Article

JHP

Journal of Health Psychology
2020, Vol. 25(12) 1857–1870

DOI: 10.1177/1359105318775185
journals.sagepub.com/home/hpq
SAGE

Coping with post-war mental health problems among survivors of violence in Northern Uganda: Findings from the WAYS study

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Abstract

Cognitive emotion regulation strategies and mental health problems were assessed in a sample of war-affected youth in Northern Uganda. Univariable and multivariable regression models were fitted to assess the influence of CERS on mental health problems. Maladaptive cognitive emotion regulation strategies (e.g., rumination) were significantly associated with more mental health problems while adaptive cognitive emotion regulation strategies (e.g., putting into perspective) were associated with reporting fewer symptoms of mental health problems. The youth with significant scores on mental health problems (scores ≥ 85th percentile) reported more frequent use of maladaptive than adaptive strategies. Interventions to reduce mental health problems should focus on enhancing the use of adaptive strategies.

Keywords

coping, emotional regulation, mental health problems, Northern Uganda, war

Introduction

Post-war environmental factors such as stressors, stigma, community relations and coping strategies are critical in determining the long-term mental health outcomes among survivors (Amone-P'Olak et al., 2014; Kithakye et al., 2010; Miller and Rasmussen, 2010). Specifically, coping with the negative consequences of war such as physical (e.g., injuries) and mental (e.g., posttraumatic stress disorder (PTSD), depression, anxiety, hostility) health problems is a key determinant of treatment outcomes and has significant implications for long-term mental health and well-being (Amone-P'Olak et al., 2007; McMullen et al., 2013). For example, adaptive coping strategies such as planning have often been associated with positive health behaviours and reduction in psychological distress but maladaptive coping strategies such as withdrawal have been linked to mental health problems (Garnefski et al., 2001; Garnefski et al., 2002; McMullen et al., 2013). Furthermore, the use of adaptive coping skills is known to be associated with help-seeking and effective treatment outcomes (Avants et al., 2000; Beutler et al., 2003). War-affected youth, especially for-

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merly abducted youth, may be vilified and discriminated against in communities where they are reintegrated (Amone-P'Olak, Lekhutlile, Ovuga, et al., 2016; Amone-P'Olak, Lekhutlile, Ovuga, et al., 2016; Denov, 2010). Problem focused and adaptive cognitive coping strategies are useful depending on type of stressful life event experienced (Folkman and Moskowitz, 2004; Ridder and Schreurs, 2001). Consequently, how the youth cope with the adverse physical and mental health consequences of war as well as the possible discrimination and poor relations with the community has important implications for research, practice, policy and interventions.

In their seminal work on coping, Lazarus and Folkman (1984) defined coping as the 'constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person' (p. 141). Particularly, Lazarus (1993) differentiated problem-focused coping (e.g., adapting one's surrounding to decrease the effects distress) from emotion focused coping (e.g., employing cognitive coping strategies to alter the meaning of the adversities experienced to diminish emotional anguish). Most previous coping scales used to assess coping strategies have concentrated on the behavioural and cognitive aspects of coping such as Coping Inventory for Stressful Situations (CISS) (Endler and Parker, 1990) and Ways of Coping Questionnaire (COPE) (Carver et al., 1989). Emotional regulation, irritability and interpersonal sensitivity, which are common in post-war environment, have been neglected in research (Catani et al., 2008; Hagenaars et al., 2011; Nickerson et al., 2014). Yet, cognitive coping strategies can be effectively used to regulate emotional responses to negative life events as demonstrated in previous studies (Folkman and Moskowitz, 2004; Lazarus and Folkman, 1984; Ridder and Schreurs, 2001).

Northern Uganda witnessed two decades (1986–2006) of a brutal war in which more than 50,000 people were abducted including an estimated 30,000 children commonly referred to as child soldiers (Coalition to Stop the Use of Child Soldiers, 2008). Although many studies have been conducted to assess the mental health consequences of the war on the survivors (Amone-P'Olak et al., 2013; Dokkedahl et al., 2016), only a few studies have assessed strategies survivors use to regulate their emotions as they cope with the consequences of the war (Amone-P'Olak, 2007; Amone-P'Olak et al., 2007). The choice of coping strategies can inform interventions to mitigate the negative consequences of war experiences such as depression or PTSD. War experiences are often associated with mental health problems (e.g. PTSD, depression and anxiety) and post-war environment are similarly fraught with daily stressors (Amone-P'Olak et al., 2014; Amone-P'Olak, Stochl, Ovuga, et al., 2014; Miller and Rasmussen, 2010), stigma and poor community relations (Amone-P'Olak et al., 2016). Therefore, emotion regulation is considerably important in the aftermath of war as irritability and interpersonal sensitivity are common and tempers and anger often flare leading to further conflicts and mental health problems (Brooks et al., 2011; Catani et al., 2008; Hagenaars et al., 2011; Hamama-Raz et al., 2008; Hinton et al., 2003; Nickerson et al., 2014; Silove et al., 2009).

In this study, cognitive emotion regulation strategies were assessed by the Cognitive Emotion Regulation Questionnaire (CERQ) (Garnefski et al., 2002). Previous studies have suggested that the CERQ subscales of 'self-blame', 'blaming others', 'rumination', 'catastrophizing' and 'acceptance' are often linked to psychopathology and viewed as maladaptive coping strategies (Garnefski et al., 2001). On the contrary, the subscales of 'refocus on planning', 'positive refocusing' and 'putting into perspective' are negatively associated with psychopathology (Fledderus et al., 2010; Garnefski et al., 2001; Thompson et al., 2010) and thus viewed as adaptive coping strategies. Consequently, adopting these cognitive emotion regulation strategies has important ramifications for post-war adjustment and reintegration.

The analysis in this study is based on data from an ongoing War-Affected Youth Survey (WAYS) study in Northern Uganda

(Amone-P'Olak et al., 2013). The current study examines the associations between cognitive emotion regulation strategies as measured by the CERQ (Garnefski et al., 2002) on one hand and mental health problems (depression/anxiety, somatic complaints, psychotic symptoms and conduct problems) on the other. Based on previous studies, the use of the cognitive emotion regulation strategies of self-blame, blaming others, rumination and catastrophizing are hypothesised to be positively associated with more mental health problems. In contrast, the use of cognitive emotion regulation strategies of acceptance; refocus on planning, positive refocusing, positive reappraisal and putting into perspective are associated with less mental health problems. Specifically, the objectives of the present study are fourfold: (a) to assess the extent to which the nine separate cognitive coping strategies are employed by the war-affected youth, (b) to examine the extent to which each coping strategy is associated with each mental health outcome in univariable analyses, (c) to assess the unique and independent effects of the coping strategies on mental health outcomes in a multivariable analysis and (d) to assess the extent to which war-affected youth with significant levels of mental health problems differ on reporting the nine cognitive coping strategies.

Method

Design and sample

The WAYS study utilised a longitudinal cohort design recruiting 539 formerly abducted youth (male=61%, n=329; M age=22.39, standard deviation (SD)=2.03; minimum–maximum=18–25) at baseline and 476 participants (male=61%, n=295; M age=23.52, SD=2.17; minimum–maximum=19–27) at follow-up who were currently reintegrated into their communities. Although the WAYS study is a longitudinal cohort study, the design for the analysis in this article was cross-sectional.

The youth in the WAYS study were abducted and lived in rebel captivity for an average of 3.14 years (SD=3.00, $range$=0.5–17.5). The major aim of the WAYS study is to assess individual, family and community contextual risk and protective factors that influence the long-term trajectory of mental health problems in war-affected youths in Northern Uganda. The study used cluster sampling method to recruit participants. Records of formerly abducted youth were obtained from the United Nation's child agency, UNICEF, covering the districts most affected by the insurgency in Northern Uganda. The UNICEF record was earlier used to provide humanitarian relief assistance to formerly abducted children who return from rebel captivity. The assistance included household items such as mattresses, blankets, cooking utensils, basins and so on and clothes to help them resettle in their communities after return from captivity. Thus, we assumed the list to be comprehensive and accurate. Formerly abducted youth were then recruited from these districts based on the UNICEF records. The following inclusion criteria were used for recruitment of participants in the study: (a) a history of abduction by rebels, (b) having lived in rebel captivity for at least 6 months and (c) aged between 18 and 25 years. The youth who met the above inclusion criteria were invited through their local council leaders to participate in the study. Of the 650 formerly abducted children who were invited to participate, data were collected from 539 (83%). Of the 539 youth who took part in the baseline study, 476 participated in the follow-up study. A detailed cohort profile of the study participants is described in detail elsewhere (Amone-P'Olak et al., 2013). Baseline data were collected between June 2011 and September 2011, 6 years after the war ended. Follow-up data collection was conducted about a year and a half later. The data presented in this article are drawn from the baseline data.

Data collection

Data collection for the WAYS study were conducted by research assistants who were all university graduates and well trained to collect data and interview participants. The research

assistants received thorough instructions on the background of the WAYS study and further trained on how to conduct interviews. Data was collected from participants' homes or nearby community halls by research assistants fluent in speaking and writing the native language of the participants (Luo) and the English language. Participants were asked to provide information on their socio-demographic characteristics; their experiences before, during and after the war; individual factors (coping strategies) and mental health outcomes (depression/anxiety, somatic complaints, psychotic symptoms and conduct problems). Participants spent about 30–45 minutes to complete the questionnaire.

A Clinical Psychiatric Officer accompanied the research assistants to all data collection centres to take care of any mental health emergency with a possibility for harm and make referrals to the Regional Referral Hospital. Permission to conduct the study and informed consent from participants was obtained in accordance with ethical guidelines from the Institutional Review Board and WAYS study.

Measures

Participant demographic characteristics. The socio-demographic characteristics of participants (e.g., sex, age, duration in captivity) were assessed using questions specifically formulated for this study.

Mental health outcomes. The Acholi Psychosocial Assessment Instrument (APAI) was constructed from a qualitative study in Northern Uganda (Betancourt et al., 2009a) to assess how mental health problems were perceived locally. The construction of APAI was based on the local equivalent of the *Diagnostic Statistical Manual of Mental Disorders* of the American Psychiatric Association (*DSM-IV-TR*) (APA, 2000). The authors collected data from adolescents and young adults living in war-torn Northern Uganda using free list and key informant interviews to elicit information on mental health problems they were experiencing as a result of the war (Betancourt et al., 2009a). Based on the interviews, the authors developed common local mental health syndromes that are similar to Western definitions of mental health syndromes such as mood, anxiety and conduct disorders and culturally specific indicators of mental disorders such as inability to greet, sitting while holding the cheek and so on (Betancourt et al., 2009b). Subsequently, depression/anxiety disorders, somatic complaints and conduct disorders were developed with strong internal consistency ranging from $\alpha = 0.76$ for the conduct problems to $\alpha = 0.82$ for depression/anxiety (Betancourt et al., 2009b). APAI was later on renamed the African Youth Psychosocial Assessment Instrument (APAI) (Betancourt et al., 2014) and has been used in many studies on war-affected youth in other parts of Africa such as Sierra Leone.

Consequently, the APAI, an instrument specifically designed and normed in this population, was used to assess mental health outcomes in this study. The APAI measure has 40 items with subscales such as symptoms of depression/anxiety, conduct problems, pro-social behaviours and somatic complaints without medical cause (Betancourt et al., 2009a, 2009b). In this study, the subscales of symptoms of depression/anxiety (18 items), somatic complaints (3 items) and conduct problems (10 items) were used in the analyses. The depression/anxiety comprised items that enquired into symptoms of depression/anxiety such as 'I do not sleep at night', 'I have a lot of thoughts', 'I think about suicide' and so on, while somatic complaints without medical cause included items such as 'I have pain all over my body' and conduct problems had items such as, for example, 'I fight'. The items on APAI were scored based on a Likert-type format with responses ranging from 0 (never) to 3 (always). In this study, the internal consistency were reported as $\alpha = 0.82$ for the depression/anxiety, $\alpha = 0.87$ for the somatic complaints and $\alpha = 0.76$ for the conduct problems subscales. For the APAI instrument, items on the depression and anxiety symptoms were combined into one subscale, thus preventing them from being considered separately as distinct outcomes. Similarly, earlier studies also indicated a

strong similarity among items in the depression and anxiety subscales (Brodbeck et al., 2011).

Psychotic symptoms. Four items were constructed to assess psychotic symptoms in this study. All the four items corresponded with hallucinations, delusions and persecutory feelings, all common features of psychosis. The items were (a) *sometimes I hear voices or see things other people do not see*, (b) *sometimes I feel that I have special powers*, (c) *sometimes I think that people are listening to my thoughts or watching me when I am alone* and (d) *sometimes I think that people are against me*. The items were scored ranging from 0=never, 1=rarely, 2=sometimes and 3=always. The psychotic symptoms scale had good psychometric properties (Cronbach's $\alpha = 0.71$). This instrument was used in previous studies with the same population (Amone-P'Olak et al., 2014; 2015a; 2015b).

Cognitive emotion regulation strategies. The CERQ (Garnefski et al., 2002) was used to evaluate the participants' perceptions regarding the cognitive emotion regulation strategies. CERQ is widely and globally used in assessing well-being and emotional regulation with sound psychometric properties ranging from Cronbach's alpha of 0.78–0.87 (Garnefski et al., 2002). Recent use include assessment of individual differences in emotional regulation regarding psychological well-being in Italy (Balzarotti et al., 2016) and individual cognitive emotion regulation strategies in risky behaviours among Chinese adolescents (Chen et al., 2018). The CERQ questionnaire has also been used in this population before (Amone-P'Olak, Garnefski, Kraaij, 2007). CERQ is a 36-item questionnaire with nine subscales. These subscales include *Self-blame* (thoughts of putting the blame of negative event experienced on oneself, for example, '*I feel that I am the one to blame for it*'); *Other-blame* (thoughts of blaming others for what happened, for example, '*I feel that others are to blame for it*'); *Rumination* (focusing a lot thoughts and feelings associated with the negative event, for example, '*I often think about how I feel about what I have experienced*'); *Catastrophizing* (thoughts of explicitly emphasising the terror of the negative event experienced, for example, '*I often think that what I have experienced is the worst that can happen to a person*'); *Putting into perspective* (thoughts of brushing aside the seriousness of the event/emphasising the relativity when comparing it to other events, for example, '*I tell myself there are worse things in life*'); *Positive refocusing* (thinking about joyful and pleasant issues instead of thinking about the actual event, for example, '*I think of something nice instead of what has happened*'); *Positive reappraisal* (thoughts of creating a positive meaning to the event in terms of personal growth, for example, '*I think I can learn something from the situation*'); *Acceptance* (thoughts of accepting what you have experienced and resigning yourself to what has happened, for example, '*I think that I have to accept that this has happened*') and *Refocus on planning* (thoughts about what steps to take and how to handle the negative event, for example, '*I think about a plan of what I can do best*').

Each subscale of the CERQ comprises four items referring to what people think after the experience of threatening or stressful life events such as war. The response categories ranged from 1 (almost never) to 5 (almost always). Total subscale scores were obtained by adding up the responses to the four items in each scale. The scores ranged from 4 to 20 with a higher score indicating frequent use of the coping strategy. In the current study, Cronbach's alpha of the subscales ranged from 0.68 (positive refocusing) to 0.83 (rumination). Responses to the four items in each subscale were added to obtain a subscale score. Higher scores are indicative of frequent use the cognitive strategy.

Statistical analyses

The descriptive statistics of the participants in the study were computed and presented in Table 1. Next, mean scores, *SD*s and ranges were used to assess the extent to which the nine separate cognitive coping strategies are employed by the

Table 1. Demographic characteristics of participants and correlation between variables in the study.

	Variables	(Mean, *SD*)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Sex	Male = 61%	–														
2	Age at abduction	13.81 (3.46)	**−0.27****	–													
3	Depression/anxiety	1.18 (0.58)	**0.25****	−.0.03	**–**												
4	Somatic complaints	1.02 (0.62)	**0.23****	−0.01	**0.65*****	–											
5	Psychotic symptoms	0.99 (0.66)	0.06	−0.01	**0.57****	**0.47****	–										
6	Conduct problems	0.21 (0.29)	0.02	0.06	**0.37****	**0.40****	**0.27****	–									
7	Rumination	14.80 (3.68)	**0.16****	−0.03	**0.42****	**0.31****	**0.33****	**0.13***	–								
8	Catastrophizing	14.38 (3.56)	**0.09***	−0.01	**0.40****	**0.29****	**0.37****	**0.12***	**0.64****	–							
9	Self-blame	7.05 (3.08)	**0.11***	0.06	**0.37****	**0.34****	**0.30****	**0.32****	**0.32****	**0.34****	**–**						
10	Other-blame	12.98 (4.34)	−0.08	**0.11***	**0.32****	**0.28****	**0.32****	**0.18****	**0.40****	**0.42****	**0.37****	**–**					
11	Acceptance	13.96 (3.80)	0.01	0.01	**0.19****	**0.12***	**0.18****	0.07	**0.32**	**0.36****	**0.33****	**0.38****	**–**				
12	Positive refocusing	13.37 (3.61	−0.06	−0.01	−0.04	−0.05	**−0.11***	−0.05	**−0.21**	**−0.25****	**−0.20****	**−0.22****	**−0.24****	**–**			
13	Refocus on planning	13.02 (3.18)	−0.01	−0.05	−0.08	−0.06	−0.06	−0.03	**−0.28**	**−0.36****	**−0.12***	**−0.24****	**−0.40****	**0.36****	**–**		
14	Positive reappraisal	11.70 (3.89)	−0.08	−0.07	**−0.34****	**−0.27****	**−0.30****	**−0.21****	**−0.37**	**−0.39****	**−0.47****	**−0.42****	**−0.37****	**0.38****	**0.26***	**–**	
15	Putting into perspective	13.55 (3.69)	−0.06	−0.01	**−0.26****	**−0.23****	**−0.29****	**−0.14***	**−0.41**	**−0.42****	**−0.32****	**−0.41****	**−0.34****	**0.31****	**0.32***	**0.44***	**–**

M: mean; *SD*: standard deviation.
Significant statistics are in **bold**.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

war-affected youth. A regression model was fitted to assess the extent to which each of the cognitive emotion regulation strategies predicted each of the mental health outcomes in univariable regression analyses. Only cognitive emotion regulation strategies which were significantly correlated with the mental health outcomes were included in the regression model. To assess the unique and independent effects of the coping strategies on each of the mental health outcomes, a multivariable regression model was fitted in which all the coping strategies which significantly predicted the mental health outcomes in the univariable analysis were simultaneously included in the model. Again, only the cognitive emotion regulation strategies which were significantly associated with the mental health outcomes in the univariable regression models were included in the multivariable regression model using entry approach. Finally, the extent to which war-affected youth with significant levels of mental health problems differed with regard to reporting the nine cognitive coping strategies was assessed. Prior to this, the mental health outcomes were dichotomised and a *t*-test was used to assess the extent to which the war-affected youth with significant scores on mental health problems (scores ≥ 85th percentile) differed on their use of cognitive emotion regulation strategies. To rule out the risk for multicollinearity due to multiple testing, Variance Inflation Factor (VIF) was assessed (Glantz and Slinker, 1990). Usually, it is recommended that a VIF of 10 is an indication of serious multicollinearity and values of 4.0 or higher may be a cause for concern (Glantz and Slinker, 1990).

Dichotomising the mental health outcomes into those with and without significant mental health problems in this study helped to identify an impaired group of war-affected youth, enhance the public health relevance of the study by defining and identifying opportunities for intervention. Considered a potential confounder, sex, age at abduction and duration in captivity were included into the regression models. To ensure all variables in the regression were comparable, we standardised them to a mean of zero and *SD* of 1 (*Z* scores). All analyses were conducted using IBM SPSS statistical software version 24 (IBM Corp. Released, 2016).

Results

Descriptive statistics (mean scores and *SD*s) of the cognitive emotion regulation strategies employed by the war-affected youth are presented in Table 2. Of the 539 participants, the average age of respondents was 21.97 years ($SD=2.09$, *range* = 18–25), with the majority being males (61%). On average, participants were abducted at 13.37 years of age ($SD=7.09$, *range* = 7–20) with female participants abducted at a younger age ($M=11.56$, $SD=11.30$) than their male counterparts ($M=14.53$, $SD=3.48$). The average time spent in rebel captivity was 3.14 years ($SD=3.00$, *range* = 0.5–17.5) with female spending more time ($M=3.49$; $SD=3.39$) in captivity than their male counterparts ($M=2.93$; $SD=2.71$). The most common cognitive coping emotion regulation strategy reported by the youth is 'rumination' ($M=14.80$, $SD=3.68$) followed by 'catastrophizing' ($M=14.38$, $SD=3.56$) and 'acceptance' ($M=13.96$, $SD=3.80$), in that order. Female participants significantly scored higher than their male counterparts on catastrophizing ($t(8)=2.24$, $p<0.05$), rumination ($t(8)=3.70$, $p<0.01$) and self-blame ($t(8)=2.49$, $p<0.05$).

Pearson correlations

Pearson correlations between mental health problem variables and cognitive emotion regulation strategies are presented in Table 1. There was a significant positive correlation between mental health outcomes and maladaptive coping strategies and negative correlations between mental health outcomes and adaptive coping strategies. Correlation between the cognitive emotion regulation strategies ranged from −0.12 (between 'refocus on planning' and 'self-blame') to 0.64 (between 'rumination' and 'catastrophizing'), showing low to moderate correlations between CERQ subscales. On the contrary, positive reappraisal and putting into perspective correlated negatively with mental health outcomes. The possibility for multicollinearity, assessed as VIF, were all less than 2, indicating that there were no risks for multicollinearity (Glantz and

Table 2. Univariable regression models of the influence of cognitive emotion regulation strategies on mental health outcomes.

	Depression/ anxiety β (*SE*)	Somatic complaints β (*SE*)	Psychotic symptoms β (*SE*)	Conduct problems β (*SE*)
Rumination	**0.42 (0.04)**	**0.31 (0.04)**	**0.33 (0.04)**	**0.13 (0.04)**
Catastrophizing	**0.40 (0.04)**	**0.29 (0.04)**	**0.37 (0.04)**	**0.12 (0.04)**
Self-blame	**0.37 (0.04)**	**0.34 (0.04)**	**0.30 (0.04)**	**0.32 (0.04)**
Blaming others	**0.32 (0.04)**	**0.28 (0.04)**	**0.32 (0.04)**	**0.18 (0.04)**
Acceptance	**0.19 (0.04)**	**0.12 (0.04)**	**0.18 (0.04)**	0.07 (0.04)
Positive refocusing	−0.04 (0.04)	−0.05 (0.05)	−0.11 (0.04)	−0.05 (0.04)
Refocus on planning	−0.09 (0.04)	−0.06 (0.04)	−0.10 (0.04)	−0.03 (0.04)
Positive reappraisal	**–0.34 (0.04)**	**–0.27 (0.04)**	**–0.30 (0.04)**	**–0.21 (0.04)**
Putting into perspective	**–0.26 (0.04)**	**–0.23 (0.04)**	**–0.20 (0.04)**	**–0.14 (0.04)**

β = standardised beta; *SE* = standard error.
Significant coefficients are indicated in **bold**.

Slinker, 1990). In addition, the bivariate correlations among the variables ranged from low to moderate, thus limiting the possibility of multicollinearity in fitting multivariable regression models (Glantz and Slinker, 1990).

Univariable regression analyses

Univariable regression models were fitted to assess the extent to which the cognitive emotion regulation strategies predict mental health outcomes. The results are presented in Table 2. Overall, the results indicated that nearly all the cognitive emotion regulation strategies significantly predicted mental health outcomes except 'positive refocusing' and 'refocus on planning'. In the univariable analyses, the coping strategies explained between 7 and 22 percent of the variance in depression/anxiety symptoms, 6–16 percent in somatic complaints, 2–14 percent in psychotic symptoms and 1–11 percent in conduct problems.

Maladaptive coping strategies of self-blame, rumination and catastrophizing were positively related to reporting more symptoms of mental health outcomes while common use of adaptive strategies such as positive reappraisal and putting into perspective were associated with reporting fewer symptoms of mental health problems, thus confirming earlier hypothesis.

Multivariable regression analyses

To assess which cognitive emotion regulation strategies independently and uniquely predicted the mental health outcomes, multivariable regression models were fitted. In general, maladaptive coping strategies, especially 'rumination' and 'self-blame' uniquely and independently predicted all the mental health outcomes (Table 3). In the multivariable regression models, cognitive emotion regulation strategies explained 33 percent of the variance in depression/anxiety, 24 percent in somatic complaints, 20 percent in psychotic symptoms and 11 percent in conduct problems.

To investigate whether differences exist between the youth with or without significant levels of mental health problems (≥85th percentile) in using coping strategies, independent *t*-test analyses were performed. The results are presented in Table 4. Overall, youth with significant scores on mental health outcomes differed significantly in reporting nearly all cognitive emotion regulation strategies except for positive refocusing and refocus on planning. Similarly, the youth with and without significant mental health problems significantly differed in their use of catastrophizing except for conduct problems. Regarding positive reappraisal, there were significant

Table 3. Multivariable regression models of the influence of cognitive emotion regulation strategies on psychosocial outcomes.

	Depression/ anxiety β (*SE*)	Somatic complaints β (*SE*)	Psychotic symptoms β (*SE*)	Conduct problems β (*SE*)
Rumination	0.26 (0.05)*	0.17 (0.06)*	0.13 (0.06)*	0.01 (0.06)
Catastrophizing	0.14 (0.06)*	0.06 (0.06)	0.18 (0.06)*	0.04 (0.06)
Self-blame	0.19 (0.05)*	0.22 (0.05)*	0.13 (0.05)*	0.27 (0.05)*
Blaming others	0.04 (0.05)	0.07 (0.05)	0.12 (0.05)*	0.05 (0.05)
Acceptance	0.07 (0.05)	0.11 (0.05)*	0.05 (0.05)	–
Positive refocusing	–	–	−0.07 (0.05)	–
Refocus on planning	−0.10 (0.05)	–	–	–
Positive reappraisal	−0.12 (0.05)*	−0.07 (0.05)	−0.14 (0.05)*	−0.07 (0.05)
Putting into perspective	−0.04 (0.05)	0.07 (0.05)	−0.05 (0.05)	−0.02 (0.05)
	$R^2 = 33.10$* ($F_{(10, 529)} = 23.36$, $p < 0.001$)	$R^2 = 23.70$* ($F_{(9, 530)} = 16.56$, $p < 0.001$)	$R^2 = 20.30$* ($F_{(11, 528)} = 10.86$, $p < 0.001$)	$R^2 = 11.10$* ($F_{(8, 531)} = 7.54$, $p < 0.001$)

β: standardised beta; *SE*: standard error.
Coping strategies that did not significantly predict psychosocial outcomes in the univariable analyses were not included in the multivariable analyses. Significant results are indicated in asterisks (*).

differences in its use except for psychotic symptoms. This is plausible since psychotic disorder by its very nature is a disorder related to persecutory feelings and delusion which would be out of synch with positive reappraisal.

Discussion

From the onset, this study aimed to assess the use of cognitive coping strategies, the extent to which the strategies were associated with mental health outcomes and whether significant levels of mental health problems were associated with differences in the use of different coping strategies among war-affected youth. The use of maladaptive coping strategies such as 'rumination', 'catastrophizing', 'acceptance' and 'self-blame' were associated with reporting more symptoms of mental health problems. In contrast, the use of adaptive coping strategies such as 'refocus on planning', 'positive reappraisal' and 'putting into perspective' were associated with fewer mental health problems.

The results demonstrate that the use of maladaptive coping strategies is associated with more mental health problems with significant percentage of the variance in mental health problems attributed to the use of maladaptive coping strategies. Moreover, the difference in the use of coping strategies between the war-affected youth with and without significant levels of mental health problems illustrate the important roles of coping in reporting symptoms of mental health problems in post-conflict environment.

The finding that the coping strategies of 'rumination', 'catastrophizing', 'acceptance' and 'self-blame' predicted mental health problems agree with previous studies which associated the coping styles with depression, anxiety and other mental health problems with psychopathology (Amone-P'Olak et al., 2007; Anderson et al., 1994; Garnefski et al., 2002; Nolen-Hoeksema et al., 1994; Sullivan et al., 1995). This study adds to existing literature on the role of maladaptive coping strategies in predicting psychopathologies. Consequently, interventions to mitigate the adverse effects of war should aim to reduce the use of maladaptive coping styles of 'rumination', 'catastrophizing', 'acceptance' and 'self-blame' and

Table 4. Differences in reporting of cognitive coping strategies between youth with and without clinically significant levels of psychosocial problems.

	Depression/anxiety symptoms			Somatic complaints			Psychotic symptoms			Conduct problems		
	≤85th percentile *M* (*SD*)	≥85th percentile *M* (*SD*)	*t*-test	≤85th percentile *M* (*SD*)	≥85th percentile *M* (*SD*)	*t*-test	≤85th percentile *M* (*SD*)	≥85th percentile *M* (*SD*)	*t*-test	≤85th percentile *M* (*SD*)	≥85th percentile *M* (*SD*)	*t*-test
Rumination	13.85 (3.57)	16.90 (3.09)	−7.61***	13.53 (3.56)	16.07 (3.53)	−6.79***	14.30 (3.70)	16.23 (2.71)	−2.42*	14.39 (3.69)	14.09 (3.11)	0.27 ns
Catastrophizing	14.31 (3.50)	17.04 (2.93)	−7.09***	14.10 (3.58)	16.26 (3.39)	−5.83***	14.71 (3.55)	17.00 (3.10)	−2.98**	14.77 (3.56)	16.18 (3.40)	1.30 ns
Self-blame	6.49 (2.41)	9.68 (4.29)	−9.92***	6.25 (2.36)	8.93 (3.93)	−8.80***	7.03 (3.10)	7.50 (2.86)	0.66 ns	6.97 (3.04)	10.73 (3.32)	−4.05***
Blaming others	12.38 (4.18)	15.75 (3.97)	−7.17***	12.01 (4.12)	14.78 (4.32)	−6.25***	12.89 (4.34)	14.91 (4.02)	−2.14*	12.96 (4.36)	14.27 (3.13)	0.99 ns
Acceptance	13.61 (3.75)	15.61 (3.64)	−4.72***	13.51 (3.70)	15.05 (3.98)	−3.85***	13.99 (3.81)	13.24 (3.75)	0.89 ns	13.95 (3.79)	14.36 (4.25)	0.36 ns
Positive refocusing	13.27 (3.55)	13.84 (3.89)	1.38 ns	13.80 (3.88)	13.23 (3.60)	1.47 ns	15.14 (4.11)	13.29 (3.57)	2.36 *	13.35 (3.61)	14.55 (3.36)	1.09 ns
Refocus on planning	16.85 (2.83)	15.83 (3.23)	2.85**	16.38 (3.16)	15.88 (3.24)	1.48 ns	17.10 (3.25)	15.97 (3.17)	1.58 ns	16.02 (3.18)	15.55 (3.05)	0.50 ns
Positive reappraisal	14.80 (4.16)	11.04 (3.49)	9.14***	13.64 (4.23)	10.91 (3.37)	7.12***	13.27 (4.51)	11.63 (3.86)	1.94 ns	14.64 (5.12)	11.64 (3.84)	2.54*
Putting into perspective	15.75 (3.76)	13.07 (3.50)	6.67***	15.19 (3.58)	12.88 (3.52)	6.18***	15.57 (3.23)	13.47 (3.69)	2.57*	14.45 (3.67)	15.53 (3.69)	0.82 ns

M: mean; *SD*: standard deviation; ns: not significant.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

encourage adaptive coping strategies of 'positive reappraisal' and 'putting into perspective' which were inversely related to reporting mental health outcomes (Amone-P'Olak et al., 2007; Garnefski et al., 2001, 2002).

The findings of this study demonstrate that the degree of reporting cognitive emotional regulations strategies differ between war-affected youth with and without impaired levels of mental health problems. Those with impaired levels of mental health problems reported more use of maladaptive (e.g., rumination, catastrophizing, self-blame and blaming others) and less use of adaptive strategies (e.g., putting into perspective or positive reappraisal) strategies. The reverse was true for those with low scores on mental health problems. Indeed, similar cognitive styles commonly used by war-affected youth with significant levels of mental health problems are the same as those initially positively associated with psychopathology.

The findings of this study have implications for interventions, research and policy. Regarding interventions, the findings illustrate the need to design programmes to reduce the impact of maladaptive coping styles such as rumination, catastrophising and self-blame and enhance the use of adaptive coping styles such as putting into perspective and positive reappraisal to reduce the risk for mental health problems. In Northern Uganda, group interpersonal psychotherapy has been shown to be effective for mental health problems such as symptoms of depression, especially among war-affected girls (Bolton et al., 2007). In addition, narrative exposure therapy (NET) has been shown to reduce PTSD among war-affected populations (Ertl et al., 2011; McMullen et al., 2013). Although NET and group interpersonal psychotherapy have been shown to be successful, replication studies have not been conducted to confirm their long-term use and generalizability to other war-affected regions, especially in less resourced settings. Consequently, further research is required to replicate some of the successful

interventions so far conducted. In addition, because war-affected population constitute an important and vulnerable group, policy makers need to direct resources towards their mental health treatment, care and well-being.

Nevertheless, the results of this study should be interpreted with caution due to a number of limitations. First, the self-report measure of mental health problems and coping strategies may have been prone to recall bias, thus affecting the validity of the findings. Second, the use of cross-sectional design makes it difficult to infer causality. Third, the observed relationships may be spurious due to other proximal risk factors such as genetic or personality factors or pre-existing mental health problems in subpopulations with or without mental health problems (Garnefski et al., 2002; McMullen et al., 2013). In addition, the aftermath of war is associated with poverty that produces stressors which make war-affected youth more prone to mental health problems besides the choice of coping strategies. Finally, the results do not represent definitive psychological or psychiatric diagnoses but relate to symptoms of mental health problems.

The current study has a number of strengths too. First, the current study had a fairly large sample size compared to studies emanating from Africa region making the findings more credible (Bayer et al., 2007; Betancourt et al., 2010). Second, the instruments used to assess the mental health outcomes were adapted and normed in similar war-affected populations before (Betancourt et al., 2010). Third, this study was conducted more than 6 years after the war ended and the results are not affected by ongoing war unlike many studies that were conducted during the war. Hence, the results are not adulterated by an ongoing conflict. Finally, the mental health outcomes were dichotomised to identify an impaired group (scores $\geq$ 85th percentile) of war-affected youth to enhance the public health relevance of the study. The results can therefore be used to identify war-affected youth with serious mental health problems who need further psychological and/or psychiatric help.

Conclusion

The use of cognitive emotion regulation strategies are significantly associated with mental health problems despite the limitation of the cross-sectional design of this study. This indicates that cognitive emotion regulation strategies might play an important role in intervention aimed at reintegrating war-affected youth with mental health problems. Cognitive therapies aimed at tackling maladaptive coping strategies such as 'catastrophizing', 'rumination' and 'self-blame' while encouraging adaptive coping strategies such a 'refocus on planning' or 'putting into perspective' should be included to form the core of interventions to mitigate mental health problems in war-affected youth. Consequently, the results of the current study may have significant implications for practice to alleviate the negative impact of war on war-affected youth.

Acknowledgements

The authors thank the former child soldiers for accepting to participate in this study and the following research assistants for collecting data: George Opio, Balaam Nyeko Otim (RIP), John Bismarck Okumu, Terrence Okot Akidi, Allan Silverman Obwoya, Denis Komakech, Sandra Abalo, Christine Laura Okello, Patrick Opira, Charles Opira, Justin Ongom, Dennis Nyero, Pamela Akumu, Christine Lamwaka, Brenda Akello, Agnes Areta, Kevin Aculu, Irene Faith Alinga, Douglas Too-rach, Sam Ford Komakech and Mary Fiona Aber. The usual disclaimer applies.

Author Contribution

K.A.P. designed the project, carried out research, performed analyses and drafted the manuscript. B.O. read, corrected and offered suggestions to improve all the drafts. Both authors read and approved the final manuscript.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or

publication of this article: This work was supported by Training Health Researchers into Vocational Excellence (THRiVE) in East Africa, grant number 087540, funded by Wellcome Trust. This study was funded by The Wellcome Trust (grant no. 087540/Z/08/Z) as part of the African Institutional Initiative for the project *T*raining *H*ealth *R*esearchers *i*n *V*ocational *E*xcellence (THRiVE) in East Africa.

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