

DOCUMENT RESUME

ED 453 501

CG 030 998

AUTHOR Manix, Mary M.
TITLE Posttraumatic Stress Disorder in Children Exposed to Man-Made Disasters.
PUB DATE 2001-08-00
NOTE 71p.; Doctoral Research Paper, Biola University.
PUB TYPE Dissertations/Theses - Doctoral Dissertations (041)
EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Children; *Counseling; Counselor Training; *Emotional Disturbances; Group Counseling; Literature Reviews; Mental Health; *Posttraumatic Stress Disorder; Violence; War
IDENTIFIERS Childhood Experiences; Man Made Disasters; *Witnesses to Violence

ABSTRACT

This paper reviews the literature published in the last 10 years that focused on posttraumatic stress disorder (PTSD) in children exposed to man-made disasters such as war, school shootings, and the Oklahoma City bombing. As mass violence continues in society, mental health professionals need to be prepared to treat child victims of such disasters. A presentation of the literature on children's exposure to political violence is followed by studies that examined extrafamilial violence. Definitions of relevant terms and a survey of the instruments used in research are followed by a discussion of methodological issues and limitations revealed by the review. Although this review cannot delineate conclusive results, the information is clinically relevant to mental health professionals treating child victims of man-made disasters. The research was consistent in reporting that a significant number of children exposed to man-made disasters do exhibit PTSD symptoms. It suggested that in the absence of treatment the children would continue to suffer from PTSD for years after the disaster. Group techniques were found to be particularly helpful in working with youth who had experienced trauma from a disaster. (Contains 71 references.) (JDM)

ED 453 501

POSTTRAUMATIC STRESS DISORDER
IN CHILDREN EXPOSED TO
MAN-MADE DISASTERS

A Doctoral Research Paper

Presented to

the Faculty of the Rosemead School of Psychology

Biola University

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In Partial Fulfillment
of the Requirements for the Degree
Doctor of Psychology

by

Mary M. Manix

August, 2001


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IN CHILDREN EXPOSED TO
MAN-MADE DISASTERS

by


Mary M. Manix

APPROVED:


Cherry G. Steinmeier, PsyD Date 3/30/01


Veola E. Vazquez, PhD Date 3/30/01

APPROVED:


Patricia L. Pike, PhD, Dean
3/30/01
Date

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ABSTRACT

POSTTRAUMATIC STRESS DISORDER IN CHILDREN EXPOSED TO MAN-MADE DISASTERS

by

Mary M. Manix

This paper is a review of current research on Posttraumatic Stress Disorder (PTSD) as found in children who have been exposed to man-made disasters, specifically wars, school shootings, and the Oklahoma City bombing. The studies reviewed include a variety of international and US populations. Methodological problems with sampling, instrumentation, and definition of terms yield tentative conclusions. The research suggests that a significant number of children exposed to man-made disasters suffer from PTSD or exhibit mild to moderate PTSD symptoms even years post-disaster. Evidence is also strong for the presence of a diagnosis of PTSD in children as young as preschool age. Furthermore, research appears to support the idea that, as the level of exposure and intensity increase, PTSD symptomatology becomes more severe. Suggestions for possible treatment interventions and implications for future research are discussed.

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ACKNOWLEDGMENTS

This is dedicated to children around the world
who seek healing from trauma in all its forms.

I thank my parents, Stuart and Sally Manix, whose love, support, and encouragement made this achievement possible. I also want to express my deep love and appreciation to my aunt, Ann Bohner, who helped me believe in myself, taught me the power of truth, and enabled me to follow my dreams. I am forever grateful to my therapist, Laura J. Robinson, whose insights, grace, and nurturance continue to help me become a more authentic human being and clinician.

At Rosemead School of Psychology, special thanks go to Sharon Lewis-Bultsma, my friend and source of accountability throughout this project, Cherry Steinmeier, my advisor, and Veola Vazquez, my doctoral paper reader. I am particularly indebted to my editor, Debi Smith, whose suggestions and attention to detail made my material and ideas more accessible. Finally, I extend a special thanks to my former supervisor, Jerre White, who deepened my love of working with traumatized children.

“Every good and perfect gift is from above, coming down from the Father of the heavenly lights, who does not change like shifting shadows.” James 1:17

POSTTRAUMATIC STRESS DISORDER
IN CHILDREN EXPOSED TO
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Introduction

The disruptive effects of disasters on societies and individuals have been described in history, diaries, autobiographies, legends, and fictional accounts. However, as in most areas of psychopathology, most published research regarding the effects of violence and extreme stress has examined the symptomatology of adults. It was not until 1944 that the roots of disaster research in children were established in pioneering studies by Freud and Burlingham (1944) at the Hampstead war nurseries. These studies brought attention to problems experienced by young children who had been forced to separate from their families during wartime. The work of Freud and Burlingham influenced subsequent research and clinical efforts to help children who were experiencing overwhelming stress and provided the basis for Bowlby's landmark developmental theories of attachment, separation, and loss (Bowlby, 1973). The groundbreaking work of Lindemann (1944); Bloch, Silber, and Perry (1956); and Wallace (1957) further established the field of disaster research, particularly in the American social and behavioral sciences.

Endeavors to investigate disasters arose out of community studies in the social sciences, including social psychology, sociology, and cultural

anthropology. This disaster research focused more on understanding the collective behavior of groups following a disaster than on its effects on the individual person. In fact, only within the last 2 decades has a significant body of literature been developed on the psychological effects of disasters on children. Research has begun that has examined types of reactions and emergent disorders, duration of symptoms, individual vulnerability, and differential impact (Bolin, 1982; Bromet, Hough, & Connell, 1984; Saylor, 1993).

Another significant contribution to the field of disaster research resulted from the Vietnam War and the development of posttraumatic stress disorder (PTSD) as a diagnostic category (Gordon, Farberow, & Maida, 1999). The use of PTSD to classify the reactions of Vietnam veterans has also provided a conceptual framework for further understanding the effects of other disasters on individuals and yielded an increasing body of clinical research in this area that has encouraged researchers to study the applicability of PTSD to children.

This paper will review the literature published during the past 10 years that has focused on PTSD in children who have been exposed to man-made disasters, specifically wars, school shootings, and the Oklahoma City bombing. By furthering an understanding of the various facets of PTSD and trauma in children who have experienced man-made disasters, future clinical treatment can be well-informed and implemented more effectively. As mass violence in society continues to increase, mental health professionals need to be prepared to treat child victims of man-made disasters. A thorough examination of the empirical literature should yield valuable information that could help guide clinicians treating this highly vulnerable population. Since the empirical

literature on disasters in general is extensive and, therefore, beyond the scope of this paper, it will not include research regarding natural (Belter & Shannon, 1993) or technology-related disasters (Yule, 1993). Definition of relevant terms and a survey of the instruments used in research will be followed by a discussion of methodological issues and limitations revealed by this review. A presentation of the literature on children's exposure to political violence will be followed by studies that have examined extrafamilial violence in the United States. The paper will conclude with suggestions for treatment interventions for child victims of disaster, as well as areas for further research.

Methodological Considerations

Various methodological considerations should be addressed when reviewing disaster literature regarding children. The terms, instruments, and sampling procedures within the field of research will be discussed.

Definitions

An important consideration in reviewing this body of literature is the definition of commonly used terms. Throughout the research, definitions of terms vary slightly; however, definitional differences do not significantly impact the samples or experimental designs.

Posttraumatic stress disorder. In the Diagnostic and Statistical Manual of Mental Disorders (4th ed.; American Psychiatric Association, 1994; DSM-IV), PTSD is listed as an Axis I anxiety disorder. An individual diagnosed with PTSD must have been exposed to a traumatic event in which both of the following were present:

- (1) the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others
 - (2) the person's response involved intense fear, helplessness or horror.
- (pp. 427-428)

DSM-IV further notes that the child's response to the event may be expressed by disorganized or agitated behavior. For the purposes of this paper, the traumatic event is defined as the particular man-made disaster experienced by the child.

In addition to having survived the disaster, the individual must exhibit at least one of the following symptoms related to persistent reexperience of the trauma: (a) intrusive and recurrent distressing memories of the event, which may be manifested in children as repetitive play enacting the themes of the trauma; (b) recurrent and stressful dreams about the event, although children's dreams may be frightening without recognizable content; (c) sudden feelings or action as if the trauma were occurring again, which may occur in trauma-specific reenactment by young children; (d) intense distress at exposure to events that represent or resemble aspects of the trauma; and (e) physiological reactivity when exposed to internal or external cues that symbolize or resemble an aspect of the traumatic event (DSM-IV).

The set of symptoms most difficult to assess properly is the cluster of behaviors associated with avoidance. According to DSM-IV criteria, PTSD includes at least three of the following avoidance symptoms: (a) attempts to avoid thoughts or feelings about the trauma; (b) attempts to avoid activities or

situations that result in recollections of the trauma; (c) inability to recall important aspects of the trauma; (d) decreased interest in activities or, in children, the loss of recently acquired developmental skills; (e) feelings of being disconnected from others; (f) a restricted range of affect; and (g) a sense of a foreshortened future.

The final category of diagnostic criteria associated with PTSD is comprised of symptoms that are indicative of increased arousal. At least two of the following must be present: (a) difficulty sleeping; (b) irritability or outbursts of anger; (c) problems in concentrating; (d) hypervigilance; and (e) an exaggerated startle response (DSM-IV).

Most of the literature included in the current review utilized a definition of PTSD as articulated in the Diagnostic and Statistical Manual of Mental Disorders (3rd ed., revised; American Psychiatric Association, 1987; DSM-III-R). The current DSM-IV diagnostic criteria include alterations to those of DSM-III-R, namely the additional requirement of a response that involves intense fear, helplessness, or horror in connection with the traumatic event (criterion A2), and a new criterion: "The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning" (DSM-IV, p. 429). These alterations were minor, however, and would not significantly affect results or their interpretations. The general finding in trauma research is that symptoms related to PTSD are not merely cultural artifacts, but are actual psychological responses to severely traumatic experiences. This stance is consistent with research conducted with victims of war trauma that supports

the validity of PTSD “beyond the barriers of culture and language” (Sack, Seeley, & Clarke, 1997).

Man-made disaster. Although the definition of a disaster varies with the source and purpose, Saylor (1993) stated that there is a general consensus that a disaster be defined as an

event that has the following properties: involves the destruction of property, injury, and/or loss of life; has an identifiable beginning and end; adversely affects a relatively large group of people; is public and shared by members of more than one family; is out of the realm of ordinary experience; and, psychologically, is traumatic enough to induce distress in almost anyone, regardless of premorbid function or earlier experiences. (p. 2)

As previously mentioned, the focus of this paper is on child victims of man-made disasters such as wars, school shootings, and the Oklahoma City bombing. Therefore, disasters with natural or technology-related causes are excluded from the current review. Throughout the literature, man-made is a standard term used to differentiate this particular type of disaster from various other types.

Instruments

The second methodological consideration involves the instruments that were used in researching PTSD in children. The studies reviewed lacked consistency regarding assessment, utilizing a variety of instruments to measure PTSD and related phenomena and thereby weakening conceptual reliability.

Instruments that were used most often will be included in this section, whereas unique instruments will be discussed in the context of their specific studies.

Child Posttraumatic Stress Disorder Reaction Index. The Child Posttraumatic Stress Disorder Reaction Index (CPTSD-RI; Pynoos et al., 1987) is a 20-item self-report measure that is completed by the interviewer who administers it to the child (ages 6-17 years). This measure has been one of the most widely used instruments for the assessment of children's specific posttraumatic stress symptoms following direct exposure to violence. The CPTSD-RI assesses most DSM-III-R and DSM-IV symptoms for PTSD as well as guilt, impulse control, somatic symptoms, and regressive behaviors. Additional questions assess changes in play, newly developed fears, expectations about the future, and changes in relationships (Carlson, 1997).

The revised CPTSD-RI includes a Likert frequency scale ranging from 1 (none) to 5 (most of the time). The measure yields total scores ranging from 0 to 80 that reflect the frequency of symptoms. Categories of degree of disorder (doubtful to very severe) can be assigned based on the total score. The CPTSD-RI has reasonably good internal consistency (.85; Lonigan, Shannon, Finch, Daugherty, & Taylor, 1991) and interrater reliability (.95; Applebaum & Burns, 1991). Evidence for concurrent validity of the CPTSD-RI is mounting, and Frederick (1985) reported that CPTSD-RI scores correlated with known cases of PTSD at a .91 level in children. Furthermore, CPTSD-RI scores are predictably related to the amount of exposure to the trauma (Bradburn, 1991).

Impact of Events Scale. The Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez, 1979) is a 15-item scale that was initially developed for adults,

with both self-report and clinician-report versions. The self-report version is completed by the interviewer who administers it to the child (ages 6-15 years). The scale measures two features of PTSD: intrusion (7 items) and avoidance (8 items). The response format requires respondents to indicate the frequency of symptoms as 0 (not at all), 1 (rarely), 3 (sometimes), or 5 (often). Total scores are computed by summing item responses on each subscale.

Dyregrov, Kuterovac, and Barath (1996) evaluated the psychometric properties of the IES in a sample of 877 girls and 910 boys (ages 6-15 years) who had been exposed to warfare in Croatia, Bosnia, and Herzegovina. Factor analysis of responses to the IES, considering variables of age, gender, and grade, as well as different subgroups of exposure, revealed a similar factor structure to that found in adult respondents. Its reliability suggests that the IES is a valid and appropriate instrument for assessment of major PTSD symptoms in children. More specifically, most items loaded on the two factors: intrusion (9 items) and avoidance (4 items). Both subscales suggested satisfactory reliability (Cronbach's alphas of 0.82 and 0.74 for intrusion and avoidance, respectively), particularly in comparison to the relatively small number of items included (Dyregrov et al., 1996). Although the IES was originally developed for use with adults, it appears to be valid and appropriate for child populations as well.

Exposure Questionnaire. The Exposure Questionnaire (Nader, Pynoos, Fairbanks, Al-Ajeel, & Al-Asfour, 1993) includes questions about children's direct and indirect exposure to war conditions. "Life-threat" questions assess the extent of direct injury and/or threat of injury and/or death. "Witnessing" questions include direct witnessing of someone being killed or injured and/or

dead bodies or already injured persons. Children are also questioned about indirect witnessing of dead and mutilated bodies on television. "Worry about another" includes knowing someone who has been captured, injured, or killed. In addition, children are asked if they have hurt anyone. An exposure score is derived by summing the 10 items that comprise each of three subscales: life threat, witnessing, and threat to significant other. Cronbach's alpha for this scale has been .46 in certain studies, indicating that experiencing one type of exposure did not necessarily indicate experiencing another (Nader et al., 1993). In studies of Kuwaiti children and child refugees from the former Yugoslavia, Exposure Questionnaire results corresponded with levels of posttraumatic stress symptoms as measured by the CPTSD-RI, thereby supporting the validity of the Exposure Questionnaire (Nader & Fairbanks, 1994).

Children's Depression Inventory. Most PTSD scales and interviews are not good measures of depression. Although these instruments include items related to decreasing interest in former activities, lack of hope about the future, sleep problems, and trouble concentrating, they often do not include other important aspects of depression such as depressed mood, feelings of worthlessness or excessive guilt, psychomotor agitation or retardation, weight gain or loss, fatigue, or suicidality. For this reason, researchers studying disasters have often assessed children using standard measures of depression. One such measure is the Children's Depression Inventory (CDI; Kovacs, 1991), a 27-item self-report scale for children whose ages range from 7 to 17 years. Each item consists of three statements that vary in severity and are assigned values of

0, 1, or 2. Higher scores are indicative of greater depression (Hadi & Llabre, 1998).

Beck Depression Inventory. The Beck Depression Inventory (BDI; Beck, 1987) is a widely-used self-report measure of the presence and severity of depressive symptoms in adults. Each symptom is rated on a scale that ranges from 0 to 3, with higher scores representing increasing levels of severity. A total score of 10 or higher is generally accepted as an indication of clinically significant depression (Beck, Steer, & Garbin, 1988). Additionally, disaster researchers have often used the BDI to assess parental depression (e.g., Hadi & Llabre, 1998).

Samples and Procedures

Certain methodological considerations surrounding samples and procedures were common in most of the research reviewed. The current literature has several methodological strengths. First, almost all studies had large sample sizes, which helps increase the power of statistical findings. Any study without a robust sample size will be noted as such in this review.

Second, most studies used assessment techniques that rely on more than one source of information by usually including both children and their parents. In some studies, data collected from teachers were included as well. This method of obtaining information from multiple sources strengthens the validity of the studies by providing more accurate and reliable data. Additionally, most researchers used multi-method batteries that included common elements (across different disaster types) as well as some unique instruments that were designed to be particularly sensitive to the sequelae of a man-made disaster.

Finally, the adequacy of statistical measures employed in this research was quite good, incorporating a broad range of appropriately descriptive, as well as inferential, statistics. For the most part, statistical analyses were performed on data that had been collected by using instruments that had strong validity and reliability. Overall, findings were both statistically significant and clinically relevant.

Despite the aforementioned strengths, results of disaster research should be interpreted with caution for several reasons. First, many researchers studied a broad age range (e.g., 8-21 years) of children and grouped them together in their discussion of symptoms. Perhaps this may have been because of the restricted accessibility of participants or an attempt to increase the size of the sample. However, grouping all ages together could mask particular developmental patterns regarding the occurrence of certain symptoms. Unless such a procedure would distort the accuracy of results, researchers should divide the children into two or three age ranges when assessing the prevalence of various symptoms. Examining smaller ranges in age and comparing data with age-specific social, emotional, and cognitive developments, as articulated in psychological theories, could provide better detail regarding the impact of age on the manifestation of symptoms. As it stands now, the broad and varied age ranges make the literature difficult to interpret.

Second, almost all studies lacked control or comparison groups that could provide a context for interpreting results. Since the participants of most studies had been exposed to disasters, the researchers evaluations of the data were within-group analyses. In fewer studies, individuals who had experienced

disasters were screened, and those without PTSD were used as the control group for comparison with those who had been concurrently diagnosed with PTSD. The regular use of one or more control groups could strengthen the results of these studies.

Third, due to the unplanned nature of disaster research, it is impossible to have a truly randomized sample. Disasters, by their nature, are unpredictable and frequently preclude development of a methodologically sound and preplanned study. Additionally, although the studies attempted to control for extraneous variables, a multitude of factors, apart from the disaster, could have affected the children's emotional development (e.g., intelligence, coping skills, social support, prior adjustment).

Finally, despite the strength of assessing PTSD through information from multiple sources, trauma assessment can be very difficult because trauma symptoms often overlap with other diagnostic categories (e.g., depression). The predominate assessment methods have been child self-report measures or interview data, which pose a number of disadvantages for researchers. Results of self-reports may differ significantly from those of other sources (e.g., parents, teachers), and the researcher must determine which information is most accurate. Although self-report measures and interview data are relatively easy to use and highly versatile, results are always subject to response bias. Furthermore, instruments that assess PTSD symptomatology were translated into the children's primary language, but were not normed on the population in which they were used. Therefore, the omission of normative data stratified along cultural lines warrants caution when interpreting and generalizing these

findings. Despite this weakness, these were still the best instruments available. In an attempt to validate their use, some researchers conducted pilot studies to determine, at least in part, their cultural relevance. This review will highlight those studies which used adaptations of instruments, as well as whether or not the researchers had taken steps to assure the measure's cultural validity.

The problem of accuracy in self-reports is particularly prominent in child populations since their language is not as well-developed as that of adults, which may limit children's ability to report subjective feelings. In addition, children may be unwilling or unable to report accurately. Traumatized children often have difficulty expressing or labeling their feelings despite their willingness to cooperate with researchers. A number of reasons could account for this phenomena. First, already burdened parents may send implicit or explicit messages in the post-disaster environment about whether the child should express or admit to feelings about the trauma (Belter, Dunn, & Jeney, 1991). Furthermore, since one criterion for a diagnosis of PTSD is avoidance, these avoidant symptoms may preclude the child's ability to respond positively when asked about the trauma. For example, a child might deny having symptoms, especially on a face valid self-report measure, as a way to avoid thinking about what had happened. Therefore, PTSD in a well-defended child may escape detection by objective measures. In light of this, results of disaster research could be strengthened by the utilization of projective measures that bypass the child's conscious awareness.

Finally, a great deal of research has relied on assessment conducted at a specific age or point in time (i.e., a "snapshot" approach) to assess the presence

or absence of PTSD. This approach may be due somewhat to the focus on establishing the relevance of a diagnosis of PTSD in children. With some exceptions that will be highlighted in this review, few studies included performances on measures of PTSD that were obtained on more than one occasion. Longitudinal studies of children diagnosed with PTSD would be helpful and beneficial. Implications of PTSD's transitory and long-term nature, as well as recovery over time, could then be addressed more confidently and completely. Studies in which data are collected at more than one time may encourage a developmental approach for studying traumatization. Furthermore, research conducted from a developmental perspective may also address some methodological issues concerning generalizability of findings. Even if lack of funding seems to preclude additional study, all outcome research should include obtaining permission to contact participants and recording any data that could facilitate such follow-up.

Review of the Literature

Political Violence and Exposure to War

In this section on political violence against children, a brief historical background of each war will be followed by evaluation of empirical studies involving children's exposure to wars of various countries. Despite vast cultural diversity, posttraumatic stress reactions were not uncommon for participants in these studies.

Arab-Israeli War. The violence and conflict between Israel and Palestine dates back to the first Arab-Israeli war in 1948. Since then, several major wars

(Six-Days, October, etc.) have occurred, as well as the Intifada, which was a series of uprisings between 1987 and 1991 that included demonstrations, strikes, and rock-throwing attacks on Israeli soldiers. Many children were beaten, shot, exposed to tear gas, and physically abused. Approximately 1,300 Palestinians and 80 Israelis were killed in the uprisings (Elbedour, Bensel, & Maruyama, 1993). The struggle for the Holy Land continues to the present day, with many children growing up while witnessing endless conflict, injury, and death. None of these children have experienced the usual freedoms and innocence of childhood.

Elbedour et al. (1993) studied the effects of the stress of war on Arab children and investigated whether war had disrupted emotional adaptation, whether they displayed different levels of emotional distress, and how variables such as gender and age are related to emotional adjustment. Their sample consisted of 356 junior and senior high school students whose ages ranged from 13 to 18 years, with a mean age of 15 years. The sample was divided into the following three groups based on differing degrees of involvement in and exposure to the Arab-Israeli war: Gaza Strip ($n = 109$), West Bank ($n = 126$), and Negev in the southern part of Israel ($n = 121$). The researchers hypothesized that, given these children's life circumstances, the greatest stress would have been experienced by those in Gaza where the Intifada had been active for several years. Children from the West Bank, who had witnessed frequent conflicts, would be next in their level of experience with stress, followed by the Israeli-Arab children who had experienced this conflict less directly. To assess individual differences in current adjustment, a version of the Symptom

Checklist-90-Revised (Derogatis, 1983) and the researchers' version of a posttraumatic stress disorder checklist were administered, both of which were translated into Arabic and normed on that population.

Results revealed the highest average number of PTSD symptoms for children from the Gaza (7.36), followed by children from the West Bank (6.45), and, finally, the Israeli-Arabs (2.71). The most frequent symptoms reported for the Gaza and West Bank children were intrusion, distress, unease upon thinking about what was happening around them, anger, sleep disturbances, and hypervigilance. The most frequently reported problems among the Israeli-Arab group were convictions about a foreshortened future and a restricted range of affect. Results from the SCL-90-R indicated that the symptoms of 54 participants (15.2%) were within the "severe" range. Participants frequently reported clinically significant anxiety disorders, whereas other disorders (e.g., psychoticism, somatization) were reported somewhat less frequently (Elbedour et al., 1993).

In order to determine whether geographic location, age, and gender variables might account for differences in symptoms of distress, a multivariate analysis was conducted with the data. Results revealed significant main effects for location, $F(2, 341) = 43.43, p < .05$, and age, $F(1, 341) = 8.5, p < .05$, but not for gender $F(1, 341) = 1.19, p > .05$, with no significant interaction effects. Therefore, main effects yielded more salient disturbances and posttraumatic symptoms in older children (ages 16-18 years) than in younger ones (ages 13-15 years). Post hoc analysis indicated that, whereas children from Gaza scored significantly higher than the Israeli-Arab children, there were no regular

differences between children living in Gaza and in the West Bank or between West Bank and Israeli-Arab children. However, West Bank and Israeli-Arab groups did differ significantly (Elbedour et al., 1993).

The most salient finding of Elbedour et al.'s (1993) study was the high level of emotional problems exhibited by children in all three geographic groups. The data also support the hypothesis that as levels of stress associated with war increase, so do reported symptoms of psychopathology, particularly PTSD symptomatology. For example, circumstances surrounding the children of Gaza have been the most disturbing, and these children showed the highest incidence of psychopathology. However, findings indicate that Israeli-Arab children, though less directly involved in the regional conflicts, also bear emotional scars and are not symptom-free.

A study by Thabet and Vostanis (1999) investigated the prevalence of PTSD reactions in 239 Palestinian children, ages 6 to 11 years, who had experienced war traumas. They examined the relationship between the traumatic experiences, behavioral and emotional problems, and PTSD reactions, as well as the nature and frequency of PTSD reaction items. Assessment included the Rutter Scale A2 (parent version; Rutter, Tizard, & Whitmore, 1970) and the Rutter Scale B2 (teacher version; Rutter et al., 1970). Both instruments are standardized measures of behavioral and emotional problems, with a score of 13 or more indicating potential "cases" (i.e., presentation of a possible mental health disorder). Traumatic events and PTSD reactions were assessed by the CPTSD-RI and the Gaza Traumatic Event Checklist (Abu Hein, Qouta, Thabet, &

El Sarraj, 1993), a measure that consists of 21 items covering different types of traumatic events (e.g., tear gas, beating, injury, witnessing killing).

One hundred seventy-four children (72.8%) reported at least mild PTSD reactions, whereas 98 (41%) reported moderate to severe PTSD reactions. The mean CPTSD-RI score was 19.9 ($SD = 12.9$, range = 0-46). The most frequently reported symptoms were thoughts and fears related to the trauma, anhedonia, impaired concentration, and avoidance of situations that reminded them of the trauma. On the parent-completed Rutter A2 scale, 64 children (26.8%) were identified as cases with a potential mental health disorder, a rate similar to other deprived urban populations (Thabet & Vostanis, 1999).

PTSD reactions were also dichotomized (present/absent and absent or mild/moderate or severe) and entered as the dependent variable in a stepwise logistic regression analysis. Results revealed that the total number of experienced traumas was the best predictor of the presence ($\beta = .74$, $p < .0005$) and severity ($\beta = .32$, $p < .0005$) of PTSD. Finally, the researchers' "cultural" hypothesis on the phenomenology of mental health and PTSD symptoms was not supported. This hypothesis postulated that there are culturally determined variations in the presentation of anxiety or trauma-related disorders. Furthermore, the researchers postulated that Palestinian children who had been exposed to war would present with conversion fits and predominantly suffer from behavioral and psychosomatic problems. However, these Palestinian children did not present with somatization or behavioral problems, but they did present with high rates of cognitive and emotional PTSD symptoms (Thabet & Vostanis, 1999).

A follow-up study (Thabet & Vostanis, 2000) of this cohort was conducted 1 year later, that is, during the peace process and about 18 months after military activities ceased. Five families declined participation, leaving a follow-up sample of 234 children (126 boys, 108 girls). The children's mean age at follow-up was 9.9 years (range = 7-12 years) at the time the same assessment instruments were administered. The authors found that the rate of report for moderate to severe PTSD reactions had decreased from 40.6% ($N = 102$) to 10.0% ($N = 74$). However, 21% of the parents reported that their children had mental health problems, and 32% of the teachers reported children with mental health problems. The authors noted that, although there was a significant reduction in PTSD symptoms during the one-year follow-up, mental health issues were still a substantial problem since 10% of the children were still reporting symptoms (e.g., identification of traumatic events, anhedonia, impairment in concentration, fear, social avoidance, nightmares). Utilizing linear regression analysis, with the total CPTSD-RI score at follow-up as the dependent variable, the authors found evidence suggestive of a dose response with respect to PTSD. That is, the presence of moderate to severe PTSD at follow-up was best predicted by the total number of traumas experienced by the child at the initial assessment ($\beta = 1.1, p = .05$).

Nevertheless, longitudinal data collected in one assessment should, of course, be interpreted with caution. Overall evidence provided by PTSD research suggests that symptoms peak during the first year following the trauma (e.g., events such as natural disasters, e.g., Winje & Ulvik, 1998) and then gradually decrease. However, children remain vulnerable to further relapse if

exposed to subsequent stress (Laor et al., 1997). For children who have been exposed to longstanding conflict, a "peak" period would obviously be more difficult to identify or define. Furthermore, a limitation relevant to both initial and follow-up studies by Thabet and Vostanis (1999, 2000) was the absence of an assessment of global functioning and a clinical interview, both of which could have added to information from the CPTSD-RI and more clearly established whether the children had actually met all DSM-IV criteria necessary for a PTSD diagnosis.

Additionally, Thabet and Vostanis (1999, 2000) stress the importance of cultural issues, particularly in relation to their finding that parents reported relatively fewer mental health problems in their children than did the teachers at both initial and follow-up assessments. The authors speculate that parents' fear of stigma of mental illness may have led them to under-report their children's problems, which carries additional relevance because of its implications for effective interventions. They propose a model in which schools would play a central role in providing the basis for the detection of problems, as well as a center of trust for forming partnerships with parents and networks for extended families.

Lebanon. Between 1975 and 1991, a brutal war devastated the Lebanese population and shattered the country's political, social, and economic systems (Bryce & Armenian, 1986). During the war years, the Lebanese population was exposed to periodic and often unpredictable outbursts of violence that included air raids, street combat, shelling of neighborhoods, and displacement of entire communities. Civil unrest was also accompanied by a deterioration of the

national economy and community institutions and services (schools, healthcare system, etc.) and major disruptions in public utilities (e.g., delivery of water, electricity). Thus, the Lebanese context offered unique opportunities to examine children's reactions to man-made disasters.

Macksoud and Aber (1996) investigated this relationship between children's exposure to war traumas and children's symptomatology (e.g., PTSD) and explored whether demographic factors would moderate the effect of war traumas on the prevalence of PTSD. A sample of 224 Lebanese children (aged 10-16 years) was randomly selected from eight schools in several different geographical areas of Lebanon. The children were given the Childhood War Trauma Questionnaire (CWTQ; Macksoud, 1992), a semi-structured interview designed to assess children's exposure to war trauma, and an Arabic version of the Posttraumatic Stress Reaction Checklist (PTSRC; Frederick & Pynoos, 1988), a measure which consists of 14 symptoms that are rated on a dichotomous basis (i.e., 0 = absence, 1 = presence) and covers the major domains of PTSD. The Arabic version of the PTSRC was originally administered to a sample of 100 Lebanese children to test for validity and reliability and yielded a Cronbach's alpha of .77 (Macksoud, 1992).

A multiple regression equation was used to examine the relationship between the number of war traumas and the presence of PTSD, while controlling for age, gender, father's occupational status, and mother's educational level. Results showed that the number of traumas accounted for 16% ($p < .001$) of the variance in PTSD symptoms. To better understand the significance of the relationship between number of traumas and PTSD, the

authors explored the relation between the number of traumas and appraisal of one as the "most disturbing trauma" through regression analysis, which indicated that, for the whole sample, the number of these events accounted for 10% ($p < .001$) of the variance (Macksoud & Aber, 1996).

In sum, Macksoud and Aber (1996) suggest that children who have been exposed to several war traumas are more likely to appraise one trauma as most disturbing ($\beta = .33, p < .01$) and to exhibit more PTSD symptoms ($\beta = .29, p < .01$) than will children who have been exposed to fewer traumas. In this study, a large percentage (43%) of children who had been exposed to several traumas over an extended period of time exhibited PTSD in response to the one war trauma that they subjectively appraised as "the most disturbing," continuing to do so even when up to 10 years had passed after the trauma had occurred. This finding supports Straker's (1987) hypothesis that chronic exposure to war does, indeed, render some children more likely to develop "continuous PTSD."

A factor analysis was conducted to determine the underlying factor structure for 10 war trauma categories. The following four factors accounted for 53.7% of the variance: (a) Active Involvement, (b) Loss of Family or Home, (c) Passive Involvement, and (d) Limited Involvement. A regression equation was used to examine the relation between types of war traumas and PTSD. Results showed that Active Involvement accounted for 8% ($p = .05$) of the variance. In this factor, being a "victim of violent acts" was significantly related to PTSD ($\beta = .14, p < .05$). Loss of Family or Home accounted for an additional 4% ($p < .05$) of the variance. Of the two types of trauma contributing to this factor, bereavement was significantly related to PTSD ($\beta = .15, p < .05$). Finally, passive

involvement accounted for an additional 4% ($p < .05$) of the variance; however, none of the three types of traumas in this factor were significantly related to PTSD, though witnessing violence and exposure to shelling or combat showed a trend in that direction. Again, this analysis was controlled for demographic variables. In sum, results showed that, in addition to the number of war traumas to which children had been exposed, the occurrence of certain types of war traumas also rendered Lebanese children more likely to exhibit continuous PTSD (Macksoud & Aber, 1996).

These findings have several clinical implications. Therapeutic interventions could first be targeted to help children at risk (e.g., those who have been exposed to war experiences, those who have been bereaved, those who have suffered directly from acts of violence, those who have witnessed violent acts, those whose homes have been shelled) for severe stress reactions and PTSD. Additionally, children who have lost members of their family and/or have remained in their communities during the fighting may need to do grief work and be encouraged to maintain playful behavior skills, whereas children who have been separated from their families and/or have witnessed acts of violence should be reunited with their parents or helped to grieve their losses and encouraged to expand on their prosocial behaviors.

Iran-Iraq War. The Iran-Iraq war officially began on September 22, 1980, with an Iraqi land and air invasion of western Iran. The Iraqis attacked Teheran and other large cities with long-range missiles and air raids that severely affected the civilian population. Many Iranians left Iran to escape the political persecution that lasted for the next 8 years.

Researchers have been interested in whether or not PTSD could be diagnosed in preschool-aged children. To explore this question, Almqvist and Brandell-Forsberg (1997) examined the prevalence and stability of PTSD among Iranian preschool children exposed to war and persecution. Fifty preschoolers (ages 4-8 years) from 47 Iranian families, who were refugees in Sweden, were assessed individually. These data were combined with information from two parental interviews (initial investigation and follow-up 2 1/2 years later) that focused on exposure to organized violence and PTSD symptomatology in their children.

Almqvist and Brandell-Forsberg (1997) conducted individual assessment of PTSD symptomatology in these children using a variety of methods. The reexperiencing of symptoms (DSM-IV Criterion B) was assessed by the Erica-method (Danielsson, 1986), a standardized modified version of the Lowenfeld World Technique (Lowenfeld, 1950) that is widely used at Swedish child guidance clinics. With this technique, the child is told that he may use whatever he chooses from 360 miniature toys to build something in a large sandbox. While playing, the child is encouraged to explain the situation he creates and to talk about memories dramatized by his play.

During the first 5 minutes of assessment, behavioral observation of the child's social responsiveness was used to identify symptoms of persistent avoidance (DSM-IV Criterion C). Using a 5-point scale, the observer rated the child's behavior in the following three situations: (a) leaving parents and entering the assessment room; (b) social responsiveness to the investigator and interpreter, and (c) participation in the assessment situation. A child's statement

that he or she would not live to be a grown-up was interpreted as a sense of a foreshortened future (DSM-IV Criterion C, 7). Finally the child's ability to concentrate and perform three age-appropriate tasks was used to assess the presence of increased arousal (Criterion D; Almqvist & Brandell-Forsberg, 1997).

Parental interviews conducted at the initial assessment revealed that 34 of the 42 children who had been exposed to organized violence showed symptoms of behavioral disorders (i.e., overdependency, anxiety, restlessness, sleeping disorders, aggressive behavior). All but one of the eight children who were not currently displaying symptoms had reportedly shown different signs of psychological distress prior to their arrival in Sweden. The authors' initial child assessments revealed that 22 of the children displayed re-experiencing symptoms that were connected with the traumatic experience, 9 showed symptoms of avoidance by a numbing of general responsiveness (i.e., not interested in play or assessment tasks), and 11 showed difficulties in concentration (Almqvist & Brandell-Forsberg, 1997).

In this initial assessment, only one case of full PTSD diagnosis was identified by parental interview alone. However, when results of the child assessments were added to parental information, eight more cases of PTSD were found. Although parents did not generally describe reexperiencing symptoms in their children, observers recognized reenacting play behavior and intrusive thoughts, and 9 of the 42 (21%) children met full criteria for PTSD. Moreover, another 13 children displayed PTSD symptomatology that included reexperiencing symptoms but did not meet full criteria for a PTSD diagnosis (Almqvist & Brandell-Forsberg, 1997).

Children were divided into three groups based on information provided by their parents: (a) children who had not been personally exposed to organized violence, (b) children who had experienced dangerous air raids or attacks by long-range missiles but had not been eye-witnesses to acts of violence, and (c) children who had been eye-witnesses to acts of violence (e.g., an assault on a parent) or had been within 50 meters of an explosion. The degree of traumatic exposure was strongly correlated with the prevalence of PTSD in this sample. Children with the most severe traumatic stress exposure (38%) were more frequently diagnosed with PTSD than were those who had had experienced less severe exposure (11%; Almqvist & Brandell-Forsberg, 1997).

Two and one-half years after the initial assessment, Almqvist and Brandell-Forsberg (1997) conducted follow-up assessment using the same procedures, including parental interview and child assessment. Thirty-nine of the 50 children who had participated in the initial investigation also took part in the follow-up study. The child assessment included the same instruments as in the initial investigation, but questions relating to PTSD symptoms were added since the children had become more mature. The following is an example of such questions: "Are there some special memories from Iran, of events which made a strong impression on you, that you think about? (if yes:) Tell me about them/it" (Almqvist & Brandell-Forsberg, 1997, p. 357).

Results of the follow-up study revealed that 23% of the children still met criteria for PTSD. Eight of the 9 children who had been diagnosed with PTSD at the initial investigation participated in the follow-up. Six of these children still met diagnostic criteria for PTSD. However, the two children who did not

warrant a PTSD diagnosis were still displaying some PTSD symptoms. Again, the degree of traumatic exposure (severe to mild) was strongly correlated with the presence of PTSD. Thirty-three percent of the 15 children who had experienced the most severe traumatic stress exhibited symptoms that warranted a PTSD diagnosis, whereas 11% of the 19 children exposed to mild traumatic exposure received the diagnosis (Almqvist & Brandell-Forsberg, 1997, p. 357).

The researchers noted that parents frequently failed to recognize their children's reexperiencing symptoms and did not seem to realize that their children's reenacting play was a deviant form of behavior until later. Although some parents denied the presence of reexperiencing play or talk, they sometimes stated that they would not allow the child to play "those games" and expressed opinions that one should not talk about experiences of violence. These findings support previous descriptions of parent-child interactions in which parents deny or underestimate PTSD reactions in their children. They may be hoping that their children have forgotten the traumatic event, and the children may be attempting to protect their parents from the full extent of their traumatic memories. Nevertheless, this information provides support for the validity of diagnosing PTSD in preschool children and stresses the importance of using both child assessments and parental interviews in that process. These authors also discussed changes made in PTSD criteria by DSM-IV and stated their belief that these changes would produce minor and insignificant changes to their findings (Almqvist & Brandell-Forsberg, 1997).

Consistent with the aforementioned studies, these results suggest that traumatic exposure is of major importance for future PTSD symptomatology in preschool children. Children who had been eye-witnesses to assaults on parents or who had been within 50 meters of bomb explosions developed PTSD much more frequently than those children who did not see violent acts, even though they had been exposed to traumatic stress such as air-raid bombardments in their neighborhoods (Almqvist & Brandell-Forsberg, 1997). This finding supports the view that the degree of traumatic exposure is strongly related to the prevalence of PTSD.

Furthermore, Almqvist and Brandell-Forsberg (1997) found that very few children diagnosed with PTSD at the first investigation had recovered by the time of the follow-up. This phenomenon is consistent with the previously reviewed study by Macksoud and Aber (1996) that described similar chronic states of PTSD (continuous PTSD) in Lebanese children. The investigation of Iranian refugee children in Sweden indicates that about one-fifth of children who have been repeatedly exposed to organized violence through war and persecution are at risk for developing chronic PTSD that remains, even after the child has been moved to safety. Additionally, impaired family-functioning and parental capacity have been observed to be important risk-factors for continuous PTSD symptomatology in children, perhaps especially because most parents of children with PTSD had themselves suffered from severe traumatic exposure and had described their own related mental health problems.

South Africa. An estimated 11,000 people have died as a result of political violence throughout South Africa since 1986 (Black Sash, 1992). The ongoing civil

conflict in the Natal region of South Africa is rooted in apartheid capitalism and occurs within the context of a regional and national power struggle between the Inkatha Freedom Party (IFP) and the African National Congress (ANC). The violence in this region has taken many forms, including killing, burning, widespread intimidation, and scapegoating, especially of the youth. There has been an almost continuous presence of vigilantes, police, and soldiers from the South African Defense Force. These official and quasi-official groups have tended to focus much of their attention on the youth, who were seen as the source of resistance and the cause of much of the violence. Quite clearly, people in these areas have not only experienced frequent incidents of violence, but have also been exposed to forms of violence that have been particularly intense and severe.

Magwaza, Killian, Peterson, and Pillay (1993) researched the prevalence of PTSD in preschool age children exposed to civil conflict and violence in South Africa. Using a combination of participatory and empirical methods, five teachers selected a sample of 148 children (73 girls and 75 boys) who ranged in age from 2 to 7 years. The Posttraumatic Stress Disorder Questionnaire for Children was completed by the teachers for each of the children under their care. This questionnaire, a semi-structured symptom checklist, requires respondents to answer eight open-ended questions about the occurrence of PTSD symptoms. In addition, the children were asked to draw pictures of things they had experienced in their lives. The drawings were scored by a clinical psychologist who had 16 years of experience in the assessment of children's drawings. When there was some doubt about whether or not to score a

particular emotional indicator, the opinion of two other experienced clinical psychologists was sought until a consensus was reached.

The mean number of PTSD symptoms was 4.14, with a standard deviation of 2.22. The authors categorized the children by number of PTSD symptoms: normal (i.e., no PTSD symptoms; $n = 39$), mild ($n = 90$) and severe ($n = 18$). Thus, the most significant finding of this study was that preschool children exposed to violence are likely to suffer PTSD, with a significant number of children suffering from severe forms of the disorder (Magwaza et al., 1993).

Additionally, a three-way analysis of variance (ANOVA) was conducted with the content weighted drawing score as the dependent variable. The three-way ANOVA revealed significant main effects for gender, $F(1, 135) = 6.82, p = .010$, and degree of violence in their living area, $F(2, 135) = 7.79, p = .001$. Two-way interactions were significant for PTSD category (normal, mild, severe) and area (more violent, less violent), $F(2, 135) = 7.79, p = .001$, but were not significant for PTSD category by gender or for gender by area. These results suggest that PTSD symptoms have very different effects in the two areas, which can essentially be distinguished on the basis of frequency and degree of violence in the surrounding area. In other words, the more frequent the incidence and the greater the intensity of violence, the more likely it is that a child will be traumatized and display PTSD symptoms (Magwaza et al., 1993).

Further analysis of the relationship between degree of PTSD symptoms, drawing scores, and exposure to violence yielded an interesting trend: The more severely traumatized child (i.e., a child exhibiting more than six PTSD symptoms) is less likely to exhibit emotional disturbance in drawings. Magwaza

et al. (1993) concluded that the more a child is able to express emotional trauma through art, the less likely he is to suffer from PTSD; therefore, children's drawings may not be good indicators of PTSD. However, the findings in this study must be interpreted with caution since the reliability and validity of the instruments and scoring procedures are not known.

Sudan. As one of the poorest countries in Africa, Sudan received international attention during its famine in the 1980s. Subsequently in 1989, a civil war broke out in the south that has been driven by a government of Islamic fundamentalists who consider it their God-given duty to turn the entire country into a model of Islamic purity. The government has arrested and tortured the opposition.

In one of the few studies that included a control-group, Paardekooper, de Jong, and Hermanns (1999) examined the psychological effects of the war situation and subsequent flight on 316 South Sudanese children (aged 7-12 years) compared to a group of 80 Ugandan children who had not experienced war and flight. Measures included the Trauma Event Scale, a subscale of the Harvard Trauma Questionnaire (Mollica et al., 1992), and the author's own revised version of the Levonn Cartoon-based Interview for Assessing Children's Distress Symptoms (Richters, Martinez, & Valla, 1990), which was renamed the "Michael Questionnaire."

Results from the Trauma Event Scale revealed that Sudanese parents reported more traumatizing experiences for their children than did Ugandan parents ($t [423] = 15.42, p < .001$). A comparison of Sudanese and Ugandan children on items of the Michael Questionnaire and factor loadings revealed the

following: Sudanese children scored significantly higher than Ugandan children on the Trauma factor ($t [409] = 3.24; p < .001$), the Aggression factor ($t [408] = 8.91; p = .000$), and the Depression factors ($t [109.84] = 7.84; p = .000$). In other words, Sudanese children reported significantly more PTSD-like complaints (e.g., trouble with sleep, nervousness, traumatic memories, behavioral problems, depressive symptoms, psychosomatic complaints) than did Ugandan children (Paardekooper et al., 1999).

The Persian Gulf War. In August of 1990, Iraq invaded and occupied Kuwait. In January of 1991, after 5 months of armed occupation, an international military force expelled Iraq from Kuwait territory. During the occupation, the Iraqis used violent methods (e.g., torture, detention, intimidation) to control the Kuwaitis and overpower the resistance. Although thousands of Kuwaiti civilians were able to escape across the border to Saudi Arabia, many more remained, living under curfew, with shortages of goods, and under fear of harm. By the end of October 1990, as many as 12,000 Kuwaitis had been taken captive (Hadi & Llabre, 1998).

Nader et al. (1993) investigated the prevalence of PTSD among 51 children and adolescents (aged 8-21 years) who had been exposed to the abrupt and violent military occupation of Kuwait. The Exposure Questionnaire (Nader et al., 1994) and the authors' own instrument, the CPTSD-RI, were administered to the participants. More than 70% of the children and adolescents reported moderate to severe PTSD reactions, with the average child endorsing five of the ten different types of exposure.

The results of a correlation matrix of total exposure and the three exposure subscales (threat to significant other, witnessing, and life threat) with the total CPTSD-RI and the three PTSD symptoms categories (reexperiencing, avoidance, and arousal) revealed a significant positive correlation between overall exposure and severity of PTSD on the CPTSD-RI ($r = .38, p < .01$). Thus, those children with greater levels of exposure had more symptoms of PTSD. The total exposure score also correlated significantly with each of the PTSD symptoms categories, reexperiencing ($r = .29, p < .05$), avoidance ($r = .31, p < .05$), and arousal ($r = .36, p < .01$). When the total exposure score was subdivided into its three components, witnessing was found to be the best predictor of CPTSD-RI score. Witnessing was significantly correlated with the total CPTSD-RI ($r = .49, p < .01$) and with re-experiencing ($r = .35, p < .01$), avoidance ($r = .44, p < .01$) and arousal ($r = .38, p < .01$; Nader et al., 1993).

In addition to in-person exposure to atrocities, explicit and graphic images of dead and mutilated martyrs and enemy soldiers had been repeatedly displayed on television. This media exposure added significantly to CPTSD-RI scores, even after the effects of other types of exposure were controlled (partial $r = .49, p < .01$). Thus, even in maintaining a physical distance from the event, seeing horrible death, blood, and mutilation on television can increase psychological symptoms and severity levels of PTSD. The Threat to Other and Life-threat subscales were not significantly related to CPTSD-RI scores in this sample. However, Nader et al. (1993) suggested that the absence of a significant relationship (as hypothesized) between exposure to life threat and PTSD may have been because most children in the sample had not experienced the most

severe life threat or injury. Inclusion of more children with these forms of extreme exposure would permit further investigation of this issue.

Nader et al. (1993) also found that children who had reported hurting someone else had the highest mean CPTSD-RI score ($N = 8$, $M = 41.5$). The authors suggest the importance of examining the effects of participation in war-related aggressive acts in a larger, more representative sample. They speculated that, unless deemed necessary for survival or an effective resistance, aggression resulting in harm to another does not insulate one from, but instead increases PTSD symptomatology. Interestingly, older children tended to have greater exposure to atrocities and higher CPTSD-RI scores than did younger children.

In a related study, Nader and Fairbanks (1994) used the same sample and instruments from their preliminary study (Nader et al. 1993) to test their hypothesis that war-exposed Kuwaiti children who had reported relatively low levels of reexperiencing symptoms would have a greater problem with impulse control and somatic complaints. While statistically controlling for the general tendency of all symptoms to increase as severity level of PTSD increased, the researchers found support for their hypothesis. Applying partial correlational analysis to the data revealed a significant inverse relationship between reexperiencing and four of the five Arousal items (sleep disturbance, $r = -.36$, $df = 49$, $p < .01$; difficulty concentrating, $r = -.29$, $df = 49$, $p < .05$; somatic complaints, $r = -.37$, $df = 49$, $p < .01$; and problems with impulse control, $r = -.36$, $df = 49$, $p < .01$). In addition, 50% of the adolescents (ages 13-21 years) reported that they had difficulty with impulse control (some to most of the time),

whereas 26% of the younger children (ages 8-12 years) reported similar difficulties.

Nader and Fairbanks's (1994) study supports the hypothesis that, within severity levels of traumatic response, the suppression or absence of reexperiencing phenomena may result in increased somatic difficulties or problems with impulse control. Although children exhibited the whole range of PTSD symptoms, including reexperiencing, avoidance, and arousal symptoms, those children who reported a relative absence of reexperiencing phenomena showed an increase in generalized symptoms of arousal, including problems in impulse control and somatic complaints, regardless of age. The authors suggested that cultural attitudes may influence the level of distress that is associated with increased arousal symptoms of PTSD.

Although there are no available comparisons of American to Kuwaiti youths, Seginer and Flum (1987) reported a comparison of self-image profiles of American and Israeli adolescents. Much like their American counterparts, Israeli adolescents are happy and well-adjusted; a minority among them experience personal trouble. The Israeli profile is marked by higher impulse control, lower morals, and lower vocational and educational goals. Israeli adolescents also tend to have somewhat more conservative sexual attitudes and stronger family relationships than do American adolescents. After consulting with Kuwaiti psychologists and educators, Nader and Fairbanks (1994) speculated that the pre-crisis Kuwaiti self-image profiles would more closely resemble Israeli adolescent profiles than those of American adolescents. Furthermore, Kuwaiti children and adolescents seemed particularly distressed, as evidenced by their

post-crisis increase in problems regarding impulse control, especially recklessness and aggression, which had been uncommon in pre-crisis Kuwaitis.

Schwarzwald, Weisenberg, Waysman, Solomon, and Klingman (1993) hypothesized that younger children would reveal more severe psychological distress and symptomatology than would older children. They also hypothesized that greater levels of objective exposure and greater subjective perceptions of threat would increase both psychological distress and symptomatology. The researchers had no specific hypotheses on gender effects because of the inconsistency of findings in the disaster literature with regard to gender. Their sample consisted of 492 Israeli children from the 5th, 7th, and 10th grades. These students had been exposed to missile attacks during the Persian Gulf War that had required them to enter shelters or sealed rooms and to continuously carry gas masks during the war. Stress reactions were assessed by the Stress Reaction Questionnaire interview, which was based on the CPTSD-RI (Frederick & Pynoos, 1988). Items from DSM-III-R PTSD criteria and two items that asked homeroom teachers to evaluate the child were added.

Schwarzwald et al. (1993) found that both exposure to threat (i.e., living in an area under direct threat) and proximity of damage (i.e., physical closeness to damage sites or emotional closeness to individuals who had been hit) made distinct contributions to the presence of postwar stress reactions. This finding replicates previous findings that level of exposure to the traumatic event is an important factor influencing PTSD. Gender, age, and region interacted such that boys reported the highest stress reactions regardless of region, whereas girls reported the highest stress responses only in the region hit. The authors

suggested that gender differences in the implementation of effective coping skills may be an additional factor that mediates these differences between younger and older children. Furthermore, adolescents have been found to possess a greater variety of coping skills than preadolescents and to use them more effectively (Hoffman, Levy-Shiff, Sohlberg, & Zarizki, 1992). In a similar vein, Pynoos and Eth (1985) pointed out that adolescents also have greater cognitive skills and can, therefore, formulate a greater variety of cognitive reappraisals and inner plans of action.

To examine the role of social support in relation between Gulf War trauma and psychological distress, Llabre and Hadi (1997) assessed 151 Kuwaiti children between the ages of 9 and 13 years ($M = 10.5$ years). These researchers compared children who had been exposed to severe trauma ($n = 112$) to a control group ($n = 39$) that was comparable with respect to age and sex, but whose members had not been directly exposed to severe trauma since either they had been out of the country during the war or because their families had been relatively untouched. Both groups were given the Posttraumatic Stress Disorder Index (PTSDI), the CDI, and an eight-item measure of social support that was developed by the authors. The PTSDI and the CDI were adapted for the Kuwait population from the original scales. The researchers conducted a pilot test on these adaptations to assess their cultural relevance and appropriateness. Further modifications were made as needed.

Llabre and Hadi (1997) found significantly higher PTSDI scores in the boys' trauma group than in the boys' control group, $F(1, 147) = 4.77, p < .05$, whereas the difference was not significant between the girls' groups. There was

also a significant main effect for group, $F(1, 147) = 11.72, p < .001$. As hypothesized, the trauma group exhibited significantly more PTSD symptoms than did the control group. However, as indicated by the interaction, the differences for the boys were significantly greater than were the differences for the girls. No gender differences were observed on the PTSDI. A significant group effect was also found on the CDI, $F(1, 147) = 11.82, p < .001$. For both boys and girls, the trauma groups experienced higher levels of depression than did the control groups. The correlation between depression and the PTSDI was .45 ($p < .001$).

Overall, the results of Llabre and Hadi's (1997) study demonstrate that 2 years after the Gulf War, children who had been exposed to severe trauma were reporting levels of psychological distress (e.g., PTSD, depressive symptoms) that exceeded those of a comparable control group. These findings are consistent with results of other studies, suggesting that the effects of trauma can be generalized across ages and across cultures.

Results regarding the role of social support revealed a significant interaction on the PTSDI, $F(1, 143) = 4.00, p = .047$ and the CDI, $F(1, 143) = 4.96, p = .03$. Further analysis revealed that the girls in the trauma group with low social support had significantly higher PTSDI, $F(1, 143) = 6.9, p = < .01$, and marginally significant CDI scores, $F(1, 143) = 2.75, p < .10$, than the girls with high social support. Within the sample of boys, analysis indicated that boys in the trauma group had consistently higher PTSDI scores, $F(1, 143) = 14.6, p < .001$, and CDI, $F(1, 143) = 14.58, p < .001$, than boys in the control group. Additionally, social support had a significant main effect on CDI scores, $F(1,$

143) = 6.44, $p < .03$, such that boys who received higher levels of social support had lower CDI scores than boys with lower levels of social support. In sum, social support buffered the effect of trauma for girls, but not for boys (Llabre & Hadi, 1997).

However, boys also reported lower levels of social support than did girls. The authors speculated that the increased levels of emotional support reported by the girls served as a buffer against elevated distress by permitting them to express their feelings and fears to others and, in that way, to confront and deal with unpleasant thoughts and reminders of the war. They also hypothesize that the higher PTSD scores and lack of buffer effects of social support in boys might reflect cultural expectations for boys to “behave like men” and prematurely take on more adult responsibilities, especially in the absence of their fathers (Llabre & Hadi, 1997).

To explore the relationship between level of exposure to violence and psychological and cognitive factors, Hadi and Llabre (1998), conducted another study with 233 Kuwaiti boys and girls whose ages ranged from 8 to 12 years. Intelligence was assessed by the Wechsler Intelligence Scale for Children-Revised (WISC-R), which was the best instrument available even though it has not been normed with this population. Posttraumatic stress was measured by CPTSDI, and both child and parent were tested for depression, as measured by the CDI and the BDI, respectively. Additionally, the authors developed a structured crisis interview to assess children’s levels of exposure to violence during the crisis, as well as their current functioning. All measures were

administered between November, 1989, and April, 1990, as well as approximately 1 year following the Gulf War.

Hadi and Llabre (1998) found no significant decline in intelligence scores. Furthermore, parental depression did not predict children's psychological distress, nor was there a moderation of this effect due to the age of the child. However, the researchers cited cultural factors as a possible explanation for these results. As is typical of this culture, the children came from large, close families. Thus, a child's relationship to just one adult (e.g., a parent) may be of diminished importance when the child is surrounded and supported by many different adults (e.g., grandparents, uncles, aunts).

Results directly related to PTSD seem to support Hadi and Llabre's (1998) hypothesis that acute trauma caused by exposure to violence is related to PTSD in children. In fact, regardless of age and gender, multiple regression analysis showed that exposure to trauma was the only significant predictor of both PTSD and depression, $F_s(3, 229) = 8.75$ and 5.14 , $ps < .01$ for CPTSDI and CDI, respectively. In addition, less than 4% of the sample reported experiencing severe levels of PTSD, 23% reported moderate levels, and 34% reported mild levels. Thus, about 62% were experiencing at least mild levels of PTSD. However, the percentages should be interpreted with caution due to the sampling method used in this study. Initial sampling was conducted prior to the war. Consequently, no provisions were made to include those children who had been most affected (arrested, tortured, etc.), which may explain the relatively low percentage of children experiencing severe PTSD symptoms in this sample.

Former Yugoslavia. Bosnia Herzegovina was devastated by armed ethnic conflict after declaring its independence from Yugoslavia in 1991. More than 4 years of conflict resulted in the deaths of over 200,000 people and created more than 1,300,000 refugees (Stein, Comer, Gardner, & Kelleher, 1999).

Husain et al. (1998) explored the relationship of gender, loss of family members, and perceived deprivation to the development of PTSD symptoms. This study is unique in that its participants lived in prolonged siege conditions and were deprived of basic necessities of life for more than a year. They were exposed to random sniper fire from the hills surrounding the city of Sarajevo, and many lost family members and close friends. This sample consisted of 791 students whose ages ranged from 7 to 15 years. Participants were given the IES and the CPTSD-RI.

More girls than boys reported avoidance behaviors and reexperiencing symptoms. Differences on the IES between the girls and boys in all three values (avoidance, reexperiencing, and total score) were small, but statistically significant ($z = -4.37, p = .0001$; $z = -3.54, p = .0004$; and $z = -4.51, p = .0001$, respectively). Nevertheless, these results should be interpreted with caution since they are small and since other findings regarding effects of trauma and gender have been inconsistent. No significant differences were apparent between scores of those who reported sniper fire and those who did not. Overall, these results imply that proximity to war atrocities, deprivation, and personal losses are highly correlated with the development of PTSD, especially regarding symptoms of avoidance and hypervigilance (Husain et al., 1998).

Stein et al. (1999) investigated the posttraumatic symptoms of Bosnian children who had been exposed to war and trauma. A total of 147 displaced children, who were now residing in Bosnian refugee centers, completed self-report assessments at two different times. A cartoon-based interview (Goldstein & Wampler, 1997) was adapted by an associate of the authors to reflect the living circumstances of Bosnian children in war zone collective centers and was used to assess children's distress symptoms. The cartoons included descriptions of a child with trauma-related symptoms and an associated two- to three-sentence script. Respondents were asked to mark an empty circle, a circle that was 50% shaded, or a circle that was completely shaded, respectively labeled in the Bosnian language never, some of the time, or a lot of the time. Stein et al. (1999) hypothesized that (a) girls would report higher levels of symptoms than boys, (b) younger children would report higher levels of symptoms than older children, and (c) symptoms would decrease over time.

Stein et al. (1999) found that girls reported higher depressive symptoms and emotional numbing at Time 2, but not at Time 1. Boys reported higher levels of anxiety, hyperarousal, and intrusive thoughts at Time 1, whereas other differences were not significant. Although these gender differences were not always significant within a given time, there was a strong gender/time interaction in every PTSD subscale. This finding suggests that the direction of gender differences in PTSD severity reversed over time; that is, boys had lower mean scores than did girls at Time 2. Their second hypothesis was not supported by their findings. Pearson correlations between age and PTSD levels ranged from .14 to .07 and were not statistically significant. Finally, the authors

found that PTSD symptoms did not decrease over time as they had originally hypothesized, which is consistent with Straker's theory of "continuous PTSD" and other studies suggesting that some children who have been exposed to severe/ongoing war-related trauma suffer from chronic PTSD symptoms that do not spontaneously remit or decrease over time.

Extrafamilial Violence in the United States

In this section on extrafamilial violence against children in the United States, a brief description of a particular incident will be followed by the empirical studies that have examined the consequences of the event. Unfortunately, no empirical studies have yet been published regarding PTSD and the school shooting at Columbine High School in Littleton, Colorado. Most likely, this deficiency is due to the recentness of the event. However, an empirical study involving another school shooting, similar to the one that occurred in Columbine, will be discussed.

School shooting. A locally-known Chicago babysitter who had a history of psychiatric problems entered a closely-knit, upper-middleclass suburban elementary school attended by 310 children. As part of her daylong, area-wide terror spree, she walked into a boys' washroom where she wounded one young child and threatened two others with one of several handguns she had in her possession. As classmates watched in a second-grade classroom, she killed one child and wounded five others. All students were subsequently kept at school and were, therefore, separated from their parents for as long as 3 hours following the shooting since the whereabouts of the assailant was unknown.

Fear was generally intense throughout the community until news of the woman's suicide at a nearby home was verified by official sources.

Schwarz and Kowalski (1991) studied three aspects of PTSD in 64 children and 66 adults who were screened for PTSD 6 to 14 months following this school shooting incident. The researchers first explored the relationships among frequencies of DSM-III diagnoses of PTSD, individual symptoms, and cluster endorsements. Next, they compared and contrasted PTSD frequency, diagnosis, and symptomatology between children and adults, including an exploration of developmental influences on the expression of PTSD. Finally, the authors examined the influences of exposure to the event, gender, recalled experiences during the day of the shooting, and age on malignant memory formation and expression, as well as on PTSD symptomatology. The term malignant memory was used to organize the authors' understanding of PTSD, conceptualizing it as both a neurophysiological and a psychosocial phenomenon. Within this framework, they suggested that the formation of a malignant memory as initiated by a specific stressor represents a stable, persistent biopsychological configuration that serves to link arousal, cognition, affect, and behavior.

The children were assessed by means of a structured interview that included self-reported responses to PTSD symptoms (based on the CPTSD-RI). Parents concurrently completed a PTSD self-report, questions regarding event variables, and other measures about themselves and the child, but were not interviewed. The measures were administered by school social service personnel. Of the 64 children, 16% ($n = 10$) had been in the classroom where one child had been murdered and five children had been wounded; 14% ($n = 9$) had

been in the same wing of the building; 50% ($n = 32$) had been in the school that day; and 20% ($n = 13$) had been off school grounds. Fifty percent of the children were female. The children ranged in age from 5 to 14 years, with a mean age of 8.6 years (Schwarz and Kowalski, 1991).

Even with the 6- to 14-month delay prior to assessment, more than 27% of the children and 19% of the adults exhibited symptoms of an intensity and frequency sufficient to warrant a DSM-III-R diagnosis of PTSD. This represents a significant rate of continuing reaction to the incident. Furthermore, the delay in assessment may have resulted in underestimating the actual impact of the trauma. Adults and children did not differ significantly in the frequencies with which they endorsed reexperiencing, avoidance, and arousal symptom clusters. An interesting finding in this study was that of adult reports of omen formation and future foreshortening (21%), symptoms usually prevalent in children only, whereas the loss of recently acquired developmental skills was the only typical childhood symptom that was associated with this diagnosis in children. Omen formation did not appear to substantially differentiate children from adults, nor did it appear to be significantly associated with a PTSD diagnosis. In general, findings confirmed the validity of the diagnosis of PTSD in children since their symptoms paralleled those of adults who had been exposed to the same shooting (Schwarz & Kowalski, 1991).

Regardless of their diagnoses, the children in this study reported reexperiencing symptoms. Reports of avoidant and arousal symptoms, however, were more highly associated with a PTSD diagnosis than were the reexperiencing symptoms. In terms of DSM-III-R criteria for the entire sample,

88% of the sample reported reexperiencing the event through repetitive play; 67% reported exaggerated startle responses; 52% reported an inability to remember aspects of the shooting; 48% reported a restricted range of affect; and 41% reported a loss of recently developed skills or regressive behaviors (e.g., thumb sucking, sleeping in their parent's bed; Schwarz & Kowalski, 1991).

Findings of this study by Schwarz and Kowalski (1991) did not confirm the strong relationship between PTSD frequency and proximity that had been previously reported in studies by Pynoos and colleagues. Of the 17 children who met DSM-III-R criteria for PTSD, 2 had been in the classroom, 3 had been in the same wing of the building, 11 had been elsewhere in the school, and 1 was not on campus at the time of the shooting. The authors suggested that more associations may have been discovered if they had examined more event variables (e.g., directness of threat, prolonged isolation from help, hearing gunshots). Several causes for the relative lack of association with proximity in this study were suggested: differences in sampling methodologies, in the exposure gradients inherent in the actual physical layout of the events, in the characteristics of the school or community, or in the effects of later interventions.

In contrast, recalled feeling states of arousal and numbness were highly associated with a PTSD diagnosis in both children and adults. A high rate (81%) of worry about the safety of self and others was related to proximity. These findings suggested that the concept of exposure might be broadened to include not only proximity to the disaster, but emotional states as well since affective

reactions during the disaster may link the event with the formation of malignant memories (Schwarz & Kowalski, 1991).

Age-related differences were found between adults and children and may reflect the impact of developmental factors on the manifestation of PTSD symptomatology. Children continued to perceive the shooting as a more extreme stressor and consistently exceeded adults in reporting significantly more symptoms within all clusters. For example, distressing dreams appeared to be more significantly associated with a PTSD diagnosis in children. Age differences were also apparent in type and specificity of reexperiencing symptoms. Symptoms in this cluster were more often reported in children. Children appeared to experience more intrusive spontaneous recurrent recall that was not associated with specific reminders (Schwarz & Kowalski, 1991).

An interesting finding regarding an inverse relationship between avoidance symptoms and age suggested that avoidance may be more frequent and easily activated in children and that avoidance symptoms may lessen with age. The authors noted that developmentally based variations in symptom presentation and pattern of disorder are apparent between children and adults, but these differences are not of such magnitude to warrant separate and distinct diagnostic criteria for children (Schwarz & Kowalski, 1991).

Schwarz and Kowalski (1991) speculated that developmental factors make a significant contribution to the formation and/or perpetuation of malignant memories. Greater frequencies of startle response, recurrent distressing dreams, and physiological reactivity suggest the persistence of arousal states and may reflect central-nervous-system-based immaturity. These

findings are consistent with younger children's poorly developed abilities to use neurophysiological mechanisms, cognitive reappraisal, or intervening positive affective experiences to down regulate or otherwise modify arousal and their subjective experience of it. Children may continue to respond to earlier trauma in a more intense but less integrated way, simultaneously reexperiencing, avoiding, and remaining aroused.

Limitations of the Schwarz and Kowalski (1991) study are primarily due to self-selection and self-reporting. A one-time screening by self-report or interview may not adequately pick up certain symptoms, which may be especially true in PTSD, where avoidance symptomatology, central to the nature of the disorder itself, may interfere with self-reporting and may be best assessed in a clinical interview. Additionally, reports of experiences during the event relied on recall after a significant period of time (6-14 months), which may have resulted in retrospective distortion, contagion, and intervention that may have diluted the proximity effects. The differences in exposure and the methods used to collect data make conclusions about developmental influences tentative (Saylor, 1993).

Oklahoma City Bombing. The 1995 bombing of the Federal Building in Oklahoma City by Timothy McVeigh tragically captured national attention to man-made disasters. Oklahoma City was unprepared to cope with the impact of this large-scale disaster that killed 167 people, including 19 children.

Pfefferbaum et al. (1999) investigated the responses of middle school and high school students who had been exposed to the Oklahoma City Bombing across a spectrum of loss. A questionnaire measuring exposure, initial

responses, and current PTSD symptoms was administered to 3,218 students 7 weeks after the explosion. The questionnaire included a 22-item Posttraumatic Stress Symptom Scale (PTSS) adapted from the IES.

More than one-third of the students in the sample knew someone who had been killed in the explosion. Most respondents reported that, in the aftermath of the bombing, most or all of their television viewing was bomb-related, and television exposure was correlated with posttraumatic stress symptoms at 7 weeks ($r = .22$). As expected, relationship to the deceased was also correlated with difficulty calming down after bomb-related television exposure at 7 weeks. Wang, Pynoos, James, and Wang (1994) believe that difficulty calming down after trauma-related viewing is a useful public health screening item that can be used to identify currently distressed children. The youths in this sample reported having experienced arousal and fear at the time of the bombing, many continued to worry about themselves and their families, and many still did not feel safe at the time of the assessment 7 weeks later (Pfefferbaum et al., 1999).

Analysis revealed that the mean PTSS score of bereaved youths was significantly higher than that of nonbereaved youths, and the group of students who had lost an immediate family member had a significantly higher mean PTSS score ($M = 48.9$, $SD = 10.6$) than all other groups. The group of bereaved students also had significantly higher mean scores than did the nonbereaved students, suggesting a main effect on each of the 3 symptom clusters: intrusion, $F(3, 3076) = 50.06$, $p \leq .0001$, avoidance, $F(3, 3047) = 29.09$, $p \leq .0001$, and arousal, $F(3, 3072) = 47.78$, $p \leq .0001$. No significant differences were found in

the mean intrusion scores among the 3 bereaved groups (loss of friend, loss of other relative, loss of parent or sibling), which may be a reflection of the potency of intrusion following an event as dramatic as a bombing as well as the pervasiveness of traumatic reminders in the environment. However, arousal symptoms were found to be most intense for those with the closest losses (Pfefferbaum et al., 1999).

Pfefferbaum et al. (1999) also reported that, for both bereaved and nonbereaved participants, intrusion ($r^2 = 0.80, 0.79$, respectively) and arousal ($r^2 = 0.77, 0.77$, respectively) were the best predictors of PTSD symptomatology 7 weeks after a traumatic experience. Intrusive phenomena and arousal may predominate, particularly immediately following a disaster when environmental triggers are unavoidable. However, other studies have revealed that reexperiencing symptoms are the most prevalent characteristics (Nader et. al., 1993; Najarian, Goenjian, Pelcovitz, Mandel, & Najarian, 1996; Schwartz and Kowalski, 1991). Symptoms of arousal (Najarian et. al., 1996) and avoidance (Nader et. al., 1993) are second and third in frequency. On the other hand, Schwarz and Kowalski (1991) found that avoidance and arousal symptoms are most highly associated with PTSD in children even though reexperiencing symptoms are common.

Finally, Pfefferbaum et al. (1999) reported that the retrospective report of arousal at the time of the blast was highly predictive of the total PTSS and symptom cluster scores 7 weeks later. These researchers suggested that arousal symptoms, which may occur with intrusion or avoidance, may be the most distressing aspect of the PTSD response and are the least likely to be under

conscious control. The ability to distinguish arousal symptoms associated with trauma from arousal symptoms associated with medical conditions is clinically important. Educating primary care physicians about this aspect of PTSD may increase the probability of appropriate referrals to mental health professionals. Overall, this study highlighted the presence of PTSD in bereaved youths and supported the existing literature citing the important role of loss and emotional closeness in the development of PTSD. High levels of avoidance and the small number of children in this sample who had received counseling suggests that many children who were in need of psychological services may have been overlooked.

Conclusions

This review explored the current research on PTSD in children who have been exposed to man-made disasters, especially wars, school shootings, and the Oklahoma City bombing. The studies reviewed have covered a variety of aspects of PTSD such as prevalence, mediating risk factors, and developmental differences. The preponderance of research reviewed used self-report measures, which are subject to response bias. Comparisons between studies were difficult because many researchers used questionnaires and instruments that they had revised to fit their specific cultural population. Although this review cannot delineate conclusive results, the information is clinically relevant to mental health professionals treating child victims of man-made disasters.

Although sampling procedures and research designs of this body of research may be somewhat limited and subject to various methodological

difficulties, these studies provide valuable data for clinicians, educators, and parents around the world, and are a valid attempt to meet the needs of children. Despite the lack of control groups and despite sampling limitations, both international and national research is consistent in reporting that a significant number of children exposed to man-made disasters do suffer from PTSD or exhibit at least mild to moderate PTSD symptoms, even several years post-disaster. Evidence is also strong for the diagnosis of PTSD in children as young as preschool age.

The research also offers support for the idea that as the level of exposure and intensity increases (physical proximity or emotional closeness of child to victims harmed in the disaster/emotional states), the child's PTSD symptomatology is more severe. Related to this finding, man-made disasters may be more difficult for children than are disasters that are considered "acts of God" because the attribution of blame extends beyond that of simple fate (Allen, Dlugokinski, Cohen, & Walker, 1999).

Furthermore, the literature suggests that, in the absence of treatment, a significant number of children will continue to suffer from PTSD (i.e., continuous PTSD) for years after the disaster, especially those children who have been exposed to war and political violence in multiple traumatic events over an extended period of time. Finally, professionals working in disasters must actively inquire about symptoms of trauma and grief since the literature cites high levels of avoidance in children suffering from PTSD.

Treatment of PTSD in Children

The aforementioned studies have provided valuable information on the nature and prevalence of PTSD in children exposed to man-made disasters. Such rich data can be beneficial to the development of prevention strategies and treatment interventions. Although interventions with child victims of man-made disasters have not been researched extensively, the existing empirical and anecdotal data suggest that any intervention should be multifaceted. Moreover, the information from these studies is generalizable to children who are victims of individual trauma (e.g., witness to domestic violence, sexual abuse) that may also result in a diagnosis of PTSD or similar symptoms. Interventions should be implemented according to the developmental level of the child and may involve individual skills training to help the child manage anxiety, as well as a system-wide approach. An education component that helps normalize feelings and helps facilitate the expression of war-related worries through writing, talking, or playing appears essential for this specific population (Saylor, 1993). Studies have emphasized the importance of protecting children and adolescents, insofar as possible, from witnessing bloody injury and grotesque death, either directly or indirectly (e.g., television, photographs, other media), during and after war since these images tend to increase symptoms and severity levels of PTSD.

The disaster literature has also focused on the benefits of one of the most widely used procedures for helping persons who have been exposed to large scale disasters: critical incident stress debriefing (CISD). This procedure was developed and refined by Mitchell and Everly (1995). CISD's primary aims are to mitigate the impact of the disaster and to accelerate the recovery process and

has been applied in the treatment of children who are victims of disasters. CISD should be provided within 24 to 72 hours of the event for maximum benefit (Gordon et al., 1999). For children, CISD is most often conducted in small groups that are led by a school psychologist or trained clinician in a school or clinic setting. Certain therapy techniques, such as cognitive therapy combined with crisis intervention, have been found to be highly effective in treating families. Additionally, individual play therapy and expressive art techniques have a long history of usefulness in the treatment of children and are especially applicable for those who have been traumatized by disaster (Monahon, 1993; Pynoos & Nader, 1988; Terr, 1989).

Group techniques are particularly effective in working with latency-age through adolescent children who have experienced trauma from a disaster (Galante & Foa, 1986; Lystad, 1985; Terr, 1989; Weinberg, 1990; Yule & Williams, 1990). For example, the Listen to the Children (Allen et al., 1999) interview provides an opportunity for children to discuss their story in a group setting. The therapist/leader facilitates sharing and listening to the coping strategies of other children, thus expanding each child's knowledge of options for constructive action.

In addition, family treatment can be highly useful. Families who have experienced trauma together are likely to find family-oriented treatment helpful. Having only one child exposed to trauma will still affect the entire family, making family therapy an essential component of the healing process for them as well (Monahon, 1993).

Suggestions for Future Research

Future research needs to include more cross-sectional studies that would examine how PTSD and associated traumatic reactions are expressed by children at different ages and across developmental stages. Longitudinal studies are needed to provide data on the course of PTSD symptoms as well as issues of comorbidity.

More research is needed on the potentially mediating effects of factors such as social support, coping skills, and religious commitment on the symptoms of PTSD. This line of research, coupled with research regarding resiliency factors in children who have been exposed to disasters, could help develop preventative health programs as well as more effective treatment interventions.

More cross-cultural studies would enlighten mental health professionals as to how culture impacts PTSD symptomatology and manifestation. Future research on disasters and children should take into account the multidimensional nature of stress from disasters, as well as the fact that exposures vary with respect to frequency and severity.

Research protocols could also be improved by the consistent inclusion of multi-source information (e.g., from parents, teachers) and collection strategies. The consistent use of similar measurement strategies across studies would aid the communication and dissemination of findings to both researchers and clinicians. The comprehensive use of standardized instruments (e.g., CPTSD-RI) and in-depth clinical interviews of children, parents, and teachers would provide the most accurate and clinically useful information.

Finally, interventions for children who have been exposed to man-made disasters need to be expanded and rigorously evaluated to make them more developmentally and culturally appropriate. More effective outreach and PTSD prevention strategies as well as research on the efficacy of school and clinic-based treatments need to be explored through rigorous research.

The evidence is clear that children who have been exposed to man-made disasters can and do suffer from PTSD, even those as young as preschool age. The dynamics of this process and its subsequent treatment are multi-faceted and complex, encompassing developmental, familial, and cultural issues. This paper has sought to review the literature and enlighten the mental health community regarding several facets of these intricate relationships.

REFERENCES

- Abu Hein, F., Qouta, S., Thabet, A., & El Sarraj, E. (1993). Trauma and mental health of children in Gaza. British Medical Journal, *306*, 1130-1131.
- Allen, S. F., Dlugokinski, E. L., Cohen, L. A., & Walker, J. L. (1999). Assisting the impact of a traumatic community event on children and assisting with their healing. Psychiatric Annals, *29*, 93-98.
- Almqvist, K., & Brandell-Forsberg, M. (1997). Refugee children in Sweden: Post-traumatic stress disorder in Iranian preschool children exposed to organized violence. Child Abuse and Neglect, *21*, 351-366.
- American Psychiatric Association. (1987). Diagnostic and statistical manual of mental disorders (3rd ed., rev.). Washington, DC: Author.
- American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington, DC: Author.
- Applebaum, D. R., & Burns, G. L. (1991). Unexpected childhood death: Posttraumatic stress disorder in surviving siblings and parents. Journal of Clinical Child Psychology, *20*, 114-120.
- Beck, A. T. (1987). Beck Depression Inventory manual. San Antonio, TX: Psychological Corporation.
- Beck, A., Steer, R., & Garbin, M. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. Clinical Psychology Review, *8*, 77-100.
- Belter, R. W., Dunn, S. E., & Jeney, P. (1991, October). The psychological impact of Hurricane Hugo on children: A needs assessment. Paper presented at the Association for Advancement of Behavior Therapy meeting, San Francisco.
- Belter, R. W., & Shannon, M. P. (1993). Impact of natural disasters on children and families. In C. Saylor (Ed.), Children and disasters (pp. 85-102). Philadelphia, PA: Brunner/Mazel.
- Black Sash (1992). The Black Sash Natal Coastal Region Repression Monitoring Group, Final Report. Durban, South Africa: Author.
- Bloch, D. A., Silber, E., & Perry, S. E. (1956). Some factors in the emotional reactions of children to disaster. American Journal of Psychiatry, *133*, 416-422.

- Bolin, R. (1982). Long term family recovery from disaster. Boulder, CO: University of Colorado, Institute of Behavioral Science.
- Bowlby, J. (1973). Attachment and loss: Vol. 2. Separation: Anxiety and anger. New York: Basic Books.
- Bradburn, I. S. (1991). After the earth shook: Children's stress symptoms 6-8 months after a disaster. Advances in Behavior Research and Therapy, 13, 173-179.
- Bromet, E. J., Hough, L., & Connell, M. (1984). Mental health of children near the Three Mile Island reactor. Journal of Preventive Psychiatry, 2, 276-301.
- Bryce, J. W., & Armenian, H. (1986). In war time: The state of children in Lebanon. New York: Syracuse University Press.
- Carlson, E. B. (1997). Trauma assessments. New York: The Guilford Press.
- Danielsson, A. (1986). Att bygga sin värld, handbok i Erica-metoden (To create your world, handbook to the Erica-method). Stockholm, Sweden: Psykologiförlaget.
- Derogatis, L. R. (1983). SCL-90 scoring and procedures—Manual II (Rev. ed.) Towson, MD: Clinical Psychometric Research.
- Dyregrov, A., Kuterovac, G., & Barath, A. (1996). Factor analysis of the impact of event scale with children in war. Scandinavian Journal of Psychology, 37, 339-350.
- Elbedour, S., Bensef, R., & Maruyama, G. (1993). Children at risk: Psychological coping with war and conflict in the Middle East. International Journal of Mental Health, 22, 33-52.
- Frederick, C. J. (1985). Selected foci in the spectrum of posttraumatic stress disorders. In J. Laube & S. Murphy (Eds.), Perspectives on disaster recovery (pp. 110-130). Norwalk, CN: Appleton-Century-Crofts.
- Frederick, C., & Pynoos, R. S. (1988). Child Posttraumatic Stress Reaction Index. Los Angeles: University of California, Los Angeles Neuropsychiatric Institute and Hospital.
- Freud, A., & Burlingham, D. T. (1944). War and children. New York: International Universities Press.
- Galante, R., & Foa, D. (1986). An epidemiological study of psychic trauma and treatment effectiveness for children after a natural disaster. Journal of the American Academy of Child Psychiatry, 25, 357-363.

- Goldstein, R. D., & Wampler, N. S. (1997). War experiences and distress symptoms of Bosnian children. *Pediatrics*, *100*, 873-878.
- Gordon, N. S., Farberow, N. L., & Maida, C. A. (1999). *Children and disasters*. Philadelphia, PA: Brunner/Mazel.
- Hadi, F. A., & Llabre, M. M. (1998). The Gulf crisis experience of Kuwaiti children: Psychological and cognitive factors. *Journal of Traumatic Stress*, *11*, 45-56.
- Hoffman, M. A., Levy-Shiff, R., Sohlberg, S. C., & Zarizki, J. (1992). The impact of stress and coping: Developmental changes in the transition to adolescence. *Journal of Youth and Adolescence*, *27*, 39-45.
- Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of events scale: A measure of subjective stress. *Psychosomatic Medicine*, *41*, 209-218.
- Husain, S. A., Nair, J., Holcomb, W., Reid, J. C., Vargas, V., & Nair, S. S. (1998). Stress reactions of children and adolescents in war and siege conditions. *American Journal of Psychiatry*, *155*, 1718-1719.
- Kovacs, M. (1991). *The Children's Depression Inventory: A self-rated depression scale for school-aged youngsters*. New York: Multi-Health Systems.
- Laor, N., Wolmer, L., Mayes, L., Gershon, A., Weizman, R., & Cohen, D. (1997). Israeli pre-school children under scuds: A 30-month follow-up. *Journal of the American Academy of Child and Adolescent Psychiatry*, *36*, 349-356.
- Lindemann, E. (1944). Symptomatology and management of acute grief. *American Journal of Psychiatry*, *101*, 141-148.
- Llabre, M. M., & Hadi, F. (1997). Social support and psychological distress in Kuwaiti boys and girls exposed to the Gulf crisis. *Journal of Clinical Child Psychology*, *26*, 247-255.
- Lonigan, C. J., Shannon, M. P., Finch, A. J., Daugherty, T. K., & Taylor, C. M. (1991). Children's reactions to a natural disaster: Symptom severity and degree of exposure. *Advances in Behavior Research and Therapy*, *13*, 135-154.
- Lowenfeld, M. (1950). The nature and use of the Lowenfeld World Technique in work with children and adults. *Journal of Psychology*, *30*, 325-331.
- Lystad, M. (1985). Innovative mental health services for child disaster victims. *Children Today*, *12*, 13-17.

- Macksoud, M. (1992). Assessing war trauma in children: A case study of Lebanese children. Journal of Refugee Studies, 5, 1-15.
- Macksoud, M. S., & Aber, J. L. (1996). The war experiences and psychosocial development of children in Lebanon. Child Development, 67, 70-88.
- Magwaza, A. S., Killian, B. J., Petersen, I., & Pillay, Y. (1993). The effects of chronic violence on preschool children living in South African townships. Child Abuse and Neglect, 17, 795-803.
- Mitchell, J. T., & Everly, G. S., Jr. (1995). Critical incident stress debriefing: An operations manual for the prevention of traumatic stress among emergency services and disaster workers (2nd ed., pp. 101-114). Elliot City, MD: Chervon.
- Mollica, R. F., Caspi-Yavin, Y., Bollini, P., Truong, T., Tor, S., & Lavelle, J. (1992). The Harvard Trauma Questionnaire: Validating a cross-cultural instrument for measuring torture, trauma and PTSD in Indochinese refugees. Journal of Nervous and Mental Disease, 180, 111-116.
- Monahan, C. (1993). Children and trauma: A parent's guide to helping children heal. New York: Macmillan, Inc.
- Nader, K. O., & Fairbanks, L. A. (1994). The suppression of reexperiencing: Impulse control and somatic symptoms in children following traumatic exposure. Anxiety, Stress, and Coping, 7, 229-239.
- Nader, K. O., Pynoos, R. S., Fairbanks, L. A., Al-Ajeel, M., & Al-Asfour, A. (1993). A preliminary study of PTSD and grief among the children of Kuwait following the Gulf crisis. British Journal of Clinical Psychology, 32, 407-416.
- Najarian, L. M., Goenjian, A. K., Pelcovitz, D., Mandel, F., & Najarian, B. (1996). Relocation after a disaster: Posttraumatic stress disorder in Armenia after the earthquake. Journal of the American Academy of Child and Adolescent Psychiatry, 35, 374-383.
- Paardekooper, B., de Jong, J., & Hermanns, J. (1999). The psychological impact of war and the refugee situation on south Sudanese children in refugee camps in northern Uganda: An exploratory study. Journal of Child Psychology and Psychiatry and Allied Disciplines, 40, 529-536.
- Pfefferbaum, B., Nixon, S. J., Tucker, P. M., Tivis, R. D., Moore, V. L., Gurwitch, R. H., Pynoos, R. S., & Geis, H. K. (1999). Posttraumatic stress responses in bereaved children after the Oklahoma City bombing. Journal of the American Academy of Child and Adolescent Psychiatry, 38, 1372-1379.

- Pynoos, R. S., & Eth, S. (1985). Developmental perspective on psychic trauma in childhood. In C. R. Figley (Ed.), Trauma and its wake (Vol. 2, pp. 36-52). New York: Brunner/Mazel.
- Pynoos, R. S., Frederick, C. J., Nader, K., Arroyo, W., Steinberg, A., Eth, S., Nunez, F., & Fairbanks, L. (1987). Life threat and posttraumatic stress in school-age children. Archives of General Psychiatry, *44*, 1057-1063.
- Pynoos, R. S., & Nader, K. (1988). Psychological first aid and treatment approach to children exposed to community violence: Research implications. Journal of Traumatic Stress, *1*, 445-473.
- Richters, J. E., Martinez, P., & Valla, J. P. (1990). Levonn: A cartoon-based interview for assessing children's distress symptoms. Bethesda, MD: National Institute of Mental Health.
- Rutter, M., Tizard, J., & Whitmore, K. (Eds.). (1970). Education, health and behaviour. London: Longman.
- Sack, W., Seeley, M., & Clarke, G. (1997). Does PTSD transcend cultural barriers? A study from the Khmer adolescent refugee project. Journal of the American Academy of Child and Adolescent Psychiatry, *36*, 49-54.
- Saylor, C. F. (Ed.). (1993). Children and disasters. New York: Plenum Press.
- Schwarz, E. D., & Kowalski, J. M. (1991). Malignant memories: PTSD in children and adults after a school shooting. Journal of the American Academy of Child and Adolescent Psychiatry, *30*, 936-944.
- Schwarzwald, J., Weisenberg, M., Waysman, M., Solomon, Z., & Klingman, A. (1993). Stress reaction of school-age children to the bombardment by SCUD missiles. Journal of Abnormal Psychology, *102*, 404-410.
- Seginer, R., & Flum, H. (1987). Israeli adolescents self-image profile. Journal of Youth and Adolescence, *16*, 455-472.
- Stein, B., Comer, D., Gardner, W., & Kelleher, K. (1999). Prospective study of displaced children's symptoms in wartime Bosnia. Social Psychiatry and Psychiatric Epidemiology, *34*, 464-469.
- Straker, G. (1987). The continuous traumatic stress syndrome: The single therapeutic interview. Psychology in Society, *8*, 48-62.
- Terr, L. (1989). Treating psychic trauma in children: A preliminary discussion. Journal of Traumatic Stress, *2*, 2-20.

- Thabet, A., & Vostanis, P. (1999). Post-traumatic stress reactions in children of war. Journal of Child Psychology and Psychiatry and Allied Disciplines, 40, 385-391.
- Thabet, A., & Vostanis, P. (2000). Post-traumatic stress disorder reactions in children of war: A longitudinal study. Child Abuse and Neglect, 24, 291-298.
- Wallace, A. F. C. (1957). Mazeway disintegration: The individual's perception of socio-cultural disorganization. Human Organization, 16, 23-27.
- Wang, A., Pynoos, R. S., James, Q., Wang, M. (1994, July). Los Angeles earthquake, 1994: School district reduction of trauma effects. Paper presented at the Annual Meeting of the American Academy of Child and Adolescent Psychiatry, New York.
- Weinberg, R. B. (1990). Serving large numbers of adolescent victim-survivors: Group interventions following trauma at school. Professional Psychology: Research and Practice, 21, 271-278.
- Winje, D., & Ulvik, A. (1998). Long-term outcome of trauma in children: The psychological consequences of a bus accident. Journal of Child Psychology and Psychiatry, 39, 635-642.
- Yule, W. (1993). Technology-related disasters. In C. Saylor (Ed.), Children and disasters (pp. 105-119). Philadelphia, PA: Brunner/Mazel.
- Yule, W., & Williams, R. M. (1990). Posttraumatic stress reactions in children. Journal of Traumatic Stress, 3, 279-295.

VITA

NAME:

Mary M. Manix

EDUCATION:

Rosemead School of Psychology Clinical Psychology	Psy.D. (Cand.)
Rosemead School of Psychology Clinical Psychology	M.A. 1997
Wellesley College Psychology	B.A. 1992

INTERNSHIP:

Child and Family Guidance Center Northridge, CA	2000 - 2001
--	-------------

PRACTICA:

Harbor-UCLA Medical Center Outpatient Program	1999 - 2000
Jerry L. Pettis Memorial Veterans Medical Center Inpatient Program	1998 - 1999
For The Child Outpatient Program	1997 - 1998
Hacienda-La Puente Unified School District School Practicum	1996 - 1997

EMPLOYMENT:

Hacienda-La Puente Unified School District Drug, Alcohol, and Tobacco Education Interventionist	1997 - 1998
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Signature: <i>M. M. Manix, M.A.</i>	Printed Name/Position/Title: <i>Psychology Intern</i>	
Organization/Address: <i>Biola University, La Mirada, CA</i>	Telephone: <i>310-817-7731</i>	FAX:
	E-Mail Address: <i>Mary.Manix@biola.edu</i>	Date: <i>8/30/01</i>



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