiveness. For example, a score of 18 to 54 on the total HFS indicates that one is usually unforgiving of oneself, others, and uncontrollable situations. A score of 55 to 89 indicates that one is about as likely to forgive as one is not to forgive oneself, others, and uncontrollable situations, while a score of 90 to 126 indicates that one is usually forgiving of oneself, others, and uncontrollable situations.

Cronbach's α for the subscales of forgiveness of self and others range from 71 to 83 (Barber et al., 2005; Thompson et al., 2005). The scale has good psychometric measures with a good inter-rater reliability of .87. Internal consistency in the sample was good (Cronbach's $\alpha = .72$). For our analysis, we regressed the total score on our predictor variables.

2.4. Covariates

The participants were assessed on their age, education levels, sex/gender, and their status regarding being unaccompanied or accompanied.

Exposure to war-related traumatic events was assessed by a checklist of potentially traumatic events (Ainamani et al., 2020; Badri et al., 2012). This checklist assesses exposure to 15 war-related traumatic events, such as whether the participants have witnessed rape by armed personnel, tortured by armed personnel, abducted by armed personnel, have seen, or been forced to carry dead bodies, and witnessed the death of a loved one by armed personnel. These items require an individual to endorse whether they have personally experienced or witnessed the event with a yes or no. This scale is reliable and has been used in similar samples of refugees both in Uganda and outside Uganda (Ainamani et al., 2020; Badri et al., 2012). Participants are assessed either having experienced the event (yes) or not having experienced the event (no). This tool possesses good psycho-metric measures (Scharpf et al., 2019) and the internal consistency in our sample was good (Cronbach's $\alpha = .74$).

2.5. Data analysis

Statistical analyses were performed using STATA 14. Descriptive statistics were used to examine the social demographic characteristics and the occurrence of war-related traumatic event types, PTSD, forgiveness, and vengeance among Congolese adolescent refugees. To measure PTSD symptom severity, we summed up all the dimensional scares of a total 17-item scale (0–17). The higher scores on this scale signified severe symptoms of PTSD. Types and occurrences of different traumatic events and willingness or unwillingness to forgive others were analysed using descriptive statistics. A two-step hierarchical multiple linear regression analysis was used to analyse the association between PTSD symptom severity (predictor variable) and the outcome variables of vengeance and forgiveness within our sample as continuous variables. The

Table 1. Sample characteristics and intercorrelations with the main study variables.

Variables	*n*	*M*	SD	Range	1	2	3	4	5
1.Vengeance	269	6.02	4.55	1–16	1				
2. Age in years	269	15.12	2.03	10–19	−0.015	1			
3. War trauma	269	10.04	2.76	0–15	0.239***	−0.023	1		
4. Forgiveness	269	77.55	7.53	60–97	−0.036	0.127*	0.003	1	
5.PTSD-symptomsseverity	269	14.12	4.21	0–17	0.228***	0.132*	0.378***	−0.204***	1
	n	%							
Sex									
Male	119	44							
Female	150	56							
Level of Education									
None	38	14							
Primary	201	75							
Secondary	30	11							
Unseparated									
Yes	199	74							
No	70	26							

Note: Heartland Total score (forgiveness), PTSD-Total score = PTSD symptom severity; *$p < .05$; **$p < .01$; ***$p < .001$.

regression models in this study fulfilled all the necessary quality criteria for linear regression analysis.

3. Results

3.1. Demographic characteristics of the sample

In total, 269 participants with a mean average age of 15.12 (range 10–19) participated in our study. Two hundred and one (201[75%]) participants had a primary level of education, (199 [74%]) were accompanied minors' PTSD symptom severity was high with a mean of 12.9 (SD,13.94). Participants' descriptive statistics and results from Pearson correlation analysis are displayed in Table 1.

3.2. Type and frequencies of different war-related traumatic events

Close to 100% of the participants within our sample endorsed to have experienced at least one potentially traumatising event ranging from severe deprivation of food (260[97%]), exposure to armed combat (249 [93%]), witnessing bombing, burning and violent destruction of houses (245[91%]), disappearance of family members (239[89%]) and seeing dead bodies or corpses (236 [88%]). On the whole, girls ($n = 150$) experienced more traumatic events than boys ($n = 119$) (Table 2).

Table 2. Type and endorsed frequencies of different war-related traumatic events.

	Total ($n = 269$) *n*(%)	Boys ($n = 119$) *n*(%)	Girls ($n = 150$) *n*(%)
Having been severely deprived of food and water due to war	260(97)	114(96)	146(97)
Having been exposed to armed combat	249(93)	109(92)	140(93)
Seeing bombing, burning, or destruction of houses	245(91)	107(90)	138(92)
Disappearance of family members	239(89)	104(87)	135(90)
Seeing dead bodies	236(88)	96(81)	140(93)
Experienced a fire or explosion	229(85)	101(85)	128(85)
Witnessing an execution?	201(75)	86(72)	115(77)
Witnessing someone being killed	200(74)	80(67)	120(80)
Witnessing armed robbery	181(67)	78(66)	103(69)
Witnessing rape by armed groups	170(63)	80(67)	90(60)
Having been forced to separate from family members	165(61)	66(55)	99(66)
Physically assaulted	136(51)	70(59)	66(44)
Having been tortured	72(27)	30(25)	42(28)
Walking long distances	60(22)	26(22)	34(23)
Having been imprisoned or kidnapped	58(22)	24(20)	34(23)

3.3. Association between PTSD symptom severity and willingness to forgive

In the first step, we regressed forgiveness on PTSD symptom severity as a single explanatory variable. PTSD symptom severity had a negative statistically significant association with willingness to forgive $\beta = -0.37$; 95% confidence interval (CI) −0.58–−0.15; $p = .001$and explained 4% of the variance in the forgiveness total score (adj. $R^2 = 0.04$, $F(1, 267) = 11.63$, $p = .0007$) (Table 3). In step two, we adjusted for covariates of the total number of traumatic events, sex, separated, level of education and age in years, the estimated association between PTSD symptom

Table 3. Association between PTSD symptom severity and willingness to forgive.

	β	S.E	*p*-value	95% CI	
Step 1				LCI	UCI
PTSD-symptoms severity	−0.37	0.11	.001	−0.58	−0.15
Step 2					
PTSD-Symptoms severity	−0.48	0.12	<.001	−0.71	−0.25
Trauma-sum score	0.26	0.18	.134	−0.0	0.61
Sex					
Female	Ref				
Male	0.30	0.90	.741	−1.48	2.08
Separated					
No	Ref				
Yes	0.98	1.02	.338	−1.03	2.99
Level of education					
None	Ref				
Primary	−2.44	1.42	.088	−5.25	0.36
Secondary	−3.80	1.79	.035	−7.31	−0.28
Age in years	0.53	0.26	.045	0.01	1.04

Note: Trauma sum-score = Number of traumatic events *$p < .05$; **$p < .01$; ***$p < .001$.

Table 4. Association between PTSD symptom severity and vengeance.

	β	S.E	p-value	95% CI	
Step 1				LCI	UCI
PTSD symptoms severity	0.25	0.06	<.001	0.12	0.37
Step 2					
PTSD-symptoms severity	0.18	0.07	.011	0.04	0.32
Trauma-sum score	0.25	0.10	.016	0.05	0.46
Sex					
Female	ref				
Male	−1.08	0.54	.046	−2.14	−0.02
Separated					
No	ref				
Yes	−0.77	0.61	.208	−1.97	0.43
Level of education					
None	ref				
Primary	−1.69	0.85	.048	−3.37	−0.01
Secondary	−2.28	1.07	.033	−4.38	−0.18
Age in years	−0.13	0.16	.397	−0.44	0.18

Note: Trauma sum-score = Number of traumatic events *$p < .05$; **$p < .01$; ***$p < .001$.

severity and forgiveness remained statistically significant ($\beta = -0.48$; 95% CI −0.71–−0.25; $p = <.001$). This regression model explained 7% of the variance in forgiveness (adj. $R^2 = 0.07$, $F(7, 261) = 4.00$, $p = .0004$).

Having accomplished secondary education negatively associated with forgiveness ($\beta = -3.80$; 95% CI −7.31–−0.28; $p = .035$) while age in years ($\beta = 0.53$; 95% CI 0.01–1.04; $p = .045$) positively associated with forgiveness.

3.4. Association between PTSD symptom severity and vengeance

In this model, we regressed vengeance on PTSD symptom severity as a single explanatory variable. PTSD symptom severity had a positive statistically significant association with a vengeance [$\beta = 0.25$; 95% confidence interval (CI) 0.12–0.37; $p = <.001$] and explained 5% of the variance in the vengeance total score (adj. $R^2 = 0.05$, $F(1, 267) = 14.64$, $p = .0002$) (Table 4).

In step two, we adjusted for covariates of the total number of traumatic events, sex, separation, level of education, and age in years. The estimated association between PTSD symptom severity and forgiveness remained statistically significant ($b = -0.48$; 95% CI −0.71–−0.25; $p = <.001$). This regression model explained 9% of the variance in vengeance (adj. $R^2 = 0.09$, $F(7, 261) = 5.00$, $p < .001$). War trauma ($\beta = 0.25$; 95% CI 0.05–0.46; $p = .016$), Primary education ($\beta = -1.69$; 95% CI −3.37–−0.01; $p = .048$), secondary education ($\beta = -2.28$; 95% CI −4.38–−0.18; $p = .033$) and sex ($\beta = -1.08$; 95% CI −2.14–−0.02; $p = .046$) were also statistically significant.

4. Discussion

Our study sought to investigate the association between PTSD symptom severity, willingness to forgive, and vengeance among adolescent Congolese refugees in Uganda. We also documented the types and frequencies of traumatic events experienced by these adolescents. We hypothesised that (1) Adolescent refugees would endorse having experienced various war-related traumatic events (2) PTSD symptom severity would negatively correlate with willingness to forgive and (3) PTSD symptom severity would positively correlate with vengeance among adolescent refugees living in Uganda. Our major findings were that: (1) adolescent refugees reported exposure to several war-related event types, (2) there was a significant negative association between PTSD symptom severity and forgiveness, and (3) a significant positive association between PTSD symptom severity and vengeance was observed.

Our results show that the refugee adolescents within our sample experienced a high number of war-related potentially traumatising events. Specific, traumatising events endured by the adolescents in our sample include deprivation of food and water due to war, exposure to armed combat, witnessing bombing, burning, or violent destruction of houses, disappearance of family members, and seeing dead bodies.

High exposure to different war-related events resonates with previous research findings documenting exposure to various traumatic events among refugees (Badri et al., 2012; El-Khodary et al., 2020). One study profiling traumatic events among children and adolescents in the Gaza Strip, showed that many participants had experienced personal trauma while others had witnessed different types of traumatic events (El-Khodary et al., 2020). Specific traumatic experiences observed in the above study included being injured with live ammunition, seeing friends or family members being shot or injured, and witnessing the burning or destruction of property.

Similarly, our findings align with those of a longitudinal study documenting different types of traumatic experiences among young refugees across nine European countries (Pfeiffer et al., 2022) and another study that analysed patterns of conflict-related trauma across different age categories in a population sample from DRC (Dumke et al., 2021). We argue that, high exposure to traumatic experiences within our sample of the adolescents can be explained by the prolonged wars in the Democratic Republic of Congo.

A notable finding from our study is that female youth experienced more events across all profiled potentially traumatic events except for physical assault that was endorsed by more boys than girls. This observation however, concurs with previous studies that have documented gender differences in relation to exposure to traumatic events among the young people exposed to war trauma (El-Khodary et al., 2020; Pfeiffer et al., 2022). A recent study that unpacked gender

specific risk and protective factors among adults Congolese refugees observed that women reported higher distress than men (Lambert et al., 2024). The association between being a female and the development of PTSD including exposure to personal trauma such as rape and sexual assault among the refugees is established (Ainamani et al., 2020; El-Khodary et al., 2020; Malemo Kalisya et al., 2011). However, research that indicates young women to experience more number of traumatic events than boys is lacking. We recommend that this phenomenon be closely examined.

The finding that individuals with high PTSD symptoms severity were less likely to extend forgiveness to their perceived perpetrators corresponds well with the previous findings of previous researchers who observed that children who were exposed to trauma and PTSD had significantly less willingness to reconcile and exhibited high feelings of revenge (Bayer et al., 2007; Langman & Chung, 2013). Specifically, a negative correlation between PTSD and both willingness to forgive was found (Bayer et al., 2007). While high forgiveness levels were associated with lower PTSD-related symptoms scores (Cerci & Colucci, 2018). Relatedly, other findings have found that individuals who are exposed to violent traumatic events are less likely to extend forgiveness to their perceived perpetrators (Lopez, 2003). We argue that PTSD symptom severity might hinder the refugee adolescent's ability to extend forgiveness to those individuals who are perceived to be their perpetrators.

In line with previous studies that showed that; traumatised individuals harbour feelings of revenge, grudge and anger (Cardozo et al., 2003; Orth et al., 2006), our findings show that PTSD symptom's severity is positively associated with feelings of revenge within our study sample. This correlation between PTSD and feelings of revenge was also observed in a sample of 174 survivors of violence victims from Germany (Orth et al., 2006). In the same way, other studies that have deeply investigated the motivations behind vengeance and vindictive sentiments have shown that people engage in vengeful behaviour in order to give the perpetrator what they deserve, establish the victim's self-esteem and re-establish balance or engage in 'tit for tat' (McCullough et al., 2001). Findings in our study could also be explained by the presence of maladaptive coping behaviour related to excessive anger outbursts, aggression, and hostility that have been observed among individuals with PTSD (Barber et al., 2005; Spiller et al., 2019). Our results are further supported by a theoretical framework proposing feelings of revenge as ruminative within the concept of PTSD and trauma (Bies et al., 1997). The results imply that adolescent refugees are likely to be preoccupied with thoughts of what could have caused their unpleasant experiences, how they could have prevented the occurrence, and how best justice or revenge could be achieved, could further culminate into harbouring revengeful feelings towards the perpetrator.

We suggest that an assessment of forgiveness and feelings of revenge be incorporated in the major trauma-focused interventions.

4.1. Limitations

Several limitations should be noted. First, the cross-sectional study design does not allow for the establishment of causality. Therefore, reported associations between PTSD symptomatology and feelings of forgiveness and revenge should be interpreted with caution. Longitudinal and prospective studies are needed to shed more light on the causal relations. Although participants spoke openly about their experiences and feelings, potential biases such as social desirability cannot be ruled out for subjective reports. Our experience working with such refugee groups helped mitigate this limitation.

5. Conclusions

In conflict and post-conflict communities, children and adolescents are continuously exposed to many forms of potentially traumatising events, which also expose them to a high risk of developing severe PTSD symptoms. Individuals with severe symptoms of PTSD are likely to express less feelings of forgiveness and higher feelings of revenge. The positive physical and psychological benefits of forgiveness are enormous.

We recommend that future studies examine the extent to which reduction of feelings of revenge and unwillingness to forgive can improve refugee mental health. We also recommend that future studies consider the effect of time since the traumatic event and the time of assessment. This will provide information on whether coping strategies such as vengeance and aspects of forgiveness are modified by time.

Authors' contributions

HEA participated in the conception and design of the study, collected the data, performed the data analyses, interpreted the data, and drafted the manuscript. GZR participated in the conception of the study and provided substantial revision of the manuscript. NG and CT participated in the conception of the study and revised the manuscript and JH participated in the conception and design of the study and revision of the manuscript. All authors read and approved the final manuscript.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

The data sets used and analysed during the current study will be available on dataverse.harvard.edu on acceptance of the paper for publication.

ORCID

Herbert E. Ainamani http://orcid.org/0000-0001-7290-7232
Godfrey Rukundo http://orcid.org/0000-0002-3739-1426

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