

Growing Pains: The Impact of Disaster-Related and Daily Stressors on the Psychological and Psychosocial Functioning of Youth in Sri Lanka

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Daily stressors may mediate the relation between exposure to disaster-related stressors and psychological and psychosocial distress among youth in disaster-affected countries. A sample of 427 Sri Lankan Sinhalese, Tamil, and Muslim youth (mean age = 14.5) completed a survey with measures of exposure to disaster-related stressors and daily stressors, psychological distress (posttraumatic stress, depression, and anxiety), and psychosocial distress. The results indicated that daily stressors significantly mediated relations between war- and tsunami-related stressors and psychological and psychosocial distress. Some daily stressors not directly related to disaster also predicted functioning. These results point to the need for policies and interventions that focus on reducing proximal daily stressors that are salient to Sri Lankan youth exposed to disasters.

It is by now a basic tenet of developmental psychology, supported by nearly four decades of research, that children's development is influenced by numerous factors at multiple levels, ranging from intrapersonal variables, both biological and psychological, to factors operating at the level of the family, community, and society (Bronfenbrenner & Morris, 1998; Cooper & Guthrie, 2007). This ecological or multilevel framework, though originally applied to the study of typical or healthy development, is also used to examine psychopathology as well as resilience of youth living in high-stress environments (Buckner, Bassuk, & Beardslee, 2004; Fitzgerald, Karraker, & Luster, 2002; Masten, 2006; Pynoos, Steinberg, & Piacentini, 1999). In their efforts to understand the impact of stressful events and contexts such as parental divorce and poverty

on children's emotional, cognitive, and social well-being, researchers have increasingly transcended the earlier emphasis on simple main effects models, looking instead to identify and understand mediating and moderating factors at multiple levels of influence that might explain or influence the relation between stressors and children's mental health (Cicchetti & Lynch, 1993; Osofsky, 2004; Pynoos et al., 1999). The adoption of an ecological framework and the development of risk or causal models that specify mediating and moderating variables at multiple levels of children's social and material ecologies have, in turn, facilitated the development of empirically based interventions that target those variables most amenable to change.

Research on the physical and mental health of children and youth living in settings of armed conflict and natural disaster, or what the Interagency Standing Committee (IASC) has termed *emergency settings* (IASC, 2007), has lagged somewhat in this shift toward an ecological perspective. This lag appears to be related to two major issues. First is the issue of which predictors are, or ought to be, the focus of study. Second is the issue of which outcomes are, or ought to be, the focus of measurement.

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Issues Related to Children and Youth Exposed to Disasters

Several reviews synthesize the findings on predictors of mental health in children exposed to situations of armed conflict (Barenbaum, Ruchkin, & Schwab-Stone, 2004; Belfer, 2006; Fazel, Wheeler, & Danesh, 2005; Kalksma-Van Lith, 2007; Stichick, 2001). The reviews demonstrate that the primary focus remains the documentation of the simple or direct relation between exposure to experiences of violence and loss (e.g., exposure to gunfire and bombs, the violent death of family members) and children's mental health. The underlying assumption is that direct exposure to potentially traumatic disaster-related events represents the major threat to children's mental health in emergency settings. Consistent with that assumption, numerous studies have documented a positive—though highly variable—correlation between severity of exposure to war and other disaster-related stressors and psychiatric symptomatology in children, particularly symptoms of posttraumatic stress disorder (PTSD; American Psychiatric Association, 2000; see, e.g., Fazel et al., 2005; Macksoud & Aber, 1996; Neuner, Schauer, Catani, Ruf, & Elbert, 2006; Qouta, Punamäki, & El Sarraj, 2003; Thabet & Vostanis, 2000). This emphasis on the traumatic impact of direct exposure to war- and disaster-related stressors has led to numerous calls for trauma-focused interventions aimed at ameliorating symptoms of PTSD in children living in emergency settings (e.g., Neuner et al., 2006; Yule, 2002).

There is, however, increasing interest in more contextualized approaches that consider multilevel influences on the relation between disasters and children's mental health (Cairns & Dawes, 1996; Dawes & Donald, 1994; Garbarino & Kostelny, 1996; Hart, Galappatti, Boyden, & Armstrong, 2007; Heptinstall, Sethna, & Taylor, 2004; Miller & Rasco, 2004). A growing body of evidence suggests that stressful social and material conditions caused or exacerbated by armed conflict and natural disasters may predict mental health status as well as, or better than, actual degree of exposure to war or to other disaster-related events (Al-Krenawi, Lev-Wiesel, & Sehwill, 2007; Miller, Omidian, Rasmussen, Yaqubi, & Daudzai, 2008; Wessells & Monteiro, 2006). War and natural disasters do a great deal more than expose young people to potentially traumatic stressors; they also generate a host of enduring, stressful conditions of daily life. For the purposes of this study we use the term *daily stressors* to refer to these stressful conditions that may impinge upon

children's psychosocial well-being. Such conditions can arise from any area of a child's ecology and include poverty caused or worsened by the loss of family livelihoods, displacement into crowded and impoverished refugee camps with a corresponding loss of privacy and autonomy, a loss of social support caused by the weakening of social networks through the death of family members, alterations in family structure or functioning when family members are killed or disabled, and a lack of access to basic goods and services such as health care and schooling (Barenbaum et al., 2004; Kalksma-Van Lith, 2007; Miller & Rasco, 2004; Wessells & Monteiro, 2006).

Although daily stressors such as those listed earlier may function to mediate or explain the impact of war and other disasters on children's mental health, it seems reasonable to assume that even in situations of complex emergency, some children will also be affected by stressors that may also occur in nonemergency settings, such as family violence and sexual abuse. To the extent that such stressors are unrelated to conditions of war or disaster, they essentially function as independent sources of daily stress in children's lives. This raises the important possibility that, even in emergency settings, at least some of the variance in psychological functioning (including such disaster-related psychiatric conditions as PTSD) may be due to sources of traumatic stress unrelated to conflict or disaster. Thus, one purpose of this study is to examine the relations between direct exposure to war- and tsunami-related stressors, exposure to daily stressors, and distress in children exposed to such stressors.

Issues Relating to Assessment of Outcomes in Children Exposed to Disasters

There is robust research indicating that reactions to trauma in children look qualitatively different from adult reactions to traumatic events (Davis & Siegel, 2005; Osofsky, 2004; Shaw, 2000). However, although researchers acknowledge the developmental and age differences in how children may express trauma reactions, less attention has been paid to cultural differences in such processes. Most studies of children's distress and well-being in complex emergencies have conceptualized these constructs using Western psychiatric diagnoses and self-report measures developed and standardized on Western populations. The most common outcomes examined are depression, anxiety, and child PTSD (for reviews and critiques of this method, see

Barenbaum et al., 2004; Hollifield et al., 2002; Miller, Kulkarni, & Kushner, 2006). Assessments of trauma reactions in children have generally focused on emotional and cognitive symptoms of distress (internal or intrapsychic experiences) while largely overlooking the dimension of psychosocial functioning (internal experiences that affect external, culturally appropriate behaviors). Although a majority of armed conflicts and major natural disasters in the past 50 years have occurred in non-Western nations (UNICEF, 2008; United States Committee for Refugees, 2009), by 2001, only about 14% of samples in disaster research have been from these countries (Norris et al., 2002). When such studies have been conducted, surprisingly little attention has been paid to cultural variations in the ways in which children's well-being and distress are expressed and understood within local cultures.

An understanding of children's functioning that takes social domains into account is particularly salient to collectivistic cultures, where general functioning is dependent on social networks, religious beliefs, cultural practices, and social roles (Summerfield, 1999; Triandis, 1995). Thus, culturally sound assessments of psychosocial functioning merit considerable attention in research conducted with children living in settings of complex emergency. The second goal of the current study was to address this empirical gap. Using a culturally specific measure of children's psychosocial status along with intrapsychic measures of distress, we examined the relations between war and tsunami exposure, daily stressors, and psychological and psychosocial functioning in Sri Lankan youth.

A Contextual Model: Looking Beyond Catastrophic Stressors

Current treatment programs designed to alleviate psychiatric symptoms among children who are exposed to war or natural disasters often focus solely on exposure to the disasters themselves. This emphasis may be overly narrow if in fact, significant variance in children's distress and development is explained by daily stressors caused and exacerbated by, or even unrelated to conflict or natural disaster. Moreover, to the extent that some daily stressors mediate the impact of war or natural disaster on psychosocial functioning and development, it may be especially productive to focus intervention efforts on altering those stressors. War- and other disaster-related traumatic stressors are events that cannot be altered, although their residual impact on psychosocial well-being may be allevi-

ated, but daily stressors represent ongoing, proximal events or situations that continue to adversely affect children, and can be altered.

Few studies have assessed the impact of daily stressors on children's mental health in emergency settings. However, research with adults in zones of ongoing conflict has shown a consistent pattern where the strength of the relation between direct exposure to war and mental health drops considerably when daily stressors are taken into account. Indeed, daily stressors have been demonstrated to account for greater variance in some mental health outcomes, compared with direct exposure to war experiences. For example, among adult refugees from Darfur living in Chadian refugee camps, stressors associated with daily life in the camps such as difficulty accessing basic resources and safety concerns predicted levels of PTSD, as well as indigenous idioms of distress, better than previous exposure to the genocidal violence in Darfur (Rasmussen et al., 2010). Similarly, in a study of adults in Afghanistan, daily stressors such as poverty, unemployment, domestic violence, and social isolation predicted psychological and psychosocial distress better than previous exposure to war-related violence and loss; moreover, daily stressors and war exposure accounted for roughly equal variance in levels of PTSD symptoms (Miller et al., 2009).

In one of the few studies of children that examined the impact of daily stressors in a zone of ongoing conflict, Al-Krenawi et al. (2007) found that family violence was more strongly related to children's mental health than the degree of exposure to political violence. Using ethnographic methods to study families in Afghanistan, de Berry et al. (2003) found that in addition to war-related violence and loss, parents and children identified family violence, poverty, and lack of access to education as major sources of childhood stress. Hart et al. (2007) similarly used a variety of qualitative methods with children in a heavily war-affected region of Sri Lanka, where children identified aspects of armed conflict as well as other threats to their well-being such as poisonous snakebite, theft, and flooding as significant sources of threat to their well-being. Unfortunately, when considering children's mental health in settings of complex emergency, few other studies have looked beyond children's direct exposure to war- or disaster-related traumatic stressors. Consequently, data remain sparse on the relation of daily stressors to the mental health of children living in war- and disaster-affected areas.

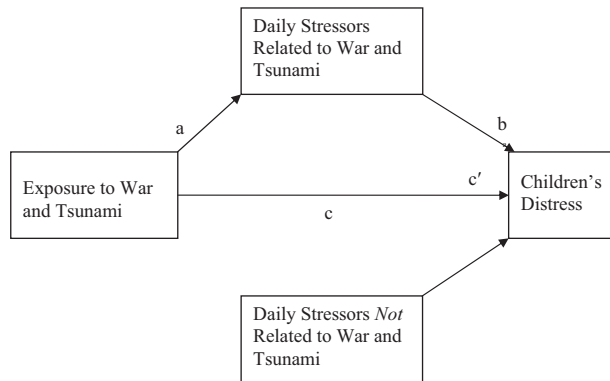


Figure 1. Model for assessing mediation in the relation between disaster exposure, daily stressors, and children's distress.

Figure 1 depicts the hypothesized relation between disasters such as war and daily stressors, and emotional, cognitive, and social distress in youth. In the model, exposure to war and natural disasters exerts a direct effect on distress; however, the influence of this exposure is partially mediated by a subset of daily stressors caused or exacerbated by the conditions of war or natural disaster. There is also a subset of daily stressors that influence children's distress independently of any relation to war and natural disaster. We have intentionally not specified the particular daily stressor(s) in each box (mediators and nonmediators) of the model. Given the current paucity of findings in this area, it seemed premature to specify the relation of particular daily stressors to disasters, on the one hand, and children's distress, on the other. The model in Figure 1 was tested with youth living in a heavily war-torn and tsunami-affected district in eastern Sri Lanka.

Background: Sri Lanka. The island of Sri Lanka has a population of just over 20 million, over 75% of whom are Sinhalese Buddhists. Significant minority ethnic groups include Tamils and Moors, commonly referred to as Muslims (Department of Census and Statistics, Sri Lanka, 2001). Sri Lankans tend to be collectivistic and traditional in orientation (Durvasula & Mylvaganam, 1994; Fernando, 2005, 2008). However, the long-drawn-out armed conflict that began in the 1980s and the tsunami of 2004 appear to have disrupted the social bonds that tie children to parents and families to each other. Somasundaram (2003) has referred to this type of disruption as "collective trauma," a condition where whole communities are so impacted by violence and loss that the very fabric of society is destroyed, exposing people to multiple traumatic

events with few safety nets against resulting trauma. Children, being most dependent on their parents and supportive sociocultural structures, are the most likely to be affected by collective trauma. Additionally, children are directly affected by the armed conflict: kidnapped to become child soldiers, being detained and tortured, becoming crippled due to mine explosions, and/or orphaned (Amnesty International, 2009; South Asia Free Media Association [SAFMA], 2008).

A brief respite from the war began in 2002 after a cease-fire agreement was signed by both parties. However on December 24, 2004, just as Sri Lankans were beginning to look forward to rebuilding their lives, the tsunami crashed into Southeast Asia, killing over 35,000 and displacing over a million (SAFMA, 2008). Currently, thousands of families still live in barren, impoverished refugee camps. In addition, the Tamil militants returned to armed conflict in 2005, ironically citing a perceived lack of fairness in the distribution and disbursement of tsunami relief funds as the reason for their return to militancy (SAFMA, 2008). In 2008, over 450,000 people were considered to be living as internally displaced people or refugees due to both the war and the tsunami (SAFMA, 2008).

The Ampara district, where the present study was conducted, is one of the regions most severely affected by the tsunami, with more than 10,000 killed and many more displaced from their homes (Canadian International Development Agency [CIDA], 2009; Department of Census and Statistics, Sri Lanka, 2005). Ampara also represents the eastern frontline of the civil war and was the site of numerous war-related atrocities (Amnesty International, 2008). Many villages, known as "border villages," lie on the border between territories disputed between the Sri Lankan government and the Tamil militants; villagers in these areas often found themselves in the midst of fierce fighting between the two military forces. It is against this background that this study was conducted with Sri Lankan youth.

Issues of age, gender, and ethnic group membership. Few consistent results have been established on the relation between demographic variables (age, gender, and race), disaster exposure, and outcomes for children living in disaster settings. Some studies have found that younger age is a predictor of worse functioning (Bonanno, 2008), whereas others have found no relation between age, exposure, and outcome (for a review and meta-analysis, see Evans, Davies, & DiLillo, 2008). In terms of gender, a robust finding is that girls tend to internalize distress (as depression or anxiety) whereas boys

tend to externalize it (as aggressive behaviors) (Evans et al., 2008). A prior study conducted with children in the western and northern parts of Sri Lanka revealed that whereas gender did not significantly predict distress, younger age did (Fernando & Makanui, 2005). The same study found that Muslim and Christian children reported worse psychosocial outcomes, whereas Buddhist and Hindu children reported less distress (Fernando & Makanui, 2005). Because this earlier study was conducted in a different region of Sri Lanka, we will make no predictions in this study as to which demographic variables might be related to predictors and outcomes.

The current study has several goals: (a) to examine the relation of war- and tsunami-related stressors to the psychological and psychosocial functioning of Sri Lankan youth, (b) to examine whether daily stressors mediate this relationship, and (c) to determine which demographic characteristics might be related to distress in Sri Lankan youth. Several hypotheses were tested in this study (see Figure 1); these hypotheses are listed in groups based on the analysis being conducted.

1. War and tsunami exposure will be significantly related to daily stressors (pathway a).
2. War and tsunami exposure will be significantly related to psychological and psychosocial outcomes for Sri Lankan youth (pathway c in Figure 1):
 - a. War and tsunami exposure will be significantly related to PTSD, depression, and anxiety.
 - b. War and tsunami exposure will be significantly related to overall psychosocial status and to internalizing, externalizing, and psychosocial withdrawal components of psychosocial status.
3. Controlling for the effects of war and tsunami exposure, exposure to daily stressors will be significantly related to psychological and psychosocial outcomes (pathway b):
 - a. Exposure to daily stressors will be significantly related to PTSD, depression, and anxiety, after controlling for the effects of war and tsunami exposure; and
 - b. After controlling for the effects of war and tsunami exposure, exposure to daily stressors will be significantly related to overall psychosocial status and to internalizing,

externalizing, and psychosocial withdrawal components of psychosocial status.

4. Daily stressors will mediate the relation between exposure to the war and tsunami and all outcome measures (pathway c' ; weaker than pathway c in Figure 1):
 - a. The relation between war and tsunami exposure and the outcomes of PTSD, depression, and anxiety will be weaker after including daily stressors to the model;
 - b. Similarly, adding daily stressors to the model will weaken the relation between war and tsunami exposure and overall psychosocial status, and to internalizing, externalizing, and psychosocial withdrawal components of psychosocial status.

If exposure to daily stressors does in fact serve as a mediator in the model, then the regression weight for exposure to war and tsunami predicting outcomes will be smaller when the mediator is also in the model (pathway c' in Figure 1) than when the mediator is not in the model (pathway c). With full mediation, pathway c' would be zero. Because no prior studies have considered this model, no prediction was made as to whether daily stressors would fully or partially mediate the relation.

We also examined whether age, gender, and ethnicity are significantly related to disaster exposure, daily stressors, and the outcomes of interest. No hypotheses about these relations were formulated, however, given that prior research has not established such relationships among Sri Lankan youth.

Method

Participants

Participants for this study comprised three groups of students: Sinhalese ($n = 223$; girls = 108), Tamil ($n = 89$; girls = 53), and Muslim ($n = 115$; girls = 79). Student grades ranged from 7 to 13 (Advanced Level II, equivalent to high school senior). Approximately half the sample was female (56%; $n = 240$). The mean age of the youth was 14.5 years ($SD = 1.88$), with a range of 11–20 years; no significant differences were found for age by ethnic group. Religious affiliation was exclusively related to ethnicity for the Sinhalese and Moor students (Buddhist and Muslim, respectively). Among the Tamil students, 54 were Hindu whereas 35

were Christian. Most participants' families (97%) could be classified as being of lower socioeconomic status (relative to other Sri Lankans) based on parental income, education, and profession.

Instruments

Demographic survey. The survey included questions about the respondent's gender, age, and education, as well as questions about parental education, income, and profession, type of household (intact, extended families living in the home), type of housing (permanent housing vs. temporary shelter), and religiosity (importance of religious beliefs, frequency of practicing religious beliefs).

The Sri Lankan Index of Psychosocial Status for Children (SLIPSS-C). The SLIPSS-C is a 49-item measure assessing multiple subdomains of psychosocial distress. The measure was developed in Sinhalese and Tamil languages using qualitative methods, including focus groups with children. A more extensive discussion of the development and validation of the measure is available elsewhere (Fernando, Miller, Uyanavithanage, Prasad, & Garcia, 2008). Respondents endorsed items assessing the frequency of feelings and behaviors, from 0 (*never*) to 4 (*almost always*), with higher scores reflecting more psychosocial distress. Internal consistency of the measure was high (Cronbach's alpha = .85) and validity of the scale for Sri Lankan youth has been established (Fernando et al., 2008). Exploratory factor analysis for 46 items using principal axis extraction and direct oblimin (oblique) rotation yielded three factors with eigenvalues > 1.0: internalizing or intrapsychic symptoms (20 items, alpha = .83; e.g., feeling sad, angry, lonely; labeled *S-Internalizing*), externalizing behavior (15 items, alpha = .79; e.g., fighting with friends and neighbors; labeled *S-Externalizing*), and psychosocial withdrawal (11 items, alpha = .65; e.g., difficulty talking to parents and other adults; problems with performing one's rituals and duties; labeled *S-Withdrawal*). The internal consistency of the last subscale is somewhat lower than the others but still considered acceptable (Oyserman, Coon, & Kimmelmeier, 2002). The impact of different types of stressors on the participants' psychosocial status in these three distinct subdomains was examined.

War- and Tsunami-Related Stressor Scale (WTSS). The WTSS is a 12-item scale assessing frequency of exposure from 0 (*never*) to 2 (*more than once*) to various potentially traumatic war-related events (e.g., bomb blasts, kidnappings, shootings)

and tsunami-related events (e.g., experiencing the tsunami waves, seeing people die due to the tsunami). Items were selected in consultation with a local team of counselors and based on data from focus groups recruited to develop the SLIPSS-C. Internal consistency (Cronbach's alpha) of the WTSS was .72, although internal consistency may not provide an adequate measure of reliability for this scale (see Netland, 2005). Cronbach's alpha is likely to underestimate reliability for scales where many different experiences are relevant, yet individual items are not necessarily expected to correlate highly. Additionally, although we recognize that any one war- or tsunami-related stressor can have potentially devastating effects, a summative score on the WTSS was used in these analyses. A higher score on the WTSS indicates exposure to multiple war- and tsunami-related events.

Children's Daily Stressor Scale (CDSS). The CDSS includes 20 items generated from focus group transcripts obtained during the development and validation of the SLIPSS-C. The items were based on the most frequent responses to questions posed to focus group participants about stressors they most commonly encountered while living amid poverty, war, and natural disasters. For each item, participants were asked to indicate whether they experienced that event, from 0 (*never*) to 2 (*more than once*). Further details on the development of this measure are provided elsewhere (Miller, Fernando, & Berger, 2009; Miller, Fernando, Uyanavithanage, Prasad, & Ranawake, 2008). Internal consistency (Cronbach's alpha) of the scale was .75. Principal axis extraction and direct oblimin (oblique) rotation revealed three factors, each assessing a subdomain of daily stressors. The first subscale was labeled Deprivation, measured by 10 items (e.g., "Lack of clean drinking water"; alpha = .71). The second subscale was labeled Interparental Conflict, measured by four items (e.g., "Seen your mother or father hitting your father or mother"; alpha = .66). The third subscale was labeled Abuse, measured by six items (e.g., "Been beaten so hard you had injuries"; alpha = .62). The total CDSS score and scores on each of the three subscales were used to examine the contribution of daily stressors to psychosocial status as well as the putative mediating role of these stressors in the relation of war and tsunami exposure to psychosocial status.

Child Posttraumatic Stress Scale (CPSS). The CPSS is a 17-item checklist scale assessing the frequency of symptoms of posttraumatic stress in children exposed to a traumatic event, from 0 (*not at all*) to 3 (*almost always*); Foa, Johnson, Feeny, &

Treadwell, 2001). The CPSS has been used reliably in several studies of children exposed to traumatic stressors (Hawkins & Radcliffe, 2006). Internal consistency of the measure was high (Cronbach's $\alpha = .81$). Respondents were asked to think about the most fearful event they had experienced and to indicate whether, in the past 2 weeks, they experienced any of the feelings, thoughts, or behaviors listed relating to the event they experienced. Higher scores reflect higher levels of PTSD symptomatology.

The Birmleson Depression Self-Rating Scale (DSRS). The DSRS is an 18-item scale assessing the frequency of symptoms relating to depression on a scale ranging from 0 (*never*) to 3 (*almost always*; Birmleson, Hudson, Grey-Buchanan, & Wolff, 1987). The scale has demonstrated acceptable psychometric properties in studies with children (Myers & Winters, 2002). In the current study, three items were dropped due to poor item-total correlations for this sample, yielding a 15-item scale (Cronbach's $\alpha = .70$).

The Multidimensional Anxiety Scale for Children (MASC). The MASC is a 41-item scale assessing the frequency of symptoms relating to anxiety in children on a frequency scale ranging from 0 (*never*) to 3 (*almost always*; March, Parker, Sullivan, Stallings, & Conners, 1997). A 14-item brief version of the scale was used in this study (Cronbach's $\alpha = .73$).

Note on validity and translation of measures, and terminology The PTSD (CPSS) and depression (DSRS) scales have not been validated for use with Sri Lankan children. Therefore, care was taken during translation and back-translation to ensure equivalency of meaning, comprehensibility, and acceptability to the children (P. Bolton, personal communication, June 5, 2008). The measures were translated into Sinhalese and Tamil by the research team in consultation with the authors. The measures were then back-translated by a Sinhalese psychologist and a Tamil language professor to ensure equivalence of meaning. For ease of communicating results, the CPSS, DSRS, and MASC scales are referred to as PTSD, Depression, and Anxiety scales, respectively, hereafter.

Procedure: Recruitment of Respondents and Administration of Survey

The study was conducted in accordance with the ethical principles detailed by the American Psychological Association and recommendations for disaster research (Kilpatrick, 2004), and was approved

by the Institutional Review Board at the first author's institution.

A decision was made by the research team to attempt to recruit youth through the school system because despite the environmental hazards and difficulties, Sri Lankan parents still value education, and ensure that their children attend school regularly. Therefore, school-based samples are representative of the rural population of children in Sri Lanka. Additionally, a decision was made early on to oversample from the ethnic minority groups. Although Sinhalese comprise over 75% of the population of Sri Lanka (Department of Census and Statistics, Sri Lanka, 2001), we oversampled Tamil and Muslim children so that within-group comparisons as well as between-group comparisons could be made. An attempt was made to try to recruit children and youth from late childhood to late adolescence, so that although a broad developmental spectrum could be represented, children would be old enough to understand the questions on the survey without direct intervention by teachers or parents.

The authors worked through a local nongovernmental organization where several counselors represented each ethnic group (Sinhalese, Tamil, and Muslim). Six counselors were trained as research assistants and aided in recruitment, conducting focus groups and discussion groups, writing the scales in comprehensible Sinhalese and Tamil, and administering the surveys. Four schools (two Sinhalese, one Tamil, and one Muslim) were selected for administration of the survey because of their location and the probability of including children in the school who were exposed to the war, the tsunami, or both.

Fully informed written consent was obtained from parents and assent from children prior to administration of the survey. Data were gathered over 4 consecutive days, with the administration of the survey to one school on each day. Children followed along with the survey administrator as each item on the survey was read. All phases of the administration were supervised to assure standardization. The surveys took approximately 1.5 hr (with breaks) to administer to children in Grades 6–8, and less than an hour to administer to children in the upper grades. When the entire administration was completed, children were provided and read a "Debriefing Form" and given an opportunity to provide feedback about the experience of having taken the survey. As a token of appreciation, all children were given a package of basic school supplies and a piece of candy, though

these had not been promised to the children, to avoid coercion. Finally, each school received a small but needed item identified by the principal, valued at Sri Lankan Rs. 10,000 (approximately US\$100).

Of the 537 surveys available for this study, lack of consent forms led to 16 dropped surveys and another 94 were dropped because of questions about the validity of the data (the SLIPSS-C included three validity checks; Fernando et al., 2008). Cases with data missing on any of the variables used in the mediation analyses were also dropped, leaving 427 cases for the current analyses. Analyses of surveys with missing data did not show significant differences in age, gender, or ethnicity between the group remaining in the study and the group dropped from further analyses.

Notes on analyses. Because we conducted numerous analyses, an alpha level of .001 was used as the general criterion for statistical significance, although alpha values of .01 and .05 are shown to reveal patterns in the results. Effect sizes are shown as correlations, as beta weights, as R^2 added in regression analyses, and as group means with standard deviations for group comparisons. We report item means rather than the mean of total scores on the various scales to facilitate interpretations relative to the scale anchors and enable comparisons of scales that use the same anchors but have differing numbers of items (e.g., the CDSS has 20 items and the WTSS has 12 items, but both use 0–2 scale anchors). Nonparametric tests are reported in some cases where distributional assumptions of parametric tests are not met and nonparametric tests fail to support the parametric results. Although the sample size is $n = 427$ for all analyses that use all groups, the degrees of freedom for t tests vary because we used the test that does not assume equal variances.

Results

Analyses

Several analyses were conducted in accordance with the hypotheses and the exploratory examinations mentioned earlier. First, we examined whether age, gender, or ethnicity were significantly related to exposure to disaster-related and daily stressors. Second, we examined whether the outcomes of posttraumatic stress, depression, anxiety, and psychosocial status differed by age, gender, or ethnicity.

Next, we tested each of the hypotheses listed earlier in this study. Correlation and regression analyses were conducted in the following manner:

1. To test our first hypothesis, that exposure to disaster-related stressors was significantly related to daily stressors, a correlational analysis was conducted between WTSS scores and CDSS scores.
2. To test the second set of hypotheses that exposure to the war or tsunami will predict psychological and psychosocial outcomes, simple regressions were conducted with WTSS scores as the only predictor for each of the measured outcomes (PTSD, Depression, Anxiety, SLIPSS-C, S-Internalizing, S-Externalizing, and S-Withdrawal).
3. To test the third set of hypotheses, that exposure to daily stressors in general would predict psychological and psychosocial outcomes after accounting for exposure to disaster-related stressors, total CDSS scores were added as a second step in multiple regression analyses for each of the outcomes.
4. To test the fourth set of hypotheses, that exposure to daily stressors will mediate the relation between exposure to disaster-related stressors and outcomes, the regression weights in each model were examined. If the beta weight for WTSS obtained in the first step of each model is reduced when CDSS is entered into the model, mediation is demonstrated.
 - a. To examine whether specific types of daily stressors mediated the relation between disaster-related stressors and outcomes, each of the three subscale scores of the CDSS were entered at the second step of each of the multiple regression models. Because three conceptually distinct factors emerged from factor-analyzing the CDSS, separate mediation analyses were conducted using the Deprivation, Interparental Conflict, and Abuse subscales of the CDSS.
 - b. Finally, demographic variables were entered into each of the six models, to assess whether any of these variables would further clarify the relation between the predictors and outcomes. As noted earlier this was an exploratory analysis because there are no robust data on which to build hypotheses on such variables as age, gender, and ethnic group membership in this sample.

The results of these analyses are presented as follows.

Demographic Comparisons

Table 1 provides information on age, gender, and ethnicity for exposure to stressors using the mean of the item scores as the reported statistic. The differences are reported for each group along with an indication of statistical significance ($p < .001$) for pairwise group differences using t tests not assuming equal variances. Examination of the relation between age and stress exposure revealed that age was not significantly related to WTSS scores, $r(427) = .04$, *ns*, but was positively related to CDSS scores, $r(427) = .23$, $p < .001$. This relation was particularly strong for the Deprivation scale of the CDSS, with older children reporting greater deprivation, $r(427) = .33$, $p < .001$. Gender differences were not significant for WTSS or overall CDSS scores.

Examining ethnic group differences in exposure to stressors revealed that Tamil and Muslim youth obtained significantly higher mean WTSS scores (indicating greater exposure to multiple war- and tsunami-related stressors) compared to Sinhalese youth. The three groups did not differ significantly on CDSS (daily stressors) total scores. However, the groups did differ on the subscales of the CDSS. Compared to the Sinhalese youth, Muslim and Tamil youth obtained significantly higher mean Deprivation scores. Muslim youth obtained a significantly higher mean Abuse score but a significantly lower Interparental Conflict score, compared to Sinhalese and Tamil youth.

Table 2 provides information on the relation between demographic variables and outcome measures. Age was not significantly related to any of the outcome measures. Significant gender differences were obtained for two subscales of the SLIPSS-C; boys obtained significantly higher S-Externalizing scores, $t(376) = 4.56$, $p < .001$ ($d' = .45$), whereas girls obtained significantly higher S-Internalizing scores, $t(418) = 3.76$, $p < .001$ ($d' = .36$). Examination of scores obtained by ethnic groups revealed that Tamil and Muslim youth obtained significantly higher mean SLIPSS-C scores compared to Sinhalese youth. Subscale analysis revealed an especially strong ethnic group difference on S-Internalizing, with Muslim youth obtaining the highest mean score, Sinhalese youth obtaining the lowest, and Tamil youth scoring between these two groups (all pairwise differences significant at $p < .001$).

Other outcome measures also revealed significant ethnic group differences. Tamil and Muslim youth obtained significantly higher mean Depression scores compared to Sinhalese youth, and Muslim youth obtained a significantly higher mean Anxiety score compared to Sinhalese and Tamil youth. The ethnic groups did not differ significantly on PTSD. Overall, psychological and psychosocial outcomes appear to be worst for Muslim youth, whereas Sinhalese youth reported the least amount of distress. Tamil youth fell somewhere between these two groups. The relation of the demographic variables of gender, ethnicity, and age to outcome

Table 1
Age, Gender, and Ethnic Group Comparisons on Trauma Exposure ($n = 427$)

	Trauma exposure variables				
	WTSS	CDSS (Total)	Deprivation	Interparental conflict	Abuse
Number of items	12	29	10	4	6
Cronbach's alpha	.72	.75	.71	.66	.62
Possible range	0-2	0-2	0-2	0-2	0-2
r with age (Pearson r)	.04	.23***	.33***	.15	-.12
Gender, M (SD) of mean scores					
Female ($n = 240$)	0.29 _a (0.24)	0.44 _a (0.21)	0.62 _a (0.37)	0.36 _a (0.47)	0.12 _a (0.21)
Male ($n = 187$)	0.32 _a (0.29)	0.49 _a (0.26)	0.62 _a (0.40)	0.45 _a (0.47)	0.22 _b (0.34)
Ethnic group, M (SD) of mean scores					
Sinhalese ($n = 223$)	0.84 _a (0.39)	0.43 _a (0.21)	0.52 _a (0.31)	0.47 _a (0.49)	0.13 _a (0.26)
Tamil ($n = 89$)	0.92 _b (0.42)	0.48 _a (0.24)	0.72 _b (0.39)	0.39 _a (0.45)	0.17 _a (0.23)
Muslim ($n = 115$)	1.18 _b (0.48)	0.50 _a (0.28)	0.75 _b (0.45)	0.28 _b (0.41)	0.24 _b (0.32)

Note. Group means within gender and ethnicity that do not share the same subscript differ at $p < .001$. WTSS = war- and tsunami-related stressor scale; CDSS = Children's Daily Stressor Scale.

*** $p < .001$.

Table 2
Age, Gender, and Ethnic Group Comparisons on Outcome Variables ($n = 427$)

	Outcome variables						
	PTSD	Depression	Anxiety	SLIPSS-C	S-Internalizing	S-Externalizing	S-Withdrawal
Number of items	17	15	14	49	20	15	11
Cronbach's alpha	.81	.70	.73	.85	.83	.79	.65
Possible scale range	0-3	0-3	0-3	0-4	0-4	0-4	0-4
Age (Pearson r)	.099	-.027	.085	-.010	.040	-.076	-.047
Gender, M (SD)							
Female ($n = 240$)	1.09 _a (0.49)	0.78 _a (0.33)	1.00 _a (0.45)	1.15 _a (0.34)	1.47 _a (0.51)	0.71 _a (0.40)	1.26 _a (0.47)
Male ($n = 187$)	1.06 _a (0.45)	0.82 _a (0.37)	0.88 _a (0.42)	1.17 _a (0.34)	1.29 _b (0.45)	0.91 _b (0.45)	1.36 _a (0.47)
Ethnicity, M (SD)							
Sinhalese ($n = 223$)	1.04 _a (0.48)	0.73 _a (0.32)	0.84 _a (0.39)	1.06 _a (0.29)	1.22 _a (0.41)	0.75 _a (0.36)	1.26 _a (0.48)
Tamil ($n = 89$)	1.04 _a (0.43)	0.87 _b (0.37)	0.92 _a (0.42)	1.20 _b (0.34)	1.46 _b (0.46)	0.82 _a (0.51)	1.31 _a (0.46)
Muslim ($n = 115$)	1.17 _a (0.48)	0.87 _b (0.34)	1.18 _b (0.48)	1.32 _b (0.36)	1.68 ^c (0.53)	0.88 _a (0.49)	1.37 _a (0.44)

Note. Group means within gender and ethnicity that do not share the same subscript differ at $p < .001$. PTSD = posttraumatic stress disorder; SLIPSS-C = Sri Lankan Index of Psychosocial Status for Children; S-Internalizing = Internalizing subscale of the SLIPSS-C; S-Externalizing = Externalizing subscale of the SLIPSS-C; S-Withdrawal = Withdrawal subscale of the SLIPSS-C.

measures will be examined in subsequent regression analyses.

The Relation Between War- and Tsunami-Related Stressors and Daily Stressors

A simple correlation analysis indicated a significant relation between WTSS scores and CDSS scores, $r = .44$ ($n = 427$), $p < .001$, confirming the first hypothesis (path a in Figure 1). Children with greater exposure to disasters experienced higher levels of daily stressors.

The Relation Between War- and Tsunami-Related Stressors and Psychological and Psychosocial Functioning

Regression analyses using WTSS as the only predictor for each of the outcomes indicated that WTSS scores were significantly related to each outcome (see Model 1 in Table 3) except the S-Withdrawal subscale of the SLIPSS-C (path c in Figure 1). Exposure to war- and tsunami-related stressors was significantly related to increased PTSD ($\beta = .32$), Depression ($\beta = .23$), and Anxiety ($\beta = .33$), as well as to total SLIPSS-C ($\beta = .35$) scores and to two of its subscales, S-Internalizing ($\beta = .40$) and S-Externalizing ($\beta = .23$) scores ($p < .001$ for each of these outcomes). Because WTSS scores were not significantly related to S-Withdrawal scores ($\beta = .01$), no further regression analyses were conducted with this subscale. Thus, the second set of hypotheses was confirmed for all but S-Withdrawal. Exposure to stressors associated with war and tsunami

significantly predicted poorer psychological and psychosocial functioning.

The Contribution of Daily Stressors Beyond WTSS in Predicting Psychological and Psychosocial Functioning

Regression analyses using both WTSS and CDSS as predictors indicated that CDSS scores contributed beyond WTSS to predict all six outcome measures (see Model 2 in Table 3; path b in Figure 1). Controlling for WTSS, the CDSS total score significantly predicted PTSD ($\beta = .40$), Depression ($\beta = .22$), and Anxiety ($\beta = .35$) scores, as well as the overall SLIPSS-C ($\beta = .25$) and the two subscales of S-Internalizing ($\beta = .27$) and S-Externalizing ($\beta = .19$) ($p < .001$ for all analyses) scores. Thus, the third set of hypotheses was confirmed: Exposure to daily stressors was significantly predictive of poorer psychological and psychosocial functioning, beyond that which can be predicted by exposure to the war and tsunami.

Daily Stressors as Mediators Between War- and Tsunami-Related Stressors and Outcomes

Total CDSS scale as a mediator. Model 1 in Table 3 provides the beta weights of the WTSS in regression analyses predicting each of the six outcome variables. These weights are represented by path c in Figure 1. Model 2 in Table 3 provides the regression weights when both WTSS and CDSS are used to predict each of the outcomes. The regression weights for WTSS and CDSS correspond to paths c' and b , respectively, in Figure 1. The corre-

Table 3

Summary of Regression Analyses Testing Potential Mediating Effects of Daily Stressors on the Relations Between Disaster Exposure and Psychological and Psychosocial Outcomes (n = 427)

Model	Predictors	<i>r</i> with WTSS	β of predictors on outcome variables					
			PTSD	Depression	Anxiety	SLIPSS-C	S-Internalizing	S-Externalizing
1	WTSS		.32	.23	.33	.35	.40	.23
2	WTSS		.14	.13*	.17	.24	.29	.14**
	CDSS	.44	.40	.22	.35	.25	.27	.19
3	WTSS		.19	.18	.21	.30	.33	.23
	Deprivation	.42	.29	.12*	.28	.11*	.18	.00
4	WTSS		.31	.23	.32	.34	.40	.23
	Interparental Conflict	.02	.19	.14**	.14**	.17	.12**	.15
5	WTSS		.25	.18	.26	.27	.34	.14**
	Abuse	.27	.23	.20	.24	.30	.23	.33
6	WTSS		.17	.15**	.18	.25	.28	.17
	Deprivation		.24	.08	.23	.05	.15	-.07
	Interparental Conflict		.11**	.09	.06	.11*	.05	.11*
	Abuse		.18	.17	.20	.27	.21	.32
<i>R</i> ² added	WTSS		.10	.05	.11	.12	.16	.05
in Model 2	CDSS		.13	.04	.10	.05	.06	.03

Note. All tests are two-tailed. Numbers in bold indicate $p < .001$. PTSD = posttraumatic stress disorder; SLIPSS-C = Sri Lankan Index of Psychosocial Status for Children; S-Internalizing = Internalizing subscale of the SLIPSS-C; S-Externalizing = Externalizing subscale of the SLIPSS-C; WTSS = War- and Tsunami-Related Stressor Scale; CDSS = Children's Daily Stressor Scale.

* $p < .05$. ** $p < .01$.

lation between WTSS and CDSS is .44, represented by path a. The mediation effect can be observed as the reduction in the beta weight for WTSS when the mediator is added to the model. For predicting PTSD, we find this reduction to be substantial: $c-c' = .315 - .137 = .178$.

An equivalent way to compute the mediation effect is the product of the regression weights for the paths through the mediator, paths a and b. For predicting PTSD with CDSS as a mediator, this product is $.444 \times .401 = .178$, the same value as $c-c'$. Both paths a and b are statistically significant with $p < .001$, which we take as evidence that daily stressors (CDSS) mediate at least partially the relation between exposure to the stressors of war and tsunami (WTSS) and PTSD. Statistical significance of the $a \times b$ index of mediation can also be tested with the Sobel test (Sobel, 1982), which yields $z = 5.33$, $p < .001$.

The beta weights for the CDSS (Model 2 in Table 3) are statistically significant ($p < .001$) for each of the six outcome variables. Thus, the CDSS mediates between WTSS scores and scores on PTSD, Depression, Anxiety, and SLIPSS-C (total, as well as S-Internalizing and S-Externalizing) scales. In each model, the mediation effect is partial rather than complete because although the beta weights on the WTSS are reduced for all outcome measures, they do not reduce to zero but rather remain statis-

tically significant with $p < .001$ for PTSD, SLIPSS-C, S-Internalizing, and Anxiety scores.

The final rows of Table 3 provide the R^2 added when WTSS is entered at the first step of a hierarchical regression and when CDSS entered at the second step ($p < .001$ for all six outcome variables). Examination of these R^2 values demonstrates that the CDSS approximately doubles the variance explained by the WTSS alone in predicting PTSD, Depression, and Anxiety.

The individual subscales of the CDSS as mediators. Because CDSS scores were significantly and meaningfully related to the six outcome measures, and because three conceptually distinct factors emerged from factor analyzing the CDSS, separate mediation analyses were conducted using each of the three subscales of the CDSS (Deprivation, Interparental Conflict, and Abuse; Models 3, 4, and 5 in Table 3).

As a first step, the relations between WTSS scores and each of the three subscale scores (path a) were tested. The WTSS was correlated with two of the three subscale scores of CDSS: Deprivation ($r = .42$, $p < .001$) and Abuse ($r = .27$, $p < .001$). Because path a was not significant for Interparental Conflict ($r = .02$, $p > .05$), this factor cannot function as a mediator between WTSS and the outcome variables; no further mediation analyses were conducted with this variable.

As shown in Model 5 (Table 3), Abuse was a significant predictor of each measure of psychological and psychosocial functioning, beyond the contribution of WTSS. The beta values ranged from .20 for Depression to .33 for S-Externalizing ($p < .001$ for each of these path b beta weights). Thus, Abuse was a strong mediator of the relation between WTSS and each of the outcome measures. Deprivation also clearly mediated the relation between WTSS and three of the outcome measures: PTSD ($\beta = .29$), Anxiety ($\beta = .28$), and S-Internalizing ($\beta = .18$), all $p < .001$. Evidence for mediation was present but weaker for the total SLIPSS-C ($\beta = .11$, $p < .05$) and Depression ($\beta = .12$, $p < .05$) scores. These results confirm our fourth set of hypotheses, providing strong evidence for mediating effects of the daily stressors of deprivation and abuse on the relationship between exposure to war and the tsunami and distress in youth.

Multiple mediator models. The three subscales of the CDSS were moderately correlated. The correlation of Deprivation with Interparental Conflict was $r = .19$ and with Abuse was $r = .23$, whereas the correlation between Interparental Conflict and Abuse was $r = .19$ (all $n_s = 427$, $ps < .001$).

Mediation effects and the unique contributions of each variable are shown in Model 6 (Table 3). The Abuse subscale of the CDSS demonstrated significant and unique mediating effects with all outcome measures ($p < .001$ for the relation with each outcome variable). The direct paths (c') for the WTSS were significantly greater than zero ($p < .001$ for all outcome variables except Depression scores, where $p < .01$), indicating that the mediation effect was only partial. The unique mediation effects of Deprivation and Interparental Conflict scores were generally weaker, although the Deprivation subscale showed unique mediation effects in predicting PTSD, S-Internalizing, and Anxiety scores ($p < .001$).

When age, gender, and ethnicity were included along with the WTSS and the three CDSS subscales as predictors, age did not add unique variance to predicting any of the six psychological and psychosocial outcomes, whereas gender and ethnicity did explain variance in some models. Controlling for all other variables, being female predicted higher Anxiety ($\beta = -.16$) and S-Internalizing ($\beta = -.20$), whereas being male predicted higher S-Externalizing ($\beta = .17$). Compared to the Sinhalese youth, Muslim youth obtained significantly higher Anxiety ($\beta = .17$), total SLIPSS-C ($\beta = .24$), and S-Internalizing ($\beta = .23$) scores. Even with the demographic variables entered into the model, CDSS scores con-

tributed beyond these variables and WTSS scores in predicting all six outcomes, with R^2 changes of .12 for PTSD and .10 for total SLIPSS-C scores. When demographic variables were included in the model, WTSS scores contributed uniquely toward predicting PTSD, SLIPSS-C, and S-Internalizing scores but not to predicting the other three outcome variables. Space limitations preclude more in-depth analyses of the relation of the demographic variables with the outcome measures but are available elsewhere (Fernando et al., 2008).

Summary of Analyses

Taken together, the results convincingly demonstrate that daily stressors mediate the relation between exposure to disaster-related stressors and psychological and psychosocial outcomes for Sri Lankan youth. As summarized in Table 3, the total CDSS score and the subscales of Deprivation and Abuse significantly mediated the relation between WTSS scores and most of the outcomes (PTSD, depression, anxiety, and two subdomains of psychosocial status). These findings held even when age, gender, and ethnicity were statistically controlled. The subscales of daily stressors demonstrated distinct predictive patterns (see Table 3, Model 6) with all predictors in the model: Deprivation was a strong predictor of PTSD and Anxiety but not of Psychosocial Status. In contrast, Abuse was a relatively stronger predictor of Psychosocial Status than of PTSD. In particular, S-Externalizing was strongly predicted by Abuse ($\beta = .32$) but not by Deprivation ($\beta = .07$). Figure 2 uses data from Table 3 (Models 1 and 6) to graphically represent how two of the three subscales of the CDSS mediate the relation between the WTSS and PTSD.

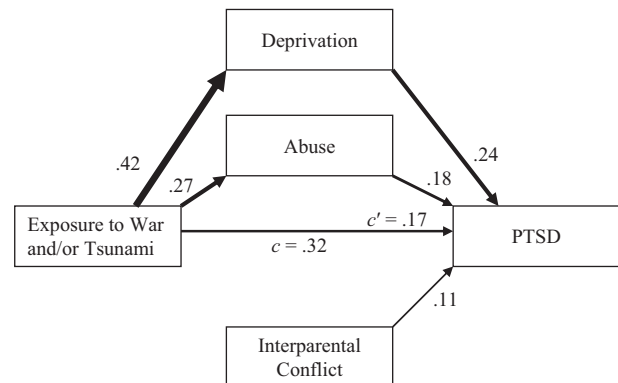


Figure 2. Daily stressors as mediators of the relation between exposure to war and/or tsunami and posttraumatic stress disorder ($n = 427$).

Discussion

In this study, we sought to examine the relative contribution of disaster exposure, on one hand, and daily stressors, on the other, to the mental health and psychosocial functioning of youth in a region of eastern Sri Lanka sorely affected by a prolonged civil war and a devastating tsunami. We also sought to assess the extent to which daily stressors mediate or explain the relation between disaster exposure and children's mental health. Using a multiethnic sample that reflected the ethnically diverse population of Sri Lanka in general and the Ampara district in particular, we used focus groups with youth to identify salient, proximal stressors in their social and material ecologies. Items were used to develop a self-report measure of daily stressors (the CDSS), which was subsequently used with self-report measures of war and tsunami exposure, PTSD, depression, anxiety, and a culturally specific measure of psychosocial distress.

The two issues we highlighted earlier in this study were addressed in this study. First was the tendency of researchers to focus solely on direct exposure to disasters as predictors of distress in children. As in much of the previous research with youth in settings of armed conflict and natural disaster, the results of this study demonstrated that exposure to disaster-related violence and loss was significantly related to the psychological and psychosocial distress of Sri Lankan youth. Limiting our analyses to these relations, a strong case could be made for trauma-focused interventions to be conducted with this group. However, and consistent with our hypotheses, the addition of daily stressors to the models markedly reduced the power of disaster exposure to predict the psychological and psychosocial distress of Sri Lankan youth, even that of PTSD (see Figure 2). The daily stressors taken together were stronger predictors of PTSD than direct exposure to the conflict and the tsunami, and about as strong a predictor of the other measures of psychological and psychosocial distress. Moreover, as hypothesized, daily stressors partially mediated the relation between direct exposure to conflict and tsunami and resulting distress of Sri Lankan youth. Thus, the failure to include daily stressors in explanatory models of distress among young people in emergency settings is likely to overestimate significantly the predictive power of disaster exposure, and to overlook critical sources of variance in youth well-being or distress.

When the CDSS subscales identified through factor analysis were entered into the mediation

models, several key findings emerged, all consistent with our hypotheses and the models depicted in Figures 1 and 2. First, material deprivation, witnessing interparental conflict, and being the victim of child abuse all contributed significantly to psychological and psychosocial distress, although the strength of these relations varied depending on the outcome variable used in each model. Importantly, both child abuse and deprivation predicted PTSD as well as or better than direct exposure to the war and tsunami (see Table 3 and Figure 2); clearly, therefore, our findings suggest that *direct exposure to armed conflict and natural disaster was neither the only nor even the primary source of traumatic stress in these children's lives*. We also found, as hypothesized, that the effects of exposure to disaster on the functioning of these Sri Lankan youth were at least partially mediated by experiences of material deprivation and child abuse. This study found empirical evidence that conflict and natural disasters generate conditions of deprivation for children and their families (e.g., diminished access to basic resources). That such deprivation should in turn affect young people's well-being is not surprising.

On the other hand, the mediating role of child abuse is less readily interpreted. The findings, however, do support Somasundaram's (2003) claim that the war, in particular, may be creating a culture of violence, where overall incidents of individual and family violence increase. In addition to physical abuse, several items on the abuse subscale also reflect actual or feared experiences of sexual abuse, and were endorsed by youth of both sexes (with boys reporting more sexual and physical abuse than girls). It may be that the generally stressful social conditions created by disaster reduce the patience and increase the reactivity of parents and teachers, making physical abuse (especially against boys) more likely. It may also be that conditions of war weaken social norms that otherwise protect children from being physically and sexually victimized. Additionally, in the crowded confines of camps for displaced families, privacy and parental protection are diminished and the potential for sexual abuse is increased.

We did not assess the sources of actual or feared abuse; consequently, we do not know whether the youth in our sample were primarily concerned with physical and sexual abuse by teachers, older youth, relatives, armed combatants, or other adults such as police officers. Anecdotally, we have heard that older school boys sometimes prey upon younger boys to obtain sexual pleasure, as sexual contact between young men

and women is restricted in Sri Lanka due to strict sociocultural and religious norms. Follow-up research, conducted in a culturally sensitive manner, could examine the sources and nature of sexual and physical abuse of both young men and women in Sri Lanka, and how conditions of war and natural disasters might exacerbate these traumatic, yet preventable events.

Finally, as hypothesized in Figure 1 and depicted as an example in Figure 2, a subset of daily stressors, interparental conflict, was unrelated to war and tsunami exposure but did exert a significant effect on PTSD, anxiety, psychosocial status in general, and externalizing psychosocial behavior in particular. Focusing solely on disaster-related variables would have failed to pick up these important relations between daily stressors and distress among Sri Lankan youth.

The second issue we addressed was the tendency of some trauma researchers to focus on PTSD and other psychiatric symptomatology as the main outcomes of interest when assessing distress in youth living in disaster settings. The results of this study indicate that although PTSD was a valid outcome to assess, the addition of the domain of psychosocial status provided a broader and more culturally relevant understanding of the relation between disaster exposure and distress in Sri Lankan youth. Gender and ethnic group differences were obtained for psychosocial status, particularly for internalizing behavior, where girls and Muslim youth reported significantly higher internalizing behavior compared to boys and to Sinhalese and Tamil youth, respectively. Tamil youth in turn reported significantly higher internalizing behavior compared to Sinhalese youth. No such group differences were obtained for PTSD scores. Given that Muslim youth also reported significantly higher exposure to the war and tsunami, as well as to daily stressors, it is interesting that the outcome of PTSD, which is sensitive to trauma exposure, did not show such group differences. Thus, in this study, the addition of a locally developed measure of psychosocial status provided a more comprehensive picture of how both disaster-related and daily stressors impact the psychosocial well-being of youth, compared with focusing solely on PTSD as an outcome. Additionally, although we did not focus on the outcome of anxiety as a measure of distress, the MASC (the measure of anxiety used for this study) was more sensitive to both disaster-related and daily stressors, compared with the measure of PTSD. This suggests that when working in Sri Lanka with scarce resources, it may be more

useful to use the SLIPSS-C and MASC as outcome measures.

The Relation of Demographic Variables to Predictors and Outcomes

Examination of the relation between demographic variables (age, gender, and ethnic group membership) and exposure to disaster-related stressors and daily stressors revealed that although older age was related to greater exposure to daily stressors, age did not significantly predict any assessed outcomes. Gender was not significantly related to predictors but was significantly related to psychosocial outcomes; consistent with other studies (e.g., Montgomery, 2008), girls reported significantly higher internalizing tendencies and anxiety, whereas boys reported significantly higher externalizing behaviors.

Ethnic group membership was related to both predictors and outcomes. Exposure to disaster-related stressors was greater for the Tamil and Muslim youth than for Sinhalese youth. Additionally, Muslim and Tamil youth showed greater levels of deprivation than Sinhalese youth, and Muslim youth reported higher levels of abuse than Sinhalese youth. Conversely, Sinhalese youth reported significantly greater exposure to interparental conflict compared to Muslim youth. In terms of outcomes, the most striking difference was between Sinhalese and Muslim youth; the latter reported significantly higher depression, anxiety, and internalized psychosocial distress, compared to Sinhalese children. There is evidence that Sri Lankan Muslims are often ignored in the debate about where to allocate scarce economic resources (International Crisis Group, 2007); these results speak to an urgent need to ensure that intervention programs target this at-risk ethnic minority group. Additionally, more studies should be conducted to determine whether the findings obtained here about specific ethnic groups enduring different types of hardship are robust.

Implications of Results for Practice and Policy

There is a growing debate regarding the relative priority of trauma-focused versus more holistic psychosocial interventions with children in settings of armed conflict and natural disaster. On one side of this debate, proponents of trauma-focused models point to elevated rates of PTSD symptoms among children in emergency settings as evidence that intervention efforts should aim primarily at the

amelioration of psychological trauma resulting from exposure to war and disaster using specialized trauma treatment programs (Neuner et al., 2006; Yule, 2002). Implicit in this view is a particular set of assumptions: (a) PTSD is valid and meaningful diagnostic construct for children regardless of the cultural context; (b) PTSD, rather than other expressions of distress, represents the most critical indicator of children's mental health in situations of war and disaster; and (c) children's distress in emergency settings is primarily related to traumatic exposure to war- and disaster-related violence and loss.

Advocates of more holistic psychosocial approaches challenge these assumptions and argue instead for community-based approaches that strengthen naturally occurring support systems, normalize children's daily routines, and provide child-friendly spaces in schools and other locales for activities that promote recovery without focusing specifically on trauma. These researchers maintain that the cross-cultural validity of PTSD has generally been assumed rather than systematically evaluated, and that even when symptoms of PTSD are present, they may be of secondary concern to families in cultural contexts where other expressions of distress may hold greater salience (de Berry et al., 2003; Hart et al., 2007; Kalksma-Van Lith, 2007; Miller & Fernando, 2008; Miller et al., 2009; Wessells & Monteiro, 2006). These researchers also argue that by focusing so narrowly on the posttraumatic effects of war- and disaster-related violence and loss, insufficient attention is paid to *ongoing* sources of stress in children's lives that may be amenable to change through targeted interventions (Barenbaum et al., 2004; Belfer, 2006). Finally, advocates of psychosocial approaches point to findings that symptoms of distress, including trauma, tend to abate in many children given adequate social support, the normalization of circumstances, and the passing of time (Belfer, 2006; Thabet & Vostanis, 2000; Wessells & Monteiro, 2006).

The results of this study shed additional empirical light on a debate that has, to date, been grounded largely in clinical and field experience as well as in competing ideologies. Our findings suggest some clear, if somewhat nuanced conclusions. First, although our data do not speak to the clinical utility or cultural salience of PTSD as a diagnostic construct in Sri Lanka, the syndrome was clearly present in our sample and was significantly related to disaster exposure as well as to daily stressors. Currently, we do not know whether PTSD represents the most meaningful expression of posttrau-

matic distress among Sri Lankan youth. However, PTSD was sensitive to the predictors of interest in this study. Second, although war and disaster did exert a direct effect on psychological and psychosocial health among the youth in our sample, material deprivation, physical and sexual abuse, and witnessing interparental conflict also represented major sources of ongoing stress. With specific regard to PTSD, daily stressors accounted for significantly greater variance in PTSD levels, indicating that there are critical sources of traumatic stress affecting youth in eastern Sri Lanka other than their history of exposure to the conflict and the tsunami.

Unlike prior exposure to the conflict or the tsunami, daily stressors represent *current* and proximal sources of stress in children's lives and may be targeted for change. Our data strongly suggest several potentially effective strategies for improving young people's psychosocial well-being in this and other regions of Sri Lanka, including the development or expansion of child abuse prevention programs and greater attention to meeting the basic material needs of children and youth. Having adequate access to water, safe housing, and schooling are all related to children's well-being. Focus group discussions with children in refugee camps adjacent to swamps indicated that one of the greatest sources of stress for these children was the presence of poisonous snakes, which restricted people from going for water after dark, and generated considerable fear when walking to the toilets at night. This sort of proximal threat loomed considerably larger for children than memories of the tsunami that had occurred several months earlier.

Limitations

There are several limitations in this study that suggest caution when interpreting the results. The first is the use of a composite score of war- and tsunami-related stress. It could be argued that war-related events lead to different types of psychological outcomes, compared to tsunami-related events, and that a composite score may not capture how exposure to a single disastrous event could result in specific distress for a child. Although a significant linear relation was obtained between the composite score and outcomes, future research could examine which particular types of events are associated with specific outcomes. In this study, we wished to point more to the general patterns of results. Another limitation is that by conducting the

study in schools, we may have excluded children who were most affected by the war and the tsunami, such that they were unable to attend school. Teachers did indicate that all children attended school regularly, and attendance records demonstrated over 98% school attendance overall, but it is possible that the children absent on the day the survey was administered may have been systematically different from the children who completed the survey, biasing the data.

Caution should also be used in generalizing the findings to all Sri Lankan youth or to a specific ethnocultural group, as the data were gathered in a particular setting where both the tsunami and the war had occurred. Lower reliability on some subscales of the measures also suggests caution in overinterpreting results until more studies are conducted that establish the relations found here. However, lower Cronbach's alpha is likely to underestimate reliability for the event-based scales used in this study. Because exposure to various disaster experiences does not necessarily co-occur, Cronbach's measure of internal consistency may be less relevant for such scales. More importantly, as Netland (2005) argues, war (and by extension, natural disaster) exposure scales should include the full range of events to which people may be exposed in a particular region. Our study did include such a range. Future research could also use teacher and parent reports against which self-report data could be compared, providing a more appropriate index of reliability for such measures of exposure and overcoming the added limitation of reliance on self-report.

Because we relied on the ability of children to read and comprehend the survey, younger children were not included in this study. Future research could include a wider age range, using methods such as stories and pictures to obtain similar information from younger children. The lack of longitudinal data also limits findings. The current study does not speak to how the developmental trajectory of children who report more distress may change as a function of exposure to disaster-related stress, and interfere with developmental tasks of childhood and adolescence, creating ongoing stress for these youth.

Adding other ecological dimensions such as parent characteristics and other cultural variables may have provided a richer profile of these youth, although many of these dimensions were captured in the SLIPSS-C. Future research could also examine how socioeconomic conditions might function as both mediators and moderators of

outcomes for youth living in emergency settings. In a study conducted with Sri Lankan businessmen, de Mel, McKenzie, and Woodruff (2008) found that time, rather than economic recovery, was a better predictor of psychological recovery after trauma. Whether this is true for Sri Lankan children as well remains to be examined. In relation to this issue, although our model suggests that exposure to disasters predicts exposure to daily stressors, it is possible that a third variable (such as poverty) might be related to both, as well as to outcomes. It is not uncommon to find that far more poor than wealthy people reside in places where disasters typically strike. Thus, poverty may, on the one hand, place a child at risk for being in an undesirable location and, on the other, exacerbate the ill effects of exposure to stressors. The current model is only one perspective on the relationship between stressors and distress.

Despite these limitations, this study provides empirical evidence for the importance of examining daily stressors as significant contributors to the psychological and psychosocial distress of youth living in complex emergency settings, using culturally grounded measures. Although Sri Lanka's armed conflict is now officially ended, it must not be forgotten that its impact continues to be felt by Sri Lankans, particularly those living in the north and the east (CIDA, 2009; United Press International, 2008). Children and families there are struggling simply to survive. The results obtained in this study argue for more holistic and ecologically sound intervention programs that target specific stressors among Sri Lankan youth, to effect change and ameliorate the distress of this very vulnerable population.

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