Perceived Local and Global Threat in Northern Ugandan War-Affected Youth and its Relationship to Posttraumatic Stress Disorder

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Abstract

A naturalistic study exploring the role of a dangerous context in the maintenance of posttraumatic stress symptoms was conducted in a Northern Ugandan High School. Results revealed that 99% of the students boarding in the High School geographically situated in a dangerous environment reported posttraumatic symptoms of clinical significance. A principal components analysis (PCA) on measures of contextual threat and safety identified that a failure to identify a local context of safety was associated with perceived threat across contexts (global threat). Perceived local and global threat was significantly correlated with levels of posttraumatic stress symptoms. Results are discussed within an ecological model of posttraumatic stress. The implications of these findings for psychological interventions conducted in a context perceived as dangerous are also discussed.

1. Introduction

Posttraumatic stress disorder (PTSD) is a disorder that can develop after witnessing or experiencing a life-threatening event. The disorder is characterised by fear-related hyperarousal, avoidance and intrusion symptom clusters that do not diminish over time (American Psychiatric Association, 2000). As the disorder progresses, additional social (Schnurr, Hayes, Lumney, McFall & Uddo, 2006), psychological (Lawford, Noble, Kann & Ritchie, 2006), educational (Saigh, Yasik, Oberfield, Halamandaris &Bremner, 2006) and health problems (Lauterbach, Vora & Rakow, 2005; Deykin et al. 2001) frequently emerge.

Given the debilitating nature of PTSD it is not surprising that the disorder has attracted a wealth of research into its underlying neurological (e.g., Karl et al., 2006; Williams et al., 2006), physiological (e.g., Ghisolfi et al., 2004;) and psychological correlates (e.g., Engelhard & Arntz, 2005). However, despite the breadth and depth of research into PTSD, the causal mechanisms remain elusive. To date, the reasons why some trauma survivors return to normal functioning or even experience growth (Linley & Joseph, 2004) and others develop PTSD are largely unknown. However, a recent direction in PTSD research offers hope that factors underlying the individual differences in recovery following a lif-threatening event (experienced or witnessed) might soon be elucidated.

Dawson (2007) identified that factors that modulate preparatory antipredator responses in animals also modulate posttraumatic hyperarousal, intrusion and avoidance responses in humans. Similar to animals, individual differences in posttraumatic responses following trauma were found to be the result of complex interrelationships between individual factors (trauma exposure, perceived current risk of life-threat, individual resources to negotiate threat) and environmental factors (access to refuge from threat). This ecological approach to trauma elevates the role of the environment and highlights its interrelationship with the individual in the mitigation or maintenance of fear-related posttraumatic symptoms.

Dawson and Homewood (2007) further investigated this ecological approach utilising fear conditioning studies with rats. They found that rats initially experienced the conditioning context as a global excitatory context (i.e. all elements of the fear conditioning context had the ability to elicit fear not just specific cues associated with shock). The identification of associations that predict a local context of safety (a segmented temporal or spatial component of the context that

was free of shock) facilitated differentiation from the global excitatory context and extinction of fear to specific threat cues over non-reinforced re-exposures to the threat cues. High levels of fear (as measured by rats freezing behaviour) were maintained over re-exposures until a local context of safety was differentiated from a global excitatory context. Dawson and Homewood (2007) extrapolated from their findings that a similar process operates in humans following a traumatic event. Initially, trauma survivors experience a global excitatory context (i.e. the whole world is dangerous). The identification of associations that predict a local context of safety (i.e. refuge from threat) facilitates differentiation from a global excitatory context and new learning about associations that previously predicted threat (i.e. cue does not predict threat in this context). High levels of fear-related responses are maintained, as in PTSD, when a local context of safety is not differentiated from a global excitatory context following trauma.

The aim of this study is to explore whether Dawson and Homewood's (2007) findings regarding a global excitatory context can be applied across species to human trauma survivors. Ideally, to explore this possibility an experimental paradigm in which a local context of safety is withheld after the introduction of a traumatic event would be empirically desirable. However, for obvious ethical reasons this is not considered a viable option. The next best option was therefore considered to be a naturalistic study with recent trauma survivors who continue to live within a dangerous context. It was thought that this type of study would best allow exploration of whether (a) a dangerous context maintains posttraumatic symptoms, (b) a failure to experience a local context of safety following a traumatic event is associated with a global excitatory context (i.e. a perception of threat across contexts) and (c) whether a global excitatory context is positively correlated with high levels of posttraumatic symptoms (i.e. PTSD).

In Northern Uganda, a violent civil war between the Lords Resistant Army and Government soldiers has been going on, almost continuously, for several decades (although at the writing of this paper peace talks are reported to be going well). Civilians have been particularly hard hit by this on-going war. After multiple massacres and atrocities committed by rebel armies, people from the rural areas were forced to leave their homes and livelihoods and move into the towns to reside in internally displaced people's camps (IDP camps). However, even in the IDP camps and town schools children remain at risk of abduction. It is estimated that as many as 30,000 children have been abducted and forced to fight as child soldiers with the LRA and/or used as sex slaves for LRA soldiers (World Vision Report, 2007).

Many of these children escape during skirmishes with Government forces and are placed back in local schools where they continue to live in fear of further abduction or rape from the soldiers. Although not all of the school students experience abduction, most have been exposed to war-related deaths and atrocities thus meeting the gateway criteria for PTSD of experiencing or witnessing a life-threatening event. Stories shared amongst each other of life in the bush as soldiers, family members killed or missing, and the constant presence of soldiers and gunfire, remind students that they continue to reside in a dangerous environment. The reality for these children is that their school environment, whilst safer than their life in the bush or family home or IDP camp, remains a dangerous context (Steel Magnolias International Report, 2005). Sadly, the above Ugandan context provides a field option for a naturalistic study exploring the role of contextual threat (local and global) in the maintenance of PTSD symptoms. Following contact with Ugandan officials, a Northern Ugandan Head Mistress offered an invitation to conduct the study in her Girls Secondary Boarding School.

Cross-cultural PTSD research is considered problematic by some researchers (e.g., Bracken, 1998), as PTSD was operationalised in a Western context. However, PTSD has been shown to exist in both adults (McCall & Resick, 2003; Mehta, Vankar, & Patel, 2005; Dawson, 2005) and children (Giannopoulou et al., 2006; Ruchkin et al., 2005) from non-Western cultures. Further, recent clinical assessments conducted by Steel Magnolias International (SMI), an Aid and Development Company, confirmed the presence of PTSD in students attending the selected Northern Ugandan Secondary Boarding School.

A sample of some of the high school students' narratives contained in an SMI report on the Psychological Status of Northern Ugandan High School Students (2005:7) follows. The brief narrative excerpts provide examples of PTSD criteria of a life-threatening event and symptoms such as intrusions, re-living phenomena and hyperarousal symptoms (e.g., difficulty concentrating and sleeping) in the students.

Student 1: *"I am travelling in a bus with a best and beloved friend of mine. Suddenly when we reached a certain place the rebels attack us and he was killed next to me. Since then I thought my life is useless because I can't get another friend so caring. I start thinking of him and I can't sleep at night - the whole picture of what happened will be in my mind".*

Student 2: *"Me I was abducted together with my brother we went up to Sudan from there my*

brother was killed while I was even seeing and this thing disturb me a lot. If I start revising my notes [schoolwork] *I will start recalling what happened"*

Student 3: "*Sometimes when I am reading my books* [schoolwork] *I begin to hear sounds from my old home. It comes in terms of a person talking something, which I couldn't listen or understand – saying you are going to die today stop reading. Whilst I was not abducted I was very bright in class but now my performance has gone down"*

Student 4: "*When I was in the bush I heared many gun shots and if I sit in the class where people are shouting I feel that I am in the bush again and I will get confused"*.

For the purpose of this study, Weiss & Marmar's (1997) Impact of Events Scale-Revised (IES-R) was selected to measure the Northern Ugandan student's posttraumatic symptoms. Although the original version of the IES-R scale, the IES, has been used successfully with children across various cultures (e.g., Vila et al., 2001; Yule, ten Bruggencate & Joseph, 1994; Green et al., 1994; Sack, Seeley, Him & Clarke, 1998) and shortened by Smith, Perrin, Dyregrov and Yule, (2003) to eliminate questions that may be ambiguous for children, the original scale does not include PTSD hyperarousal symptoms. The IES-R was therefore selected for this study so that the three core symptoms clusters that comprise PTSD (intrusions, hyperarousal and avoidance) were included.

At the advice of local Northern Ugandan community leaders the IES-R was then modified in order to minimise potential confusion of certain Western phrasing. In collaboration with a specialist child psycho-analyst and several Ugandan community leaders the IES-R questions were rewritten in simplified language (Refer to Table 2, page 190) to promote a clearer understanding of core meanings cross-culturally. The scale was then validated through a series of confirmatory factor analysis (CFA) and a principal components analysis (PCA). Models selected for the confirmatory factor analysis were the traditional three-factor model of Weiss & Marmar (1997) and two alternate factor models for the IES-R proposed by Creamer, Bell & Failla (2003).

Student's subjective ratings of safety and threat across seven contexts (family home, neighbourhood, school or workplace, community (or town), communities near where you live, country, the world) were obtained as a measure of contextual safety and threat. Responses were then subjected to a principal components analysis (PCA) to determine whether the fourteen questions represented separate items or tapped into a common underlying construct of a global

excitatory context. Factors identified by the PCA were then correlated with scores from the modified IES-R. It was predicted that levels of contextual fear across contexts would correlate with levels of posttraumatic symptoms as measured by the modified IES-R.

2. Method

2.1 Participants

Participants were 385 female Northern Ugandan High School students aged between 12 and 23 years of age. All participants had been exposed to war-related trauma and were living in the school grounds as boarding students. The school is exposed to the ongoing presence of soldiers and gunfire and is situated in a region that has recently been affected by large-scale war-related deaths and atrocities.

2.2 Materials

2.2.1 Modified version of the Impact of Events Scale-Revised

The Impact of Events Scale-Revised (IES-R) is a measure of posttraumatic stress symptoms (hyperarousal, intrusion and avoidance) adapted by Weis and Marmar (1997) from the original Impact of Events Scale (IES) developed by Horowitz, Wilner and Alvarez, (1979). The scale is a 22-item self-report measure of current subjective distress relating to a specific traumatic event, in this case war-related trauma. Each item asks for a subjective rating on a 5-point Likert scale (0 = not at all; 1 = a little bit; 2 = moderately; 3 = quite a bit; 4 = extremely). The scale is scored by computing the mean of completed items for the total score and the mean of completed items for each sub-scale (Weiss & Marmar, 1997). A raw score of 33/34 or means above 1.5 for the total scale have been shown to be a reliable marker for the detection of PTSD (see Creamer, Bell, & Failla, 2003; Huang, Zhang & Xiang, 2006).

As noted in the introduction the IES-R questions were rewritten in simplified language to promote a clearer understanding of core meanings cross-culturally. The order of questions was also rearranged from the original IES-R so that questions deemed more threatening came after cognitive engagement with less threatening questions. The rationale behind the rearrangement was that cognitive engagement is associated with the ability to effectively manage distress triggered by trauma memories (see Rothschild, 2004). Due to the high intensity trauma

experienced by this population it was considered a valid measure to try and minimise emotional distress.

2.2.2 Measure of contextual safety and threat

Contextual safety and threat was assessed by a subjective rating on a 5-point Likert scale (0 = not at all; 1 = a little bit; 2 = moderately; 3 = quite a bit; 4 = extremely) to two questions relating to seven context items. Question one related to safety: "How **safe** from danger do you feel in the following contexts (environments): family home, neighbourhood, school or workplace, community (or town), communities near where you live, country, the world". Question two related to perceived threat: "How much do you believe that something **dangerous (or unsafe)** could happen to you in the following contexts (environments): family home, neighbourhood, school or workplace, community (or town), communities near where you live, country, the world". Computing the mean of the three factors identified by the PCA provided the contextual fear and safety scores.

2.3 Procedure

Parents were notified by the school regarding the content of the study and asked to contact the School Principal if they had any objections to their child participating. All students present at school on a particular day were given the option of completing the modified IES-R and questions relating to contextual safety and threat. Teachers previously trained by the principal researcher in the management of trauma responses administered questionnaires in class groups. Instructions on how to fill out the modified IES-R and procedures to follow should they become distressed were given verbally by the teachers. Questionnaires were completed anonymously and returned to teachers who then returned them without identification of class group to a central collection point. Questionnaires were then sent to Australia for analysis.

2.4 Analysis

The modified IES-R was scored according to the procedure outlined by Weiss & Marmar (1997). To test the factorial structure of the scale a series of confirmatory factor models were specified and then estimated using AMOS. Confirmatory factor models were based on the two models proposed by Creamer et al. (2003), a single factor model (general distress) and a two-factor model (intrusion/hyperarousal and avoidance), and the traditional three-factor model (intrusion, hyperarousal and avoidance). The fourteen questions relating to safety and threat were

subjected to a principal components analysis (PCA) to test for underlying factors. Correlations were then carried out to test the relationship between the modified IES-R scores and identified contextual factor scores. All correlational analyses were carried out using SPSS version 12 for Windows.

3. Results

The School Principal reported that the girl's sleeping arrangements had contaminated question 22 as the larger dormitories that slept several hundred girls made getting to sleep difficult for all girls irrespective of trauma. On this basis, question 22 *'I had trouble getting to sleep'* was dropped from all analysis so as not to confound data. Mean scores and standard deviations for the total score and sub-scale scores are presented in Table 1. The mean scores were well above the recommended cut-off of 1.5 for the detection of potential PTSD.

Frequencies indicated that 99 % of the High School students who participated in the study had posttraumatic symptoms of clinical significance if scored according to the traditional scale (i.e., 99% of scores were above 1.5). Cronbach's coefficient alpha for three subscales was moderate to low, Avoidance = .667, Intrusion = .622, Hyperarousal = .451, indicating that the questions in the modified scale are not reliably measuring the factors to which they are assigned in the traditional IES-R scale.

Table 1. Means and standard deviations for the IES-R total score and subscale scores.

	Mean Total	Mean Hyperarousal	Mean Intrusion	Mean Avoidance
Mean Score	3.08	3.46	3.46	2.45
Standard Dev.	.43	.50	.44	.73

3.1 Confirmatory factor analysis of the modified IES-R.

A confirmatory factor analysis was conducted on the data to determine whether alternative models recommended by Creamer et al. (2003) were a better fit to the present data than the

traditional three-factor model of Weiss & Marmar (1997). Confirmatory factor analysis was specified and estimated using AMOS. The models are presented in Figure 1.

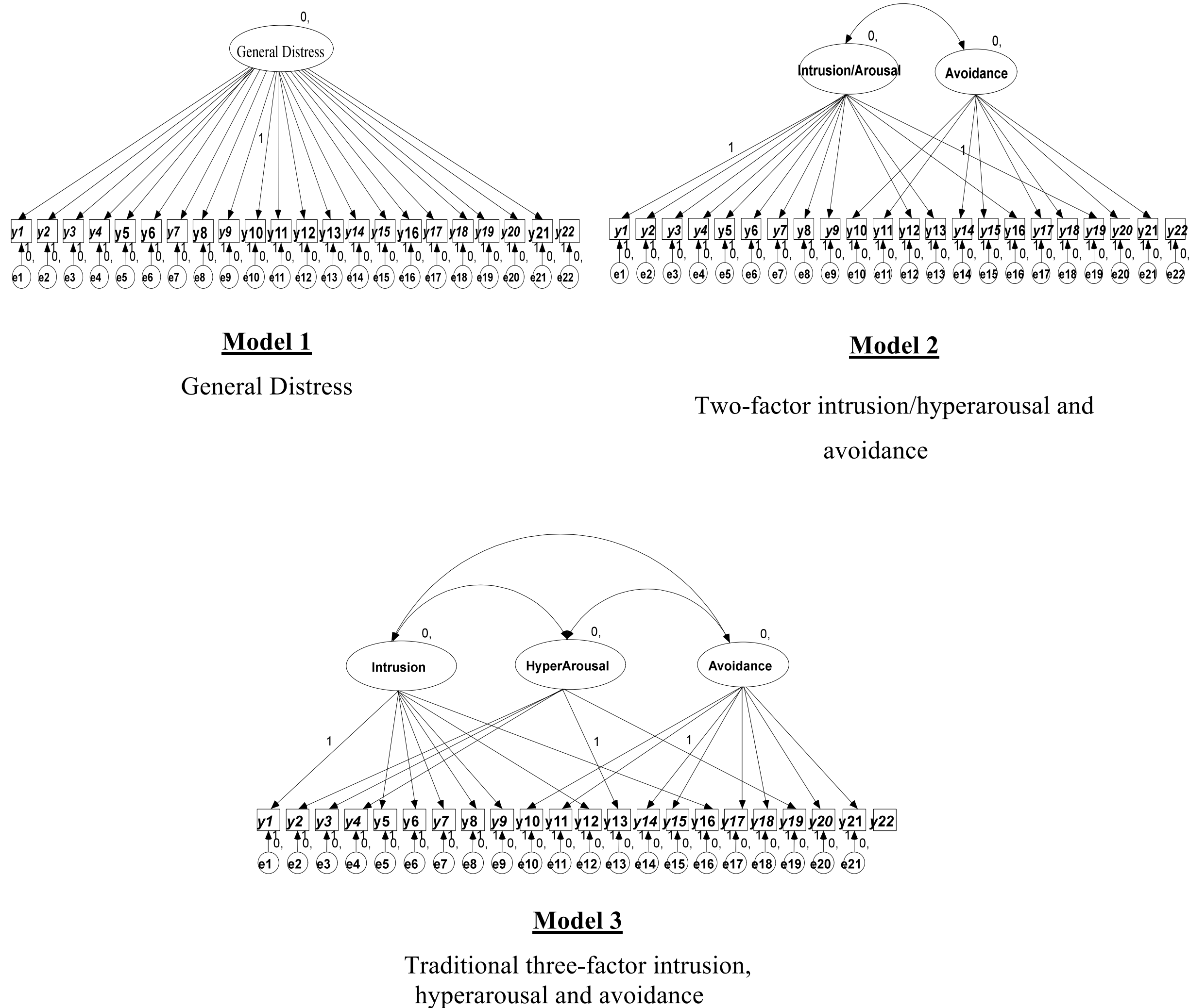

Figure 1. Specified factor models of the Impact of Events Scale – Revised (modified). Models 1 and 2 represent single and two factor models suggested by Creamer et al. (2003). Model 3 represents the traditional three-factor model. Question 22 was dropped from all analysis due to a confounding factor (see text).

Items 1-22 (y1-y22) are represented in the boxes and the unique variances (measurement error) are represented in the circles e1-e22. Single arrows between the factors and items y1-y21 represent factor loadings (as already noted y22 was dropped from analysis due to contamination).

The double-headed curved arrows represent correlations between the factors. Model 1 specified a single factor, general distress (items 1-21). Model 2 specified two correlated factors, intrusion/hyperarousal (items 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 16, 19) and avoidance (items 10, 11, 14, 15, 17, 18, 20, 21). Model 3 specified the traditional correlated three-factor model, intrusion (items 1, 5, 6,7, 8, 9, 12, 16), hyperarousal (items 2, 3, 4, 13, 19) and avoidance (items 10, 11, 14, 15, 17, 18, 20, 21).

Fitting the models with correlated factors as suggested by Creamer et al., (2003) gave a chi-square (on 209 df) as 500.422 (p <0.001) for the single factor and a chi-square (on 210 df) as 684.328 (p <0.001) for the two-factor model indicating that neither model fitted the data. The traditional three-factor model similarly did not fit the data, giving a chi-square near identical to the two-factor model (on 207 df) as 499.681 (p <0.001). Similar chi-squares between the two and three factor models is not surprising as the correlation between the intrusion and hyperarousal scales was high (.953) suggesting that the hyperarousal and intrusion questions are tapping into the same underlying construct.

Correlations between the hyperarousal/intrusion and avoidance factors for the two-factor model were low (.414). The three-factor model similarly had low correlations between avoidance and the other two factors. Correlations between avoidance and intrusion (.400) and avoidance and hyperarousal (.424) were both low, indicating that avoidance represents a separate construct to hyperarousal and intrusion. As none of the three models tested represented a satisfactory fit to the data, exploratory factor analysis was conducted to ascertain whether an alternative model could be identified.

3.2 Exploratory factor analysis of the modified IES-R

A principal components analysis (PCA) with varimax rotation was conducted on the data to explore possible alternative models. The PCA identified six components with an eigenvalue > 1.0 accounting for 51 % of the variance. There were two main factors (eigenvalues = 3.92, 2.16) and four smaller factors (eigenvalues = 1.41, 1.15, 1.11, 1.08). Table 2 (over page) outlines the six-factor solution with significant factor loadings highlighted in bold.

Table 2. Principal components analysis of the modified IES-R: six-factor solution (n = 385)

Modified IES-R Item	Communality	F1 Avoid.	F2 Hyper.	F3 Int.Th.	F4 Int.Feel.	F5 Fear/Dist.	F6 Anger
1. I had trouble staying asleep.	.497	.031	.129	.101	**.659**	-.111	.152
2. I felt angry.	.753	.056	.119	.082	.043	.008	**.852**
3. I had trouble keeping my thoughts on what I was doing.	.489	.056	**.442**	.221	.386	.059	-.297
4. I jumped at noises or things moving near me.	.469	-.035	**.531**	.017	.202	.361	-.120
5. Things reminded me of the scary event.	.528	.074	.068	**.587**	.377	.158	-.075
6. I had feelings (angry, sad, bad or scared) if the scary event came into my head.	.453	-.131	.073	**.482**	**.430**	.028	.113
7. I had dreams about the scary event.	.532	-.069	**.603**	.328	-.232	.051	.025
8. I sometimes felt or acted like I was back in the scary event.	.332	.095	**.439**	.247	.172	.199	-.008
9. I found it hard to forget the scary event.	.495	.030	.164	**.618**	.106	.012	.272
10. I felt as if the scary event was not real or true.	.358	.210	**.537**	.040	-.072	-.091	.105
11. I had a lot of feelings about the scary event but I tried not to think about what the feelings mean.	.503	**.447**	**.442**	-.160	.233	-.075	.148
12. I suddenly had pictures of the scary event in my head.	.609	.109	.184	**.731**	-.110	.028	-.127
13. When I thought about the scary event my body. felt sick (like feeling sick in the stomach, a big heartbeat, sweating, hard to breathe).	.425	-.109	**.541**	.164	.278	.002	.127
14. I tried to get rid of all pictures and thoughts of the scary event from my head.	.474	**.442**	**.452**	.013	.157	-.215	.058
15. I did other things than talk about the scary event.	.628	**.779**	.009	.017	-.017	.143	.006
16. I had very big feelings about the scary event that came and went.	.492	.235	.001	-.002	**.553**	.337	-.134
17. I tried not to think about the scary event.	.574	**.713**	.061	-.068	.212	-.001	.112
18. When I thought about the scary event my feelings went to sleep.	.440	**.415**	.193	.176	.368	-.056	.248
19. I felt that other scary things might happen.	.564	.075	.047	.187	.128	**.681**	.202
20. I kept away from things that remind me of the scary event.	.517	**.678**	-.020	.172	-.132	-.071	-.066
21. I stopped myself being sad if I thought about the scary event.	.575	.097	-.018	.021	.105	**-.734**	.121
22. I had trouble getting to sleep (deleted).	-	-	-	-	-	-	-

Factor 1 accounted for 18.5 % of the variance, had loadings on six factors and was characterised as avoidance. Factor 2 accounted for 10 % of the variance, had loadings on eight factors and was characterised as hyperarousal. Factor 3 accounted for 6.7 % of the variance, had loadings on four factors and was characterised as intrusive thoughts and pictures. Factor 4 accounted for 5.5% of the variance, had loadings on four factors and was characterised as intrusive feelings. Factor 5 accounted for 5.2 % of the variance, had loadings on two factors and

was characterised as vigilance/distress. Factor 6 accounted for 5.2 % of the variance, was comprised of a single item measuring anger. Items, 6, 11 and 14 loaded onto two factors.

As the factor structure was different to the original IES-R scale, analyses were restricted to using the mean total modified IES-R score only.

3.3 Exploratory factor analysis of contextual threat and safety scores

A principal components analysis (PCA) with varimax rotation was conducted on the combined data from the fourteen contextual threat and safety questions. This was conducted to ascertain whether the individual questions represented separate items or measured a common underlying construct. The PCA identified three components with an eigenvalue > 1.0, accounting for 57.5 % of the variance. There were two main factors (eigenvalues = 4.35, 2.51) and a smaller factor (eigenvalues = 1.2). Table 3 outlines the three-factor solution with significant factor loadings highlighted in bold.

Table 3. Principal components analysis (PCA) of the contextual safety and threat measure n = 385.

Contextual Safety and Threat Item	Communality	F1	F2	F3
How safe from danger do you feel in the following contexts (environments):				
1. Family Home	.641	**.795**	-.002	-.094
2. Neighbourhood.	.668	**.814**	-.055	.042
3. School or workplace	.371	.387	**-.466**	-.065
4. Community (or town)	.607	**.748**	-.219	.025
5. Communities near where you live	.713	**.839**	-.058	-.071
6. Country	.679	**.797**	.038	-.206
7. The World.	.526	**.689**	-.022	-.224
How much do you believe that something dangerous (or unsafe) could happen to you in the following contexts (environments):				
8. Family Home	.554	-.212	.174	**.692**
9. Neighbourhood.	.652	-.079	.103	**.797**
10. School or workplace	.254	.018	**.458**	.211
11. Community (or town)	.571	-.067	**.690**	.300
12. Communities near where you live	.626	-.013	**.749**	.255
13. Country	.638	-.020	**.797**	-.055
14. The World.	.542	-.079	**.715**	-.154

Factor 1 accounted for 31 % of the variance, had loadings on six factors and was characterised as generalised safety. Factor 2 accounted for 18 % of the variance, had loadings on six factors and was characterised as global threat. Factor 3 accounted for 8% of the variance, had loadings on two factors and was characterised as context-specific threat.

3.4 Correlations between the IES-R (modified) mean total score and measures of contextual threat and safety

Correlations between the total score of questions 1-21 of the modified IES-R and the three factors characterised as generalised safety, global threat and context-specific threat was conducted. Spearman rank correlation coefficients (*Spearman's P*) were used to calculate correlations, as IES-R items were skewed due to the predominantly high scores. Table 4 (over page) outlines the correlations between the modified Impact of Events Scale-Revised total score and threat and safety scores.

Table 4. Non-parametric correlations between Modified Impact of Events Scale-Revised total score and subjective ratings of threat and safety across contexts

Kitgum *n* = 385	**Global Threat**	**Context Specific Threat**	**Generalised Safety**
Spearman's Rho			
Total score (q.1-20)	.553**	.426**	-.343**
IES-R modified	(*n*=377)	(*n*=384)	(*n*=381)

** Correlation is significant at the 0.01 level (2-tailed)

Correlations between High School student's modified IES-R scores and the three contextual (context specific threat, generalised safety and global threat) scores were all significant at an alpha level of 0.01 (2-tailed). Generalised safety across contexts was significantly correlated with posttraumatic symptoms in a negative direction (i.e., the safer one felt across contexts the lower the level of reported posttraumatic symptoms). Both threat measures (context specific and global) were positively correlated with posttraumatic symptoms (i.e., the higher the level of perceived contextual threat the higher the level of reported posttraumatic symptoms). Of the

three factors, global threat demonstrated the strongest correlation with posttraumatic symptoms as measured by the modified IES-R.

4. Discussion

Confirmatory factor analysis conducted on the data from this study suggests that the modified IES-R operates similarly to the original IES-R as reported by Creamer et al. (2003). In both studies the traditional three-factor model was not a good fit to the data, with the adjusted goodness of fit in the Creamer et al. (2003) study (0.73) near identical in this study (0.74). However, the chi-square on the traditional three-factor model was slightly better in this study (499.68 on 207 df) compared to the Creamer et al. (2003) study (874.34 on 206 df) that used the original IES-R. This suggests that the modified questions in this study are unlikely to be the cause of the poor fit with the traditional model.

The Creamer et al. (2003) data suggested that a single factor or a two-factor solution might be more parsimonious than the traditional three factor solution. However, confirmatory factor analysis on the data from this study found that neither of these solutions was a good fit to the data. The follow-up principal components analysis (PCA) suggested that multiple factors better explained the data. Creamer et al. (2003) notes that lower levels of symptoms appear to have less differentiation between the core symptom constructs than higher symptom levels. The high level of trauma symptoms that were present in the majority of the Northern Ugandan High School students may underlie the finding that multiple factors better explained the data. At lower posttraumatic symptom levels, differentiation between multiple underlying factors may not easily be detected.

The principal components analysis (PCA) conducted on the modified IES-R identified a six-factor solution characterised as: avoidance, hyperarousal, intrusive thoughts/pictures, intrusive feelings, fear/distress and anger. Items 6, 11 and 14 all loaded onto two factors. Item 6 loaded onto both intrusive thoughts and intrusive feelings. This is consistent with the question as it includes both thoughts and feelings (*I had feelings {angry, sad, bad or scared} if the scary event came into my head*). Item 11 and 14 loaded onto both the avoidance and hyperarousal factor. It could be that avoidance is reflected in one half of Item 11 (*… but I tried not to think about what the feelings mean*) and Item14 (*I tried to get rid of…)* but hyperarousal symptoms are a result of

the feelings and pictures mentioned in the other half of Item 11*(I had a lot of feelings about the scary event)* and 14 (*... pictures and thoughts of the scary event*). The dual loadings on these factors highlight the importance of clarity and precision in the development of trauma assessment tools.

The fourth factor in this study groups fear (*I felt that other scary things might happen*) and distress together (the negative value, -.734, suggests that the question reflects *I <u>did not</u> stop myself being sad if I thought about the scary event*). This factor may represent Criteria B (4) of PTSD in the current Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). DSM-IV Criteria B (4) states that there is "intense psychological distress at exposure to internal or external cues that symbolise or resemble an aspect of the traumatic event" (American Psychiatric Association, 2000:568).

The remaining factor, anger, normally included in the hyperarousal scale, may have been identified as a separate construct in this data due to the rephrasing of the question. The question in the original IES-R combines anger and irritability within the same question ("I felt irritable and angry"). The inclusion of both of these feeling states within one question may be a confounding variable in the original IES-R as anger and irritability can represent two very different feeling states. Irritability in common usage is defined as being in a state where one is in readiness to be inflamed to anger but not necessarily displaying anger (see Macquarie Dictionary, 1982 for its common usage). Thus removing irritability from the question for the purpose of this study (to avoid language confusion) may have more clearly identified those who are actively displaying anger from those who are in a state of readiness for anger. The anger identified may be associated with an anger response that is common to the grief cycle (see Nighswonger, 1972), or a protective *fight* rather than *flight* response, or a separate trauma symptom construct altogether. Silove (2000) advocates that people who have undergone extreme human rights violations, such as this population, are left with a state of heightened overwhelming anger at the injustices experienced and that this anger may warrant consideration as a separate category of traumatic disorder.

Although different to the original IES-R factor structure, these six factors comprising avoidance, hyperarousal, intrusive thoughts, intrusive feelings, fear/distress and anger are all consistent with the DSM-IV description of PTSD (see American Psychiatric Association, 2000

for full criteria). It may be that many of the symptoms grouped together under avoidance, hyperarousal and intrusion phenomena in the DSM-IV are representative of separate constructs that are masked by low levels of trauma in the populations assessed and/or limitations of the measurement tool.

The finding that 99% of the children who completed the modified IES-R reported posttraumatic symptoms of clinical significance highlights the key role of a current dangerous environment in the maintenance of posttraumatic stress symptoms. As with all self-report measures, it is possible that that the High School children may have over reported their symptoms. However, the results are consistent with a study by Derluyn, Broekart, Schuyten and De Temmerman, (2004) on former Ugandan child soldiers. Derluyn et al. (2004) similarly reported that 97% of children assessed had posttraumatic symptoms of clinical significance. These findings argue against all posttraumatic responses being dysfunctional and support Dawson's (2007) assertion that posttraumatic symptom clusters are cross-species preparatory antipredator responses that are maintained after a life-threatening event to enhance survival in a dangerous context. Reminders of the specifics of the life-threatening event (intrusions), avoidance of trauma-related cues, and hyperarousal symptoms that facilitate rapid fear-related defensive responses serves to keep the person alive in a dangerous context. In contrast, forgetting about the encountered threat, inhibiting anger and fear to trauma cues, relaxing, concentrating on schoolwork and sleeping deeply may get you killed.

Interestingly, the alpha of .764 for the total scale suggests that the scale is not measuring a single discrete construct. This may be explained by the two factors identified by the PCA as relating to perceived contextual threat. One factor was characterised as context-specific threat that evidence supports was real and present at the time the questionnaires were administered. Whereas, the second factor characterised as global threat is consistant with the concept of a global excitatory context as outlined in the introduction. This factor included a failure to find a local context of safety (i.e., safety in the school where the students live during term) with a globalised sense of threat (see Table 3). It is proposed that the latter one differentiates PTSD from similar posttraumatic responses common to all people exposed to a dangerous context.

Animal studies by Morris, Furlong & Westbrook (2005) and Morris, Westbrook & Killcross (2005) have shown that exposure to a dangerous context re-establishes the excitatory value (i.e.

ability to elicit fear) of a tone previously paired with a shock that had undergone extinction (i.e. no longer elicited fear) and that this process reconsolidated the memory of a tone being paired with a shock. If this phenomenon also occurs across species then individuals with a perception that the world is globally dangerous are vulnerable across contexts to trauma related memories (e.g., smells, sounds, sensations) being triggered and reconsolidated across all contexts. This experience is then likely to further maintain a global excitatory context that can trigger and reconsolidate trauma memories across all contexts, which in turn maintains a global excitatory context and so on.

In light of this possibility interventions in trauma populations that continue to reside in a dangerous context, or perceive themselves to be, should focus on securing environmental safety first and not re-telling of trauma narratives and exposure to trauma cues as is common in traditional PTSD interventions. Conducting these procedures before safety is secured may inadvertently serve to maintain a global excitatory context. This possibility may explain the increased risk of developing PTSD following psychological debriefing (see review on psychological debriefing by Cuijpers, Van Straten & Smit, 2005). Early interventions in a Western context are conducted within 72 hours of the traumatic event. Individuals who have had assumptions of safety shattered and have not yet rebuilt or found a local context of safety are at risk of having a global excitatory context maintained by the content of the debriefing session. Sadly, it may also explain why local Ugandans and Congolese have reported that some children appear to get worse after Western counselling interventions (see Dawson, 2005) as the African children referred to have minimal or no access to safety.

As outlined by Silove (2000:342) "the creation of a genuine context of security in a humanitarian crisis may be a difficult task, given the multiple sources of real and perceived threats that trauma-affected and displaced communities face. The task of providing a secure environment therefore involves a multidisciplinary effort in which mental health professionals provide only one component". This study suggests that caution should govern mental health professionals providing even one component if that one component is trauma focused and the individual currently resides or perceives that they reside in a dangerous context.

Access to, or the restoration of environmental safety may be all the majority of people need to recover, as this should facilitate turning the survival switch off. For the minority who continue

with a global view of threat (and therefore by extension PTSD) interventions can be targeted at the underlying cause (i.e. a failure to identify local associations of safety post-trauma). If in reality, no safety does exist for the individual, psychological interventions would be contraindicated until other services have secured safety for the individual. If a failure to identity safety is skills or cognitions based then a psychologist may be able to facilitate recovery through the teaching of cognitive skills, behavioural strategies and emotional regulation skills.

This study has several limitations such as the correlational design does not allow direct tests of causality. Secondly, as with all self-report measures there is a possibility of over reporting, particularly in a situation such as Northern Uganda where interventions into a twenty-year war have been minimal. There may be a tendency to over report symptoms to draw attention to their plight. Third, the modified scale was not validated against other measures of posttraumatic symptoms. Despite these limitations, this study does provide valuable insight into the role of a global excitatory context and the development and maintenance of posttraumatic symptoms.

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