An estimated 2 million children have been killed in war during the past decade, and another 10 million have been traumatized by war (UNICEF, 1996). Of children exposed to war trauma, an astounding percentage meet criteria for posttraumatic stress disorder (PTSD) or experience subclinical levels of the disorder. Kinzie et al. (1986) found that in 1984, 50% of Cambodian children who had been exposed to war and genocide during the Pol Pot regime (1975–1979) met diagnostic criteria for PTSD. Follow-up studies found PTSD rates of 48% and 38% in 1987 and 1990, respectively (Sack et al., 1993). Of 364 displaced children (6- to 12-year-olds in a rural refugee camp) examined during the Bosnian war, 93.8% met criteria for PTSD, and most also experienced sadness (90.6%) and anxiety (95.5%) (Goldstein et al., 1997). Even brief periods of exposure to war trauma may be associated with substantial posttraumatic stress reactions. After the 5-month military occupation of Kuwait, more than 70% of children assessed reported moderate to severe trauma reactions (Nader et al., 1993).

Thus it is clear that children's exposure to war is a risk factor for PTSD and other adjustment problems. However, war exposure involves multiple traumatic events, including experiencing or witnessing violent acts (e.g., killings, rape, torture) or the results of violent acts (e.g., seeing dead bodies or bombed buildings), as well as experiencing nonviolent trauma such as homelessness or starvation. What is not clear from the current literature is the relative impact of different forms of war-trauma exposure on children's adjustment.

The more general children’s trauma literature indicates that children exposed to violent trauma, such as witnessing murders, are particularly vulnerable to posttrauma stress reactions (Horowitz et al., 1995; Pynoos and Eth, 1985). Studies of children exposed to nonviolent trauma, such as natural disasters, have reported much lower rates of posttraumatic stress disorder and symptoms (Garrison et al., 1995; Shannon et al., 1994). Nevertheless, relocation and food shortage due to a hurricane may be very different from the same issues experienced in the context of war. UNICEF (1996) suggests that in war, children exposed to deprivations and forced relocation may fare much worse than children exposed to violence. According to UNICEF, “most children who die in wartime have not been hit by bombs or bullets but have succumbed to starvation or sickness. In African wars, lack of food and medical services, combined with the stress of flight, have killed about 20 times more people than armaments” (1996, p. 20).

In the current study, we examined the types and frequency of war experiences and posttraumatic stress reactions for children living in Sarajevo during the Bosnian war. We predicted that children exposed to violent acts of war, such as murders and rapes, would exhibit higher levels of traumatic reactions and emotional and behavioral maladjustment than children exposed to nonviolent war events, such as prolonged exposure to harsh weather and hunger. We also examined potential compounded effects of violent and nonviolent trauma exposure. We hypothesized that children exposed to both violent and nonviolent war-trauma would experience more adjustment difficulties than children with more limited trauma exposure.

METHOD

Participants

Participants were 791 children (402 girls, 389 boys) from 10 schools within one school district in Sarajevo, Bosnia. Children were aged 6 to 16 (mean = 10.9 years); 47% of the girls and 44.7% of the boys were younger than age 11. Of 567 participants whose teachers completed child ethnic identity information, 86% were identified as Muslim or Bosnian Muslim, 12.9% were identified as Bosnian without further description, and one child was identified as Serbian.

School principals agreed to have their school participate in the study, and school personnel were in charge of contacting each parent, informing them of the study, and soliciting consent for their child’s participation. Because of the war conditions in Bosnia at the time of the study, namely a lack of paper, written permission from parents and guardians was unattainable. With institutional review board approval, verbal consent was obtained from parents and guardians, typically in person when parents escorted their children to or from school or during visits to the parents’ homes. Children provided verbal assent prior to data collection. School personnel reported a consent and assent rate of 100%.

Attendance at participating schools varied greatly (range = 12–244 students, median = 38). It is unknown how children in this sample differed from children who took refuge outside of Sarajevo or who had not yet returned to school. However, it seems reasonable to suspect that the sample might not include children who were not in school because they were wounded or were extremely symptomatic, or because their families left the region during the war.

Procedure

Data Collection Training. The current research was conducted as part of the activity of the International Center for Psychosocial Trauma (ICPT), which is directed by the third author (Dr. Husain). Among its activities, the ICPT provides seminars to educators, mental health professionals, and government officials on issues of children and families exposed to war. In February 1994, Dr. Husain led a team of mental health professionals and educators to Sarajevo, Bosnia, to assess the mental health needs of Sarajevan children and families and provide training seminars. Ten seminar participants who were educators within the Sarajevo District volunteered to participate in data collection for the present study. Training seminars were conducted for the 10 teachers and school counselors. Through instruction, demonstrations, and role-plays, they were trained to conduct semi-structured interviews and administer study measures. Seminars and data collection training were delivered in English with oral translation into Serbo-Croatian provided by a professional translator with experience in medical, psychological, and education-relevant training.

Translation. Prior to data collection, all questionnaires were translated into the Serbo-Croatian language of Bosnia by a bilingual, doctoral-level Bosnian psychologist. Completed questionnaires were independently retranslated back into English by a different doctoral-level psychologist.

Administration. Between February and April of 1994, the trained teachers and school counselors collected data at their respective schools. First, school counselors interviewed each child individually regarding war experiences and changes experienced since the war and used this information to complete the PTSD Reaction Index (RI). Second, trained teachers met with children individually or in groups of two or three to complete the Children’s Depression Inventory (CDI), War Experience Questionnaire, and Impact of Event Scale (IES). Teachers read instructions and questions aloud to the group while children answered questions in writing. Finally, each child’s classroom teacher completed the Child Behavior Checklist–Teacher’s Report Form (CBCL-TRF).

Measures

Posttrauma Reactions. The PTSD RI (Pynoos et al., 1987) is an interviewer-based measure of traumatic stress reactions. Sixteen dichotomous items largely reflect DSM diagnostic criteria for PTSD (e.g., “fear of recurrence,” “bad dreams”). Pynoos et al. recommend cutoff scores of 7 to 9 symptoms to indicate mild levels of PTSD, 10 to 12 symptoms to indicate moderate PTSD, and 13 or more symptoms to indicate severe PTSD; they report that a clinical cutoff of 7 and greater yields high correlations with interviewer diagnosis of PTSD in adults (0.95) and children (0.91). In the present study the RI demonstrated acceptable internal consistency (α = .84). The RI has demonstrated high item-level interrater agreement (κ = 0.88) (Pynoos et al., 1987) and significant relationship to the PTSD scale of the Minnesota Multiphasic Personality Inventory (Shannon et al., 1994).

The IES (Horowitz et al., 1979), a 15-item self-report measure, includes items such as “I had dreams about it.” Children rate each
item on a 4-point Likert scale (1 = "not at all true," to 4 = "often true") to indicate occurrence of trauma reactions over the past 7 days. The IES has demonstrated satisfactory split-half reliability, internal consistency, a correlation of 0.42 between the two Intrusion and Avoidance subscales (Horowitz et al., 1979), and ability to distinguish between children exposed to high levels of trauma and children exposed to few or no trauma events (Dyregrov et al., 1996; Sack et al., 1998). Although development of the IES predates PTSD diagnostic criteria, it has been shown to distinguish between children with and without a diagnosis of PTSD (Sack et al., 1998). In the present study, the IES demonstrated acceptable internal consistency (α = .85).

Emotional and Behavioral Adjustment. The CBCL-TRF (Achenbach, 1991) is a teacher-completed measure of children’s adaptive and problem behaviors. Teachers complete demographic and academic information about each child and rate 113 behavioral descriptions on a 3-point Likert scale (0 = “not at all true” to 2 = “very true”).

The CBCL-TRF is normed for school-age children up to 18 years old. Principal component analysis indicated two broad-band scales (Internalizing, Externalizing) and eight narrow-band scales (Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior). The CBCL-TRF has demonstrated adequate test-retest reliability and interteacher reliability (Achenbach, 1991). In the present study, CBCL-TRF subscales yielded satisfactory internal consistency (α = .80–.94), with the exception of Delinquent Behavior and Thought Problems (α = .69 and .66, respectively). The relatively low α values are consistent with previous studies (Achenbach, 1991).

Because depression is commonly associated with stress and trauma, we also investigated children’s self-reported depressive symptoms. The CDI (Kovacs, 1992) is a 27-item, self-rated measure of current depressive symptoms. Each item includes three statements (e.g., “I am sad once in a while,” “I am sad many times,” “I am sad all the time”). The child endorses the statement that best describes him/her during the past 2 weeks. Statements are scored 0, 1, or 2 to reflect symptom severity.

The CDI has demonstrated satisfactory test-retest reliability, split-half reliability, and internal consistency with nonclinical samples (Kovacs, 1992; Saylor et al., 1984). With an inpatient sample, CDI scores correlated moderately with diagnosis of a board-certified psychiatrist (Saylor et al., 1984). However, research suggests that the CDI is better able to distinguish normal from clinical populations and less able to distinguish between different clinical samples (Kovacs, 1992). The CDI demonstrated acceptable internal consistency in the present study (α = .82).

War Experiences. The War Experience Questionnaire (available from Dr. Bell-Dolan) was developed by Husain and Holcomb (unpublished, 1994) to gather information regarding children’s exposure to war events. The questionnaire includes 14 items assessing demographics, current living arrangements, and events experienced during the war. Each item was read aloud and children indicated whether they had experienced each event during the war.

RESULTS

CHILDREN’S WAR EXPERIENCES AND POSTTRAUMA REACTIONS

As Table 1 indicates, children were exposed to many types of adverse conditions during the war. The most frequently endorsed item was experiencing the death of a friend or family member (79.4%), followed by having family members wounded during the war (73.4%) and being exposed to close shootings (72.8%).

Chi-square analyses investigated patterns of trauma exposure across sex and age. Bonferroni correction required p < .001 for significance. Results indicated that more girls than boys reported that they worried about rape during the war. Conversely, more boys than girls reported carrying dead or wounded bodies during the war. Older children reported experiencing many more war atrocities than their younger counterparts (χ² values > 13.83, p values < .001). Older children were more likely to carry dead or wounded bodies, be threatened, witness killings and woundings, and be exposed to snipers. Likewise, older children experienced more deaths of family and friends as a result of the war.

Children in our sample exhibited substantial posttrauma reactions, with 41% falling within the clinically significant range for PTSD (RI ≥ 7). Analyses of variance (ANOVAs) investigating posttrauma reactions across age and sex indicated significantly more interviewer-reported PTSD symptoms for older children (RI: F1,734 = 16.49, p < .0001), but no significant age effect for child-reported symptoms (IES). There was a significant sex difference for child-reported PTSD symptoms, with girls experiencing more symptoms than boys (IES: F1,773 = 16.10, p < .0001), but no significant sex effect for interviewer-reported symptoms (RI). There were no significant sex by age interactions for self- or interviewer-reported PTSD symptoms.

RELATION OF WAR EXPERIENCE TO POSTTRAUMA REACTIONS AND ADJUSTMENT

Correlations

Table 1 presents correlations between war experiences and posttrauma symptoms. With Bonferroni correction, ρ < .002 was required for significance. Although correlations were modest at best, several direct and indirect violent war experiences were related to children’s PTSD and adjustment scores.

Posttrauma Reactions. Witnessing people being wounded, being in a threatening situation (including being threatened with being killed), and knowing of the rape of a family member were significantly related to both child-reported IES scores and interviewer-reported RI scores. It is interesting that no other war experiences were significantly related to interviewer-reported PTSD symptoms. However, several violent and nonviolent war experiences were related to children’s self-reported trauma reactions. Witnessing
TABLE 1
Percent Exposed to Specific War Experiences and Correlations With PTSD Symptoms and Adjustment

<table>
<thead>
<tr>
<th>Experience</th>
<th>% IES</th>
<th>RI</th>
<th>CDI</th>
<th>Attn</th>
<th>Aggr</th>
<th>Delinq</th>
<th>Withdr</th>
<th>Anx/Dep</th>
<th>Somatic</th>
<th>Social</th>
<th>Thought</th>
</tr>
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<td>Direct violence</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Carried dead or wounded</td>
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<td>.05</td>
<td>.04</td>
<td>.08</td>
<td>.10</td>
<td>.11</td>
<td>.07</td>
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<td>Close shooting</td>
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<td>-.03</td>
<td>-.05</td>
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<td>.02</td>
<td>-.02</td>
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<td>-.01</td>
<td>-.06</td>
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<td>.07</td>
<td>-.01</td>
<td>-.03</td>
<td>.03</td>
<td>.04</td>
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<td>Threatened</td>
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<td>.15**</td>
<td>.09</td>
<td>.07</td>
<td>.05</td>
<td>.14**</td>
<td>.07</td>
<td>.21**</td>
<td>.14*</td>
<td>.06</td>
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<tr>
<td>Witnessed killing</td>
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<td>.08</td>
<td>.12*</td>
<td>.13*</td>
<td>.12*</td>
<td>.20**</td>
<td>.11</td>
<td>.16**</td>
<td>.09</td>
<td>.10</td>
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<tr>
<td>Witnessed rape</td>
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<td>.11</td>
<td>.06</td>
<td>.01</td>
<td>.08</td>
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<td>.07</td>
<td>-.01</td>
<td>.00</td>
<td>-.03</td>
<td>.02</td>
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<td>Witnessed wounding</td>
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<td>.12*</td>
<td>.10</td>
<td>.13*</td>
<td>.10</td>
<td>.15**</td>
<td>.08</td>
<td>.17**</td>
<td>.06</td>
<td>.08</td>
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<td>.08</td>
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<td>.06</td>
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<td>Shot by sniper</td>
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<td>.12*</td>
<td>.00</td>
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<td>.01</td>
<td>.04</td>
<td>.01</td>
<td>-.02</td>
<td>-.03</td>
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<tr>
<td>Raped</td>
<td>.4</td>
<td>.02</td>
<td>.03</td>
<td>.10</td>
<td>.10</td>
<td>.09</td>
<td>.10</td>
<td>.02</td>
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<tr>
<td>Nonviolent exposure</td>
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<td>Relocated</td>
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<td>.10</td>
<td>.11</td>
<td>.03</td>
<td>.09</td>
<td>-.02</td>
<td>.02</td>
<td>.14*</td>
<td>.10</td>
<td>.05</td>
<td>.07</td>
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<tr>
<td>No food</td>
<td>18.8</td>
<td>.08</td>
<td>.02</td>
<td>.04</td>
<td>.09</td>
<td>.04</td>
<td>.07</td>
<td>.10</td>
<td>.12*</td>
<td>.02</td>
<td>.09</td>
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<tr>
<td>Coldness</td>
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<td>.13*</td>
<td>.06</td>
<td>.04</td>
<td>.14*</td>
<td>.09</td>
<td>.10</td>
<td>.10</td>
<td>.11*</td>
<td>.00</td>
<td>.10</td>
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<tr>
<td>Fear of the cold</td>
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<td>.14*</td>
<td>.08</td>
<td>.08</td>
<td>.14*</td>
<td>.12*</td>
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<td>.11*</td>
<td>.15*</td>
<td>.04</td>
<td>.13*</td>
</tr>
<tr>
<td>Fear of starvation</td>
<td>17.6</td>
<td>.11</td>
<td>.11</td>
<td>.04</td>
<td>.07</td>
<td>.06</td>
<td>.09</td>
<td>.07</td>
<td>.15*</td>
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<td>Indirect exposure, losses,</td>
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<td></td>
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<tr>
<td>and/or friend killed</td>
<td>79.4</td>
<td>.16**</td>
<td>.09</td>
<td>.05</td>
<td>.00</td>
<td>.00</td>
<td>.04</td>
<td>.04</td>
<td>.10</td>
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<td>raped</td>
<td>4.6</td>
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<td>.13*</td>
<td>.11*</td>
<td>.08</td>
<td>.07</td>
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<td>wounded</td>
<td>73.4</td>
<td>.07</td>
<td>.09</td>
<td>.08</td>
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<td>.01</td>
<td>.03</td>
<td>.04</td>
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<tr>
<td>Fear of rape</td>
<td>9.1</td>
<td>.11*</td>
<td>.09</td>
<td>.08</td>
<td>.05</td>
<td>.03</td>
<td>.06</td>
<td>.03</td>
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</tr>
<tr>
<td>Fear of grenade</td>
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<td>.02</td>
<td>.02</td>
<td>.06</td>
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<tr>
<td>Fear of bombardment</td>
<td>73.8</td>
<td>.05</td>
<td>.01</td>
<td>.01</td>
<td>.02</td>
<td>.03</td>
<td>.00</td>
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<td>.05</td>
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<td>.07</td>
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<tr>
<td>Fear of sniper fire</td>
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<td>.03</td>
<td>.16</td>
<td>.14**</td>
<td>.13*</td>
<td>.10</td>
<td>.04</td>
<td>.15**</td>
<td>.07</td>
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</table>

Note: PTSD = posttraumatic stress disorder; RI = PTSD Reaction Index; IES = Impact of Event Scale; CDI = Children’s Depression Inventory. The following are all subscales of the Children Behavior Checklist-Teacher's Report Form: Attn = Attention Problems; Aggr = Aggressive behavior; Delinq = Delinquent Behavior; Withdr = Withdrawn; Anx/Dep = Anxious/Depressed; Somatic = Somatic Complaints; Social = Social Problems; Thought = Thought Problems. A Bonferroni corrected p value of .002 was used as the criterion for significance.

* p < .002; ** p < .0001.

Killings, being shot by a sniper, having a family member or friend who was killed during the war, and being cold correlated significantly with self-reported (IES) PTSD symptoms.

Adjustment. Several war experiences were related to adjustment (Table 1). Direct exposure to violence, such as being in threatening situations (including being threatened with being killed) and witnessing killings and woundings, was significantly related to teacher-reported delinquent behaviors and anxiety/depression. Witnessing killings and woundings was also significantly related to teacher-reported attention problems, whereas being in threatening situations was also significantly related to somatic complaints. As expected, witnessing killings was related to teacher-reported aggressive behaviors. Fears of sniper fire and being cold were also related to aggressive behaviors. Nonviolent trauma, such as exposure to the cold and having no food, was related to anxiety/depression symptoms and relocation was significantly related to withdrawn symptoms. Witnessing killings and knowing of a family member who was raped were the only two war experiences significantly related to self-reported depressive symptoms.

Exposure Group Differences

To examine the relation between type of trauma exposure and children’s adjustment, we divided children into four groups on the basis of their exposure to violent and nonviolent trauma.
nonviolent trauma. Violent trauma included witnessing murders, rapes, or shootings; being directly threatened, shot, wounded, or raped; or carrying bodies of the wounded or dead. Nonviolent trauma included experiencing extreme coldness, fearing dying from the cold, having no food, fearing starvation, and having to relocate. The violence exposure only (VEO) group \((n = 173)\) included children exposed to violent trauma, but not extreme deprivation or relocation. The deprivation/relocation only (DRO) group \((n = 174)\) included children who experienced relocation or extreme deprivation, but not direct violence. The violence, deprivation, and relocation (VDR) group \((n = 273)\) included children who experienced both violence and extreme deprivation, and the no exposure (NoEx) group \((n = 168)\) included children who experienced neither direct violence nor deprivation.

One-way ANOVAs were calculated, with trauma exposure group (four levels) serving as the independent variable and measures of PTSD symptoms and adjustment (RI, IES, CBCL subscales, CDI) serving as dependent variables. Significant ANOVAs were followed with Tukey studentized range tests.

Posttrauma Reactions. Table 2 presents means and standard deviations of PTSD symptom scores for each trauma exposure group. The ANOVA for interviewer-endorsed RI yielded a significant effect of group \((F_{4,731} = 7.78, p < .0001)\). The Tukey post hoc tests indicated that children exposed to both violent and nonviolent trauma (VDR)
experienced significantly more PTSD symptoms than children who experienced no trauma (NoEx) or who were exposed only to deprivation and relocation (DRO). The ANOVA for self-reported (IES) PTSD symptoms also revealed a significant effect of group ($F_{3,70} = 12.88, p < .0001$). Post hoc tests indicated that children who experienced both violent and nonviolent trauma (VDR) had significantly higher PTSD symptoms than the other groups.

Adjustment. Children exposed to both violent and nonviolent trauma (VDR) experienced greater difficulty on all adjustment subscales than children not exposed to either form of trauma (NoEx). Children exposed to both violent and nonviolent trauma (VDR) also had greater teacher-reported attention problems, delinquent behaviors, anxious/depressed symptoms, and self-reported depression symptoms than children exposed to nonviolent trauma only (DRO). Children exposed to violent trauma only (VEO) had more teacher-reported attention problems, delinquent behaviors, anxious/depressed symptoms, and somatic symptoms than children not exposed to either violent or nonviolent trauma (NoEx).

Cumulative Trauma

In light of our findings that children exposed to both violent and nonviolent trauma (VDR) exhibited significantly greater PTSD symptoms and adjustment difficulties than their less exposed peers, we examined whether results were more likely to be due to the sheer number of exposure experiences (dosage effect) or to an interaction between trauma types. Two-way ANOVAs examined main effects and interactions of violent and nonviolent trauma while controlling for the number of war-trauma experiences endorsed. There was no significant interaction between violent and nonviolent trauma for either children's self- or interviewer-reported trauma reactions or for children's adjustment.

However, several main effects emerged for the number of trauma experiences endorsed, suggesting an additive effect. Specifically, additive effects were found for self- and interviewer-reported trauma symptoms, self-reported depression, and teacher-reported delinquent behaviors, anxious/depression, thought problems, and somatic symptoms ($F$ values $> 3.89, p$ values $< .05$). Significant main effects of violence were found for teacher-reported anxiety/depression, delinquent behaviors, and attention problems ($F$ values $> 5.29, p$ values $< .02$). A significant main effect for nonviolent trauma was found for teacher-reported withdrawal ($F = 8.96, p < .003$).

DISCUSSION

This is one of the few studies to examine children’s posttraumatic stress reactions and adjustment while in the midst of war. Previous studies of children’s reactions to war trauma have been conducted primarily after cessation of war exposure and the beginning of children’s postwar status (e.g., refugee, adoption, foster care), thus confounding war exposure and postwar factors. In contrast, we examined a large sample of children who were actively experiencing the threats of war and other ethnic cleansing tactics (e.g., physical attacks by neighbors, rape) (Kozaric-Kovacic et al., 1995; Weine and Laub, 1995). By historical accounts, Sarajevo was completely under siege for more than 600 days during the war (O’Ballance, 1995). The siege and the subsequent United Nations embargo greatly limited the supply of fuel, food, and water, resulting in many months of insufficient heating during inclement weather.

Another unique aspect of this study is the examination of children’s reactions to cumulative trauma, as well as to two conceptually different types of trauma: violent and nonviolent. Few studies provide information regarding children’s reactions to both types of trauma within the same context (e.g., the context of war). This study allowed us to address differential features of violent versus nonviolent trauma, the impact of cumulative trauma, and how specific war experiences relate to adjustment in a sample of currently war-traumatized children.

Our findings reflect a pattern of differential exposure by age. Older children were more likely than younger children to be exposed to violence and to have relatives and friends who were killed during the war. Of interest, older children were not more likely to self-report trauma symptoms, perhaps reflecting a pattern of symptom denial for older children or a pattern of high distress among younger children even at lower levels of trauma exposure. Sex differences were largely nonsignificant, suggesting significant exposure for both boys and girls.

Our findings regarding the extent of war trauma are similar to those of previous studies, in that many children experienced numerous atrocities during a relatively brief period of time. However, our sample of Sarajevo children reported lower rates of direct exposure to violence (e.g., witnessing murders, experiencing threats to be killed) and deprivation (e.g., having no food) than those reported in other studies (e.g., Goldstein et al., 1997; Sack et al., 1993). It has been speculated that Sarajevo
may have been shielded from some of the more horrifying war atrocities (e.g., torturing within concentration camps) due to the constant journalistic presence in the city (O’Ballance, 1995). However, rates of family losses were comparable across samples, with 60% to 80% of children reporting war-related loss of a family member. Thus, although a majority of our sample may have been protected from some aspects of war, they were clearly exposed to trauma.

As expected, our findings suggest that children exposed to both violence and deprivation exhibit more posttraumatic stress symptoms than children exposed to more limited trauma. However, contrary to expectations, children exposed to direct violence did not show more post-trauma reactions and adjustment difficulties than children who experienced only nonviolent trauma. Two primary factors may contribute to the lack of significant differences between violent and nonviolent trauma. First, during this extended war, very few children were free from exposure to violence. Although only about half of our children were directly exposed to violent acts, almost everyone experienced indirect exposure, such as being close to shootings or having a relative or friend killed. Thus it seems nearly impossible to shelter children from violence during war.

Second, deprivation and relocation within the context of war may have dramatically different consequences than outside of war. Whereas these conditions may lead to severe distress and even death during war (e.g., from starvation, untreated illnesses, stress related to encampment) (UNICEF, 1996), they may lead to briefer and less intense distress in nonwar contexts (e.g., hunger, public shelter). Also, children who reside in impoverished households in nonwar contexts may have access to stronger support networks (e.g., community programs, nontraumatized parents and peers) than war-exposed children, or they may view poverty as normative and thus adapt to limited resources. However, adaptation to deprivations within the context of war may be more difficult due to a sudden change from children’s prior status, as well as to the additive effects of deprivation, loss of support, and exposure to violence. Finally, trauma reactions within the context of war may be exacerbated by cognitive and emotional factors that may not be present in nonwar situations. For example, children faced with hunger and freezing temperatures within the context of war may feel hated, especially in wars in which enemy lines are drawn on the basis of ethnicity, religion, and other personal attributes.

Therefore, in addition to protection from violence, children within war zones may require equal attention to alleviating stress related to nonviolent traumas.

Limitations

Although this study adds valuable information to the trauma literature, several limitations must be considered. First, this study provides a snapshot of children’s functioning during war and cannot address issues related to children’s prewar or postwar status. Premorbid functioning has been related to adverse trauma reactions (Breslau et al., 1999; Reich et al., 1996; Zaidi and Foy, 1994), but is unknown for our participants. Similarly, we cannot address how our findings may be influenced by the ongoing war at the time of data collection. During war, children may be more likely to use active coping strategies, such as avoidance and denial, to reduce anxiety in the face of imminent danger, and only later experience posttrauma symptoms. Therefore, our findings may be a conservative estimate of how war experiences affect children’s adjustment.

Second, the study did not examine the consequences of exposure to loss (i.e., secondary adversities). However, it is likely that children’s adjustment is influenced not just by violent and nonviolent trauma, but also by the range of consequences set in motion by the traumatic event. Future research should examine this issue further.

Third, the psychometric properties of the War Experience Questionnaire are unknown. The measure was developed with the assistance of Bosnian psychologists and psychiatrists familiar with the types of war events children experienced in Bosnia. However, it is possible that some important traumatic events (e.g., witnessing atrocities through media exposure) were not listed on the questionnaire.

Fourth, it should be noted that clear comparisons between self- and interviewer-reported trauma reactions cannot be made. Although the IES and RI are the most frequently used measures of children’s posttrauma reactions (Vogel and Vernberg, 1993), they assess different symptoms and thus different aspects of trauma reactions. Therefore, it is unclear whether differences between the relation of IES and RI scores to trauma exposure reflect reporter differences or construct differences.

Finally, despite the merits of our findings, it is important to consider issues of construct and content validity with an Eastern European sample. Ethnocultural variations may decrease the validity of the PTSD construct as well as the validity of our measures. For example, despite some evidence of construct validity cross-culturally for
the PTSD diagnosis (Sack et al., 1997), further research is needed to examine this issue (Marsella et al., 1994). It is also unknown whether the language contained in each measure is transportable from North American (United States) to Eastern European culture and from English to the Serbo-Croatian language.

Clinical Implications and Conclusion

Overall, our findings indicate that during times of war, both violent and nonviolent trauma may have grave effects on children’s adjustment. They suggest that political actions such as embargoes (e.g., withholding fuel and food) may be as harmful to children as exposure to military violence. They also suggest that in light of limited resources during times of war, children may be best served by efforts to reduce the compounded effects of multiple traumas. For example, reducing exposure to indirect violence, such as graphic media coverage of war atrocities, and providing comfort from fears of starvation and freezing, may be functionally as helpful to children’s adjustment as reducing their direct exposure to violence.

In conclusion, trauma reactions and maladjustment are associated with both violent and nonviolent acts of war. However, further research is needed to determine whether exposure to violent versus nonviolent trauma has different adjustment trajectories in the postwar era when imminent risk of harm is no longer present.

REFERENCES

Pynoos RS, Frederick C, Nader K et al. (1987), Life threat and posttraumatic stress in school-age children. Arch Gen Psychiatry 44:1057–1063
Zaidi L, Foy DW (1994), Childhood abuse experience and combat-related PTSD. J Trauma Stress 7:33–42