

## Trauma Exposure and Psychological Reactions to Genocide Among Rwandan Children

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*A total of 3030 children age 8–19 years from Rwanda was interviewed about their war experiences and reactions approximately 13 months after the genocide that started in April 1994. Rwandan children had been exposed to extreme levels of violence in the form of witnessing the death of close family members and others in massacres, as well as other violent acts. A majority of these children (90%) believed that they would die; most had to hide to survive, and 15% had to hide under dead bodies to survive. A shortened form of the Impact of Event Scale used in a group of 1830 of these children documented high levels of intrusion and avoidance. While children living in shelters were exposed to more trauma, they evidenced less posttraumatic reactions. Analyses showed that reactions were associated with loss, violence exposure, and, most importantly, feeling their life was in danger.*

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Scientific reports about the psychosocial effects of war among civilian populations and the provision of mental health services have increased in recent years since the Gulf War and the conflict in former Yugoslavia (Al-Eissa, 1995; Ben-Zur & Zeidner, 1991; Klingman, 1992a–c; Kuterovac, Dyregrov, & Stuvland, 1994; Llabre & Hadi, 1994; Moore & Kramer, 1993; Nader, Pynoos, Fairbanks, Al-Ajeel, & Al-Asfour, 1993; Zeidner, Klingman, & Itskowitz, 1993). The stressors involved in warfare vary from conflict to conflict (e.g., distant or close, amount of violence exposure, direct life threat, losses, civilian participation in the violence). Consequently, one may also expect that the psychosocial effects they engender differ.

The situation for children in war is still an underresearched area, in particular, on the African continent, where some of the most brutal massacres have taken place.

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Research from former Yugoslavia and from the Middle East have documented that high levels of exposure to war trauma in children is associated with higher levels of posttraumatic stress disorder (PTSD; Bradburn, 1991; Nader et al., 1993). There is some indication that threat to survival is especially important for the development of posttraumatic symptoms in both adults (Fontana, Rosenheck, & Brett, 1992; Hauff & Vaglum, 1993) and children (Carlson & Rosser-Hogan, 1994).

In the genocide that occurred in Rwanda in 1994, it is estimated that as many as 1 million people of all ages were killed of a total population of about 7.5 million (mortality estimates made by the UN Human Rights Commission, the International Red Cross, and Crescent Federation's medical reports from massacre sites throughout Rwanda). Most people were killed in their local communities by perpetrators who were known to the victims. Survivors witnessed brutal killings and destruction of their homes and often had to flee for their lives and hide to survive the massacres. Both the nature and the magnitude of the survivors' exposure places them at increased risk for developing long-term psychological reactions and PTSD (Green, 1994).

Psychosocial programs established for war-traumatized children emphasize early reunification with the family and return to the community as soon as possible. Tracing and documentation programs have been integral parts of these programs. Following the genocide in Rwanda, a large number of children lost most, if not all, of their family members through death, and additional centers for unaccompanied children were established for nearly 13,000 children around the country [United Nations Children's Fund (UNICEF) Situations Reports on Rwanda from November 1994 and February 1995]. The term "unaccompanied center" is synonymous with "orphanage," but UNICEF advisors adopted the euphemism to encompass a broader category of children living in orphanages (i.e., those who may be separated from their parents due to the war). For brevity, "center" is used for these orphanages throughout this article.

UNICEF, in close collaboration with the Rwandan Ministry of Rehabilitation and several nongovernmental organizations, developed and began implementing a Trauma Recovery Program in October 1994. The Trauma Recovery Program uses a community-based, training of trainers (TOT) approach which emphasizes identification of trauma symptoms among children and use of simple methods of expression, such as storytelling, drawing, writing, dancing, and drama based on the Rwandan cultural context. The primary objective of the Trauma Program is to build national capacity among Rwandan paraprofessionals and professionals who work directly with children (i.e., teachers, caregivers in orphanages, social workers, and health providers) by strengthening their knowledge about child development, trauma and grief theory, and listening skills. In addition to the TOT component, the Trauma Recovery Program provided support to the Ministry of Education to establish a National Trauma Center in 1995 in the capital Kigali for the following: (1) outpatient treatment of severely traumatized children/families, (2) training of trainers, (3) developing/sharing informational materials, (4) sensitizing the public

about the effects of war-related violence on children through a radio message program, and (5) conducting research. A key component of the Trauma Program is the training and placement of Trauma Advisors whose role is training other social agents and identifying/screening children/caregivers for outpatient treatment at the National Trauma Center.

The survey reported herein was undertaken to obtain a baseline assessment of the nature and magnitude of exposure to traumatic events and the severity of psychological reactions among a representative sample of Rwandese children 1 year postgenocide.

## Method

### *Sample*

A total of 3030 children aged 8–19 years from 11 prefectures were interviewed in their local language, Kinyarwanda. A quota sampling approach was used to select the study sample. The quota sampling approach was based on four strata: (1) age, 8–18 years; (2) gender, a balanced sample of approximately 50% for each gender; (3) living situation (center vs. the community), where we attempted to interview 50% from centers and 50% from communities; and (4) prefecture (synonymous with states in the USA), where the original intention was to interview at least 200 children from each of the 11 prefectures in Rwanda. Unfortunately, this was not possible in 5 of the 11 prefectures due to the ongoing civil unrest and the United Nations Security office travel restrictions. Thus, only 100 children were interviewed in Kibungo, Ruhengeri, Byumba, and Gisenyi, and 195 in Cyangugu.

### *Overview of Sampling Methodology*

Of a total of 77 centers and approximately 1700 primary and secondary schools from 30 of 146 communes existing within all 11 prefectures into which Rwanda is divided, a total of 31 centers and 29 schools was selected to participate in the survey. Due to lack of human resources and logistic support, it was impossible for the Minister of Education to provide exact figures about the number of schools destroyed during the war. At least 50 children living in each of the 31 centers and 50 children from each of the 29 primary/secondary schools were interviewed. An additional 30 secondary school students were interviewed from the capital city, Kigali, to ensure access to adolescents for the second wave of data collection in 1996. Individual children were selected by the Center Directors and School Headmasters based on the desired age range and gender balance criteria above. On the day of the interviews, the research assistants explained the purpose of the study (which had been previously explained in writing when we obtained written permission from each prefectorial official) to each Center Director/Headmaster

saying that UNICEF was trying to understand children's experiences during the war so they could develop appropriate programs for them. Only two Center Directors and one Headmaster refused to let their center/school participate in the study. The Center Directors' reasons were that they were "too short-staffed," and the Headmaster was "not interested."

### *Survey Method*

The survey questionnaire had three parts. Part I included basic demographic information and specific questions concerning the nature of exposure to various war events (Table 1). Part II included a 22-item revised version of the widely used

**Table 1.** Rwandese Children's Exposure to War Scenes ( $N = 3030$ )

Question and Response	<i>N</i> for Each Question	Proportion (%) Who Answered Affirmatively
<b>Loss</b>		
Have you experienced death in your family due to the war?	2993	78.3
If yes, were both parents killed?	2965	36.5
Mother?	2966	45.3
Father?	2965	55.4
Sister(s) and brothers?	2993	8.6
Sister(s)?	2993	21.9
Brother(s)?	2993	30.9
Other relatives?	2992	54.8
<b>Threat</b>		
Have you ever been threatened to be killed?	3021	60.9
Did you believe that you would die?	3021	90.3
Did you hide to protect yourself during the war?	3022	79.7
Have you seen or witnessed any violence during the recent war?	3025	95.5
Have you witnessed with your own eyes someone being injured or killed?	3023	69.8
Did you hear someone being injured or killed?	3020	79.7
Did you hear people screaming for help?	3019	79.1
Have you been physically injured during the war?	3019	12.7
What kind(s) of violence have you witnessed?		
Someone being shot	3018	43.3
Killings/injuries with pangas (machetes)	3021	58.3
Rape or sexual assault	3016	30.8
Destruction/looting of your house	3021	82.8
Dead bodies/parts of bodies	3024	87.4
Shelling or mortar fire	3011	38.0
People being beaten with sticks	3024	59.9
Many people killed at one time (massacres)	3020	52.5
Children participating in killing(s) or injuring	3020	35.7
Family members being killed	3016	35.6
If yes, did you have to hide alone?	3010	25.9
Did you ever hide under dead bodies?	3022	16.0
Length of time you hid (4–8 weeks or longer)?	2422	52.7

adult version of the Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979), which focuses on intrusive images, avoidance of reminders, arousal signs, and associated posttraumatic stress reaction items (Table 3). Previous psychometric work with the original IES scale has shown problems with some of the items when used with children (Dyregrov, Kuterovac, & Arpad, 1996; Yule, Bruggencate, & Joseph, 1994). Based on research conducted with war-traumatized children in the Middle East and former Yugoslavia, a child version was developed in collaboration with the Center for Crisis Psychology, Bergen, Norway and the Institute of Psychiatry, London, England (Dyregrov & Yule, 1995). By factor analysis, the original 15 intrusion and avoidance items were reduced to eight items. New items tapping bodily arousal and other manifestations of posttraumatic stress depicted in DSM-IV [American Psychiatric Association (APA), 1994] have been added. The shorter scale was developed as a screening instrument that is easy to administer and answer and has been shown to differentiate children with and without PTSD, as well as the 15-item scale (Dyregrov & Yule, 1995). Part III included a nine-item Grief Reaction Inventory used by Pynoos, Nader, Frederick, Gonda, and Stuber (1987) (results not to be reported here).

Regarding the IES translation, the Primary Investigator and five Rwandan professionals and paraprofessionals including a teacher/translator, a child psychologist, a social worker, a medical doctor, and a researcher (who are all bilingual), translated and back-translated all the questionnaire items from English to Kinyarwanda. The contextual meaning of each IES item was carefully reviewed by the above group to ensure cultural appropriateness and linguistic accuracy. Each item was discussed at length and consensus was reached for the simplest and most appropriate translation. The final English–Kinyarwanda translated questionnaire was then given to two independent professional translators to translate back to English again. The overall correspondence for IES items was quite high, where 21 of the 22 (95%) Kinyarwanda–English translated items matched the English items exactly. The instructions for answering the IES questions told the children to “keep in mind the worst event that occurred to you during the fighting between April and June 1994.”

### *Procedure*

Data collection started in May 1995, approximately 13 months after the genocide began. Four female research assistants with similar educational backgrounds (all four had high school diplomas; one had a teaching certificate beyond high school) were trained and supervised by the Trauma Project Officer and Project Assistant to administer the survey. The training for research assistants consisted of three 1-hr mock interview practice sessions with each other and with children of staff members. All training information was conveyed in French and Kinyarwanda to ensure accurate understanding of all directions conveyed by the Project Officer.

Interviewers were supervised in the field by the UNICEF Project Assistant to ensure accuracy, and the first author conducted weekly debriefings with research assistants to discuss/correct any coding errors after checking the completed questionnaires. Before conducting interviews, written authorization was obtained from all 11 prefect officials to administer the trauma survey in their respective prefectures.

All children were interviewed individually at their respective school or center for unaccompanied children by the four Rwandan female research assistants, with each interview lasting approximately 30–40 min, depending on the child's age and comprehension level. Younger children (under age 10) required more time than older respondents. After completion of the survey, research assistants were instructed to offer emotional support to any child who appeared excessively distressed during the interview. This information was recorded in the "Comments" section for future follow-up by the UNICEF trauma team. Data were collected between May and December 1995.

### *Statistics*

After all the interviews were completed, the data were coded, entered, and checked by the Project Officer and the Project Assistant using EPI-Info 6.0, a statistical software package. The data were later entered on a SPSS file for further statistical analysis. The analyses used were descriptive statistics (mean, standard deviation, minimum score, maximum score, skewness, kurtosis), frequency analyses, reliability analyses (Cronbach's alpha), alpha if item deleted, average inter-item correlation, Pearson product-moment correlations, and multiple regression. The program used was Statistica for Windows, version 5.0.

## **Results**

The final sample consisted of 3030 children. Unfortunately the first 1200 cases were interviewed using an incorrect IES scale with only three categories instead of four. For this reason, all computations using IES data are restricted to the 1830 cases with complete IES data. Forty-nine percent of the children were living in centers, and the remainder were living in family settings with parents, other relatives, or foster parents. The children ranged in age from 8 to 19 years, with the majority of children aged 11–16 years. The gender balance was almost evenly split at 51% males and 49% females. On average, the children had completed 5 years of formal primary/secondary school, with the range between 0 and 12 years.

*Traumatic Exposures*

The percentages of children exposed to traumatic events during the war are provided in Table 1. Virtually all the children interviewed had witnessed some kind of violence during the genocide. More than two-thirds of the sample actually saw someone being injured or killed, and 78% experienced death in their immediate family, of which more than one-third of these children witnessed the death of their own family members. In addition, almost all the children saw dead bodies or parts of bodies, and more than half of the children witnessed many people being killed at one time (massacres), people being injured or killed with pangas (machetes), and people being beaten with sticks. The majority of children saw their homes destroyed/looted and/or heard people being injured/killed. Almost all of the children interviewed believed that they themselves would die during the war, and nearly two-thirds of them reported that their lives were threatened by the militia. More than 80% of the children reported that they had to hide to protect themselves during the war, and more than half of these children hid for 4–8 weeks or longer, while one-fourth of them had to hide alone. The majority of these children were exposed to strong sensory impressions such as people screaming for help, visual images of graphic violence inflicted against family members, and destruction of homes. Finally, 16% of the children reported that they had to hide under dead bodies in order to survive the genocide.

An a priori categorization of exposure variables was made in which exposure variables were grouped into three exposure indices: loss of family members, threat of dying, and violence exposure of different types. One variable (length of time in hiding) was dropped from these indexes, as this variable had different categories than the other variables. The reason for using only three categories was to reduce the number of further analyses. The drawback of this procedure, when many variables containing different types of information are grouped, is loss of information. Empirically, principal-component analyses (PCA) of all 30 items did not reveal a clear factor structure. Eigenvalues showed seven factors and scree plot revealed several possible numbers of factors. Exploration with different solutions did not uncover any clear factor structure. These findings did not give any clear foundation of empirically derived subscales, and we decided to use the most simple factor structure, a three-factor solution. Internal consistency analyses were done for each subscale (Cronbach's alpha, alpha if item deleted, and item-total correlation). Based on the results of these analyses, five items were left out of the three subscales.

The scales were normally distributed, allowing the use of parametric statistics. PCA of the exposure variables of the items in each index showed that a one-factor solution (unrotated) explained 48.0% (loss), 34.0% (violence exposure), 60.2% (threat), and 24.3% (exposure/total) of the variance in each index. Because of the low percentage of explained variance in the scale exposure total and because

**Table 2.** Responses (%) to the Revised Impact of Event Scale ( $N = 1830$ )

Please Mark the Response that Characterizes How it Has Been for You During the Last 2 Weeks	Not at All	Rarely	Sometimes	Often
1. Do you think about the event when you do not want to?	15.1	13.3	36.7	34.9
2. Do you try to remove the event from your memory?	21.2	17.3	22.0	39.5
3. Do you worry you may not live to become an adult?	49.8	15.9	16.7	17.6
4. Do you have difficulty concentrating/paying attention?	45.7	20.3	19.9	14.1
5. Do you have waves of strong feelings about the event?	32.8	22.8	31.3	13.0
6. Do you startle more easily because of loud unexpected sounds or feel more jumpy or nervous than before?	35.5	17.1	27.1	20.2
7. Do you stay away from situations or things that remind you of the event?	9.8	7.2	15.9	67.1
8. Have you suddenly acted or felt like the event was happening again?	55.0	9.3	21.4	14.3
9. Do you try not to talk about the event?	20.5	11.8	19.0	48.7
10. Do pictures about event suddenly pop into your mind?	28.6	24.0	30.1	17.2
11. Have you heard or seen things that make you think about what happened?	31.3	18.7	37.4	12.6
12. Do things that remind you about the event cause or trigger bodily reactions (beating heart, trembling)?	22.7	14.6	31.1	31.6
13. Do you try not to think about the event?	16.7	9.8	16.5	57.0
14. Have you had trouble experiencing feelings such as love, happiness or sadness?	4.4	1.3	3.4	1.0
15. Do you easily get irritable?	52.9	18.3	14.6	14.2
16. Do you feel that people around you do not understand how you really feel?	70.7	10.0	10.3	9.1
17. Are you alert and watchful even when there is no obvious need to be?	56.6	14.3	16.5	12.6
18. Do you have difficulty remembering what happened?	40.7	14.5	23.7	21.1
19. Have you been less interested in activities that you used to enjoy (i.e., sports, hobbies, games)?	49.4	16.1	24.6	9.9
20. Do you feel that it is a waste of time to plan for the future because you do not expect to live long?	64.7	8.7	12.6	14.1
21. Do you feel guilt about what happened?	95.9	1.6	1.3	1.1
22. Do you have problems/difficulty sleeping at night?	54.2	12.3	23.2	10.2

interitem correlations indicated a less homogeneous measure than for the other scales, this index was dropped in further analyses.

The association between where the children lived (centers vs. community) and the degree of exposure was as follows: exposure/loss–living,  $r(1505) = .18$ ,  $p < .001$ ; exposure/violence–living,  $r(1505) = .12$ ,  $p < .001$ ; and exposure/threat–living,  $r(1563) = -.14$ ,  $p < .001$ . This correlation indicates that children living in centers experienced more losses and violence exposure than children living in the community. However, children living in the community experienced more threats than children living in centers. These associations are small and explain a low degree of variance in the dependent variables (3.3%, 1.4%, and 2.0%).

*Psychological Reactions*

In terms of children’s reactions to what they were exposed to during the war, Table 2 shows that the majority of the sample said they thought about the event sometimes or often when they did not want to. More than two-thirds of the children reported that they often tried to stay away from situations or things that reminded them of the event. Overall, the data indicate that many children continued to have intrusive images, thoughts, and feelings 13–20 months after exposure to the events of the war, despite their attempts to remove the event from their memory and to avoid these reminders. Many of the children also reported increased arousal symptoms such as an inability to concentrate or pay attention.

Descriptive statistics for the Impact of Event Scale (IES; intrusion, avoidance, arousal, and the sum of intrusion and avoidance) are presented in Table 3. The results show that the skewness is within an acceptable range. Two subscales of the IES were significantly correlated: intrusion and arousal [ $r(1806) = .53, p < .001$ ] and avoidance and arousal [ $r(1798) = -.09, p < .001$ ]. Intrusion and avoidance [ $r(1806) = .03, ns$ ] did not correlate statistically significant.

Table 3 shows that the average interitem correlation is higher for intrusion and avoidance alone than it is for the IES-total. The reliability measured by Cronbach’s alpha is low, but the scales have few items. Alpha-if-item-deleted analyses showed that deleting any item gave no better reliability. If more items with the same psychometric properties as the existing ones were added, a better Cronbach’s alpha would have been obtained.

**Table 3.** Descriptive Statistics for Exposure and Symptom Measures

	<i>M</i>	<i>SD</i>	Minimum	Maximum	Kurtosis	Skewness	Average Interitem Correlation	Cronbach’s $\alpha$
Loss (5 variables)	2.06	1.65	.0	5.0	-1.34	.14	.35	—
Violence exposure (17 variables)	9.25	4.25	.0	17.0	-.94	-.27	.28	—
Threat (3 variables)	2.26	0.95	.0	3.0	.01	-1.07	.40	—
Exposure (30 total variables)	15.9	6.06	.0	28.0	-.64	-.28	.20	—
Intrusion	8.7	5.0	.0	20	-.66	.18	.34	.67
Avoidance	13.2	5.4	.0	20	-.44	-.62	.29	.62
Arousal	7.4	5.8	.0	25	-.01	.77	.26	.64
Impact of Event Scale—total	22.0	7.5	.0	40	.15	-.48	.15	.57

*Predicting Reactions (IES)*

Forced blockwise regression analyses were used to analyze the relationship between the independent variables, exposure/loss, exposure/violence, exposure/threat, gender, age, and place of residence (centers or community) and the dependent variables, intrusion, avoidance, and arousal. Two-way interaction variables between the independent variables were also included in the analyses. Several variables were grouped together in blocks and tested simultaneously. If a block counted significantly, nonsignificant effects were removed. The rationale for our procedure was that testing of the less important variables should be conducted after controlling for the most important variables (exposure). This procedure involves many analyses, of both blocks of items and items separately. Due to the large number of reestimated analyses, the results of each step in the regression analyses (as *B*-weights, beta-weights, differences in  $R^2$ ) and the correlation matrices are not presented, only the final results. Given the large number of children in this study, the chance of finding statistically significant results is high. Therefore, variables explaining less than 1% of the variance in the dependent variables were removed, even if they made a statistically significant contribution.

The first dependent variable studied was intrusion. The result of the regression analysis is presented in Table 4. Gender, age, and the interaction variables did not contribute significantly to this model. Children with the highest intrusion scores were those who had lost someone, had experienced violence and threats, and were living in the community. The beta-weights indicate that experience of threats have the strongest influence, but the effect of place of residence is almost as strong as the effect of threats.

**Table 4.** Multiple Regression with Intrusion as the Dependent Variable

Variables	Intrusion	Living	Bivariate Correlation			<i>B</i>	$\beta$	Semipartial Correlation
			Exposure/ Loss	Exposure/ Violence	Exposure/ Threat			
Living	-.21	—				-2.39	-0.24	-.23
Exposure/ loss	.34	.17	—			0.57	0.19	.16
Exposure/ violence	.33	.14	.42	—		0.21	0.18	.15
Exposure/ threat	.44	-.12	.45	.39	—	1.37	0.25	.21
Intercept						6.04		
Mean	8.60	1.55	2.10	9.40	2.28			
SD	5.00	.50	1.68	4.25	.93			
								$R^2 = .28$
								Adjusted $R^2 = .29$
								$R = .53$

Note.  $N = 1429$ . All regression parameters were statistically significant at  $p < .01$ .

**Table 5.** Multiple Regression with Arousal as the Dependent Variable

Variables	Arousal	Living	Bivariate Correlation			B	$\beta$	Semipartial Correlation
			Exposure/ Loss	Exposure/ Violence	Exposure/ Threat			
Living	-.15	—				-1.96	-.17	-.16
Exposure/ loss	.21	.17	—			.35	.10	.08
Exposure/ violence	.24	.13	.42	—		.21	.15	.13
Exposure/ threat	.29	-.12	.46	.39	—	.98	.16	.13
Intercept						5.56		
Mean	7.46	1.56	2.11	9.42	2.28			
SD	5.77	0.50	1.68	4.24	0.93			
								$R^2 = .28$
								Adjusted $R^2 = .29$
								$R = .53$

Note.  $N = 1422$ . All regression parameters were statistically significant at  $p < .01$ .

Regression analysis with avoidance as the dependent variable resulted in just one significant independent variable; exposure/threat. The results gave a B-weight of .53 and an intercept of 12.06.  $R = .09$ ,  $R^2 = .01$ , and  $\beta = .09$  ( $t = 3.50$ ,  $p < .01$ ). This relationship is small and shows that children exposed to threats scored higher on avoidance than children lower on this scale.

The results for arousal as the dependent variable are quite similar to that of intrusion. The same independent variables significantly predicted the dependent variable. Results are presented in Table 5. Children with the highest arousal scores had lost someone, had been exposed to violence, had experienced threats, and were living in the community.

The regression analyses show that the effects of age, gender, and the interaction variables do not explain significant portions of the variance in intrusion, avoidance, and arousal. However, for intrusion and arousal all three exposure variables contribute significantly, whereas for avoidance, only the experience of threat explains the variance.

## Discussion

### *Exposure and Distress Level*

The results show that a majority of Rwandan children had experienced a multitude of stressors, each of which alone would be regarded as extremely stressful in a peaceful society. The amount of violence exposure, loss, and threat that these children experienced is difficult to comprehend. Their daily lives include

intrusions, avoidance reactions, and other posttraumatic problems, while they face the formidable task of trying to make sense of incomprehensible events.

Seeing their loved ones macheted to death, hearing others screaming for help, hiding under dead bodies to survive, and seeing trusted adults, and sometimes children, participating in the killings have left strong impressions on these children's minds. More than 90% of the children believed that they would die during the war, and about one-third worried that they may not live to become adults. In previous research (Dyregrov & Yule, 1995), a cutoff score of 17, based on the intrusion and avoidance score of the revised IES, was a good predictor of a PTSD diagnosis. In the Rwanda group, 79% of the children interviewed had a score of 17 or higher on the revised IES measure more than a year after the genocide. Although caution should be used in interpreting this as evidence for a high rate of PTSD in this group, it definitely indicates high levels of distress.

Dyregrov, Gjestad, and Raundalen (1999) found that time alone did little to alleviate IES scores among Iraqi children and adolescents following the Gulf War. Given the fact that most of the key architects of the Rwandan genocide have escaped to neighboring countries, and many have returned to commit new atrocities without fear of reprisal, it is not surprising that psychological distress persists among child survivors in Rwanda. Similar persistence, although with more decline, has been documented by Sack et al. (1993) for PTSD in children and adolescents following exposure to massive war trauma.

Social and community supports are believed to be important factors in stimulating and sustaining resilience in children (Holaday & McPhearson, 1997). The extent of loss and trauma which affected all levels of society throughout Rwanda may have rendered the traditional coping mechanisms and collective support less viable and the whole adult community less receptive to children's needs given the adults' traumas and grief. Elbedour, ten Bensel, and Bastien (1993) propose that the fragmentation of community ties predispose children to emotional disturbances in times of war. In Rwanda these ties were brutally severed, and the entire social fabric, including the church, was decimated.

The persistent consequences of armed conflict on children should make us reluctant to think that children's resiliency automatically will reduce childrens' distress levels, as Eisenbruch (1988) has cautioned. The notion of resiliency in children could easily become a new form of denial of trauma among children, whereby political systems evade responsibility for helping war-traumatized children (Dyregrov, Gupta, Gjestad, & Raundalen, 1996). Resiliency in children is intimately tied to the availability of family and community resources (Holaday & McPhearson, 1997; Walsh, 1996), resources that may be severely restricted in some war-torn countries. Perry, Pollard, Blakey, Baker, and Vigilante (1995, p. 272) called it an ultimate irony "that at the time when the human is most vulnerable to the effects of trauma—during infancy and childhood—adults generally presume the most resilience." However, the documentation of high distress levels does not

automatically mean that the children have become unable to function socially or educationally. Sack et al. (1993) have shown that Cambodian adolescent survivors who emigrated to the United States have a high level of functioning. In contrast to the adolescents in the Sack et al. study, the Rwandan children continue to live in a threatening environment amidst a variety of traumatic reminders and with limited family and community resources.

### *Relation Between Exposure and Reactions*

The multivariate analyses clearly showed that exposure was related to the degree of intrusive memories and thoughts, as well as arousal. Children with a high intrusion and arousal score had lost someone; they experienced violence exposure; and, most importantly, they felt threatened. Threat was the factor that evidenced the strongest influence on intrusion and avoidance in this study, followed by place of residence, which had an almost-equal effect on predicting intrusion levels. Living in the community was associated with higher intrusion scores. The same pattern was evident for arousal as the dependent variable, regarding both exposure and place of residence.

The results confirm the findings from other studies where the threat elements of exposure have been found particularly predictive of distress (Nader, Pynoos, Fairbanks, & Frederick, 1990). Our findings are also consistent with Carlson and Rosser-Hogan (1994), who, in a study of survivors of the genocide in Cambodia, found that the experiences that had the highest rating for severity were those directly related to survival. The group studied may be especially vulnerable because of the high levels of disruptions in their primary relationships that have deprived them of various forms of support from primary caretakers and their larger social milieu.

It should be remembered, however, that if other stressors not included in the study [such as shortage of food (see Carlson & Rosser-Hogan, 1994)], as well as more information about the children's social environment, possible exposure to new traumas, and mediating variables (i.e., coping style, personality), had been assessed, a more complete understanding of what contributed to the children's reactions could have been achieved.

### *Living in the Community Versus at "Unaccompanied" Centers*

That place of residence significantly predicted intrusion and arousal was not altogether surprising given the unique circumstances in Rwandan society in the aftermath of the genocide. Children living in the community evidenced higher intrusion and arousal scores than those living at centers. This finding may be explained by the fact that the UNICEF Trauma Recovery Program initially targeted the centers for training caregivers who worked with children on basic methods

of trauma healing, whereas very few schools and family members received this training in the first 6–10 months after the genocide. The higher distress level in the community is even more compelling, as children living at centers initially experienced more losses and greater violence exposures than children in the community, although community children did report more threat to their life.

One of the primary goals of emergency programming for children involves initial support for the speedy return of children to the community, preferably with their families (Tolfree, 1996). Often there exists, as in Rwandan society, a tradition of caring for parentless children where no blood ties exist (Tolfree, 1996). This study suggests that we should not adopt such strategies indiscriminately. Some situations, such as the Rwanda genocide, may render communities less able to care for children in the immediate aftermath of a widespread disaster such as this. Wolff, Tesfai, Egasso, and Aradom (1995) showed that unaccompanied children (4- to 7-year-old Eritreans) provided for in humane group care had their social and cognitive development fostered, even when technical and material resources were severely limited.

There may be certain characteristics associated with staying at centers that children can benefit from, such as the psychosocial environment, which may have a healing effect on traumatic reactions. In Rwanda, the centers facilitated a great deal of camaraderie among children who lost both parents and other family members during the genocide, whereby they felt accepted and that their losses were not unique. Moreover, children often received better basic care, such as food, shelter, medical attention, recreational activities, and schooling, at these institutions than in communities. The UNICEF/Trauma team prioritized trainings in centers. For this reason, more children in these institutions were probably cared for and offered an opportunity to express their traumas to adults who were more knowledgeable about trauma than the parents/caretakers in the communities.

### *Methodological and Cultural Limitations*

The use of test statistics, such as Cronbach's alpha, for analyzing the exposure variables have to be based on the assumption that the indicators are reflective and not formative in nature. Several researchers have discussed the methodological implications these yield for analyzing data (Bollen, 1989; Pedazhur and Schmelkin, 1991). There are reasons for regarding exposure variables as formative, if one believes that objective exposure is measured. If this is correct, the use of Cronbach's alpha would be wrong, as there would be no measurement error. In addition, formative indicators do not necessarily have to be correlated. Cronbach's alpha, PCA, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and other test statistics are based on correlations or covariance. If the exposure variables are subjective in nature because the response is a subjective memory of what happened earlier, the scale would contain measurement error. If the items were

measuring different parts of a specific exposure, the items would correlate to a certain degree. If this were the case, it would be proper to use test statistics and derive scales based upon these analyses. There are logical reasons to suppose that exposure variables have both reflective and formative aspects in the items and that a separation of these aspects would improve the measurement of exposure to violence. This topic should be examined in later studies.

Regarding the IES subscales, we found a small, statistically significant correlation between avoidance and arousal, indicating that children high in avoidance were more often low on arousal. The high correlation between intrusion and arousal indicates that these two scales may be tapping related features. The fact that the Cronbach's alpha is lower for the total scale than it is for the intrusion and avoidance scales separately confirms the loss of meaning and confusion in using the IES-total score. Psychometrically, the more items involved, the higher the reliability if the same construct or correlated constructs are being measured. However, in this study, this is not the case, and there is empirical support for dropping the IES-total from the statistical analyses. It is also theoretically difficult to conceptualize what this superior dimension really measures. Even if intrusion and avoidance were correlated, it would be problematic to use the sum score of the constructs. Although the Cronbach's alpha would be high, this measure does not say anything about the construct validity and theoretical dimensions of the measurement [cf. Messick (1975) and Pedhazur & Schmelkin (1991) for a discussion about this subject].

The situation in Rwanda did not allow us to measure several other relevant reactions and possible mediating variables. Working in war-affected countries often presents security risks, and the lack of basic infrastructure and human resources creates less than ideal conditions for undertaking rigorous research. Despite the difficult circumstances, all 11 prefectures were represented in the study, although fewer children than originally intended were interviewed in five prefectures. Children in four of these five prefectures reported more exposure than children in the other prefectures.

Ideally, instruments developed for and cross-validated within a particular culture should be used. In Rwanda, such instruments were unavailable. When such instruments are lacking, the instruments used should at least have been translated and back-translated into the original language (Pernice, 1994). This procedure was thoroughly followed. However, there might be a bias toward acknowledging items as items were presented in an interview format, which may magnify pressure to respond in a socially desirable way (Hurh & Kim, 1982). The distribution in acknowledgment of various reactions (see Table 2) is, however, an indication that the children were able to understand and discriminate between the various reactions and were capable of answering in a manner reflecting their true response. With the kind of questions used, it would also be difficult for the children to know what would be a desirable response.

Because violent acts continued to take place throughout the research period, children may have been reluctant to disclose information about their exposure in

the fear that this in some way could have been used against them. The general respect for UNICEF's work, the rapport established by the research assistants, and the respect for the adults involved in recruiting them may have overcome this reluctance.

The use of the IES was motivated by its widespread use in trauma situations (Paton, 1990) and its recent adaptation for use in child populations exposed to disaster and war (Dyregrov & Yule, 1995). Rather than accepting existing Western notions about symptom clusters, it has been advised that one submit the responses to symptom checklists to factor analysis for each group studied (Marsella, Friedman, & Spain, 1993). This procedure was followed in this report and revealed some problems with respect to the Avoidance and Arousal subscales of the instrument. Marsella et al. (1993), in a review of ethnocultural aspects of posttraumatic stress disorder, note that some researchers have suggested that while intrusive thoughts and memories of a traumatic event may transcend cultural experiences, the avoidance-numbing and hyperarousal symptomatology may be more determined by ethnocultural affiliation.

While Western thresholds for the number of intrusive or avoidant symptoms that would indicate that a child is suffering from PTSD exists, these might be different related to cultural factors (Ramsay, Gorst-Unsworth, & Turner, 1993). Although the level of symptoms evidenced by children in this report is high, this subjective mental state may not distinguish those who function well from those who do not. More work is needed to establish threshold levels in different cultures and tie these to functional capacity.

While focusing on the inner experience of the child following adverse war events, we should not forget the social circumstances that produced them. Bracken, Giller, & Summerfield (1995) have criticized the Western focus on intrapsychic events to the exclusion of social, cultural, and somatic aspects of the trauma, and we acknowledge this bias in this report. It is important, however, to remember that although trauma takes place in a cultural context, it is experienced by individuals. There is reason to believe that there is a universal biological response to trauma where at least the reexperiencing and arousal symptoms have a biological basis (see Marsella, Friedman, Gerrity, & Scurfield, 1996). Recent research has concluded that PTSD as a result of massive war trauma appears to transcend the formidable barriers of culture and language in a Khmer population (Sack, Seeley, & Clarke, 1997), giving further indication that PTSD symptomatology may be a universal response to massive traumatic events.

### *Conclusion*

There is no baseline in modern history that enables one to compare adequately the magnitude of traumatic events that these children have personally witnessed

during the recent genocide. As indicated in this survey, the majority of Rwandan children have been exposed to unprecedented levels of war-related violence. Results from this sample are most likely representative of the larger population of child survivors, although the quota sampling approach does not ensure true random selection.

In some studies, it has been shown that high war trauma exposure constitutes a risk for children's concentration, attention, and memory performance (Qouta, Punamäki, & El Sarraj, 1995). Other studies associate exposure to violence with cognitive impairment (Arroyo & Eth, 1985; Diehl, Zea, & Espino, 1993). Given the magnitude of exposure and duration of distress evidenced by the Rwandan sample, one may speculate how this will influence their learning capacity over the next several years.

Children and adolescents who managed to survive the genocide represent the future generation of Rwanda, and serious attention must be given to these survivors in order to restore a sense of hopefulness about their future and to prevent long-term psychological sequelae.

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