



PII S0145-2134(99)00127-1

## SPOTLIGHT ON PRACTICE

# POST TRAUMATIC STRESS DISORDER REACTIONS IN CHILDREN OF WAR: A LONGITUDINAL STUDY

ABDEL AZIZ THABET

Child and Adolescent Psychiatry, School of Public Health, Al-Quds University, Gaza Strip, Palestine

PANOS VOSTANIS

Child and Adolescent Psychiatry, University of Leicester, Leicester, UK

## ABSTRACT

**Objective:** To establish rates of posttraumatic stress disorder (PTSD) reactions and general mental health problems in children who had experienced war trauma.

**Method:** A longitudinal study in the Gaza strip with 234 children aged 7 to 12 years, who had experienced war conflict, at 1 year after the initial assessment, that is, during the peace process. Children completed the Child Post Traumatic Stress Reaction Index (CPTS-RI), while the Rutter A2 and B2 Scales were completed by parents and teachers.

**Results:** The rate of children who reported moderate to severe PTSD reactions at follow-up had decreased from 40.6% ( $N = 102$ ) to 10.0% ( $N = 74$ ). 49 children (20.9%) were rated above the cut-off for mental health problems on the Rutter A2 (parent) Scales, and 74 children (31.8%) were above the cut-off on the Rutter B2 (teacher) Scales. The total scores on all three measures had significantly decreased during the 1-year period. The total CPTS-RI score at follow-up was best predicted by the number of traumatic experiences recalled at the first assessment.

**Conclusions:** PTSD reactions tend to decrease in the absence of further stressors, although a substantial proportion of children still present with a range of emotional and behavioral problems. Cumulative previous experience of war trauma constitutes a risk factor for continuing PTSD symptoms. © 2000 Elsevier Science Ltd

*Key Words*—PTSD, Children, War, Child mental health, Longitudinal.

## INTRODUCTION

THE HIGH PREVALENCE of posttraumatic stress disorders (PTSD) in children traumatized by exposure to community violence or war trauma is well established. Previous research has investigated the course and prognosis of PTSD and other mental health disorders, particularly in young populations who experienced natural disasters. Most studies have found a gradual improvement of posttraumatic symptoms, but with a high risk of relapse (American Association of Child and

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Submitted for publication February 5, 1999; final revision received April 30, 1999; accepted May 3, 1999.

Requests for reprints should be sent to Professor P. Vostanis, University of Leicester, Greenwood Institute of Child Health, Westcotes House, Westcotes Drive, Leicester LE3 0QU, UK.

Adolescent Psychiatry Official Action, 1998). Children's prognosis has often been mediated by the degree of exposure to trauma and its impact on parents (e.g., Swenson et al., 1996; Winje & Ulvik, 1998). Longitudinal studies have followed-up children who had been exposed to violence, usually within the school environment. A gradual decrease of PTSD symptoms following a sniper attack was demonstrated by Nader, Pynoos, Fairbanks, and Frederick (1990) at 1–6- and 14-month assessments.

More recent research has addressed the short-term impact of war on children, often within refugee populations. In a series of studies of Cambodian refugees, Savin, Sack, Clarke, Meas, and Richart (1996) found PTSD to persist over time, although the intensity of symptoms dropped. There was marked decrease in depression. Full PTSD was associated with experience of earlier war trauma, while development of depression was more related to recent stressors.

Macksoud and Aber (1996) found PTSD rates of 43% in Lebanese children up to 10 years after exposure to war trauma. Among displaced Kurdish children in Iraq following the Gulf war, all had PTSD symptoms and 20% had PTSD, with significant improvement when they returned to their home regions (Ahmad, 1992). Israeli pre-school children, who had also been displaced during the Gulf war and exposed to scud missile attacks, had high stress symptoms in the first 6 months (Laor et al., 1997). Children's stress levels subsequently decreased, but persisted in their mothers. Servan-Schreiber, Le Lin, and Birmaher (1998) reported a 30% rate of PTSD reactions in Tibetan refugee children in India. These findings are obviously based on different ethnic groups, as well as different types of traumatic experiences.

The aim of this study was to investigate the outcome of PTSD reactions in Palestinian children who had experienced longstanding military conflict throughout their childhood. The children of this study had been brought up during the military conflict in the area between 1987 and 1993, that is, until the peace process was initiated by the Middle East Oslo agreement. They were selected and assessed for the first time 6 months after the start of the peace process. The hypothesis was that continuing PTSD reactions would be best predicted by the degree of initial trauma.

## METHOD

### *Sample*

The Gaza strip in the Middle East has a general population of 860,000 in an area of 360 km<sup>2</sup>. There are several socio-economic adversity factors (Thabet & Vostanis, 1998) which have been repeatedly associated with child psychopathology, such as overcrowding (population density of 2,150 people per km<sup>2</sup>), 62.6% of the population living in refugee camps, a proportionately large young population (51% of the general population are under the age of 15 years, with an annual growth of 6%), and high rate of unemployment (up to 70%).

The selection of the sample has been reported in the assessment phase study (Thabet & Vostanis, 1999). This was completed 6 months after the end of longstanding military conflict in the region. In summary, 981 children of 6 to 11 years were initially randomly selected from the 97 elementary schools in the Gaza strip, and were screened by teachers for behavioral and emotional problems using the Rutter B2 Scales (Rutter, Tizard, & Whitmore, 1970). The number of children screened was 959 (97%). The "caseness" rate (i.e., possible presence of any mental health disorder) was calculated using the previously established cut-off score of 9 (Rutter et al., 1970). There were 422 children (44%) who scored positive and 537 (56%) who scored negative. In the next stage, 25% of children were randomly selected for collection of self-reported and parent-rated data, while maintaining the ratio between positive:negative cases = 44%:56%. The sample of the assessment study therefore consisted of 239 children (105 positive and 134 negative cases).

This paper reports on the 1-year follow-up of this cohort, that is, during the peace process and

about 18 months after the end of military activities. Five families refused to participate, leaving a follow-up sample of 234 children (97.9% of assessment sample). The high participation rate can be partly explained by the stability of the community, as families cannot move outside the Gaza strip. No children received mental health interventions between the two assessments. The sample is representative of the general population, as it was selected from all five geographical districts of the region. Children's mean age at follow-up was 9.9 years (range 7 to 12). There were 126 boys (53.9%) and 108 girls (46.1%). All children were Palestinian and attended school. They lived in all five districts of the Gaza strip; the North area (42, or 17.9%), Gaza city (102, or 43.6%), Middle area (28, or 12.0%), Khan Younis area (39, or 16.7%), and Rafah/South area (23, or 9.8%). The majority attended government elementary schools (119, or 50.9%), 103 children (44.0%) attended United Nations schools at refugee camps, and 12 children (5.1%) attended private schools.

### *Measures*

*Rutter Scales A2 for completion by parents* (Rutter et al., 1970). This widely used and standardized measure of behavioral and emotional problems has been found to correlate well with clinical interviews and to distinguish clinical from non-clinical subjects, with a high degree of sensitivity and specificity for children of 6 to 13 years. The scale consists of 31 items measuring behavioral and emotional problems on a 0 to 2 scale. Children with a total score of 13 or more have been found to be potential "cases," that is, presenting with a possible mental health disorder.

*The Rutter Scales B2 for completion by teachers* (Rutter et al., 1970). The equivalent 26-item forms for teachers. Children with a total score of 9 or more have been found to be potential cases. The Rutter Scales A2 and B2 were translated into Arabic, following meetings with teachers and piloting of the translated version.

*Gaza Traumatic Event Checklist* (Abu Hein, Qouta, Thabet, & El Sarraj, 1993). The initial checklist was developed by the research department of the Gaza Community Mental Health Program and consisted of 17 items covering different types of traumatic events that a child may have been exposed to in the previous year (tear gas, beating, witnessing beating, breaking limbs, imprisonment, siblings' imprisonment, injury, night raids, detention). Their content is specific to the military conflict in the area rather than general war events. For example, children experienced raids and different forms of violence rather than being in shelters or their homes being bombed. The checklist can be completed by children of 6 to 16 years ("yes" or "no" statements). A revised version of the checklist was used in this study, with 21 items. These included different sensory types of exposure to traumatic experiences, such as auditory, visual, or olfactory experiences.

*Child Post Traumatic Stress Reaction Index (CPTSD-RI: Pynoos, Frederick, & Nader, 1987)*. A 20-item self-report scale designed to assess posttraumatic stress reactions of children of 6 to 16 years following exposure to a broad range of traumatic events. The scale has been found valid in detecting PTSD according to psychiatric diagnostic classification (American Psychiatric Association, 1994). Items are rated on a 0 to 4 scale. Scores were classified as "mild PTSD reaction" (total score of 12 to 24), "moderate" (25 to 39), "severe" (40 to 59), and "very severe" (above 60). The CPTS-RI was also translated into Arabic, following piloting.

## RESULTS

There was a trend of improvement according to parent ratings of "caseness" (Rutter A2 Scales) from 26.9% ( $N = 63$ ) at the initial assessment to 20.9% ( $N = 49$ ) at follow-up, although this did

**Table 1. Mental Health Problems at Initial Assessment and 1-Year Follow-up (*N* = 234)**

	First Assessment	1-Year Follow-up	Difference (McNemar Test)
Moderate to Severe PTSD Reactions (CPTS-RI)	95 (40.6%)	24 (10.0%)	$\chi^2 = 55.05$ $P = 0.0000$
Caseness on Parent Ratings (Rutter A2 Scales)	63 (26.9%)	49 (20.9%)	$\chi^2 = 2.91$ $P = 0.087$
Caseness on Teacher Ratings (Rutter B2 Scales)	102 (43.6%)	74 (31.8%)	$\chi^2 = 9.85$ $P = 0.0017$

not reach a statistically significant level (McNemar non parametric test for paired observations:  $\chi^2 = 2.91$ ,  $p = .08$ —Table 1). In contrast, children above the cut-off score on the Teacher Rutter B2 Scales significantly decreased from 43.6% ( $N = 102$ ) to 31.8% ( $N = 74$ )—McNemar test:  $\chi^2 = 9.85$ ,  $p = .0017$ . The proportion of children with moderate to severe PTSD reactions also significantly decreased from 40.6% ( $N = 95$ ) to 10.0% ( $N = 24$ ):  $\chi^2 = 55.05$ ,  $p = .0000$ .

At both assessments, there was discrepancy on detection of mental health problems between parents and teachers (McNemar test was also used): rates of caseness at the first assessment were 26.9% for parents and 43.6% for teachers— $\chi^2 = 15.87$ ,  $p = .0001$ ; rates of caseness at follow-up were 20.9% for parents and 31.8% for teachers— $\chi^2 = 8.68$ ,  $p = .0032$ . Out of the initial 134 non-cases on the teacher Rutter B2 Scale, 45 (33.6 %) reported moderate to severe PTSD reactions at the initial assessment and 8 (6.0 %) at follow-up.

Total scores on the three symptomatic instruments had significantly decreased at follow-up (Wilcoxon signed ranks test—Table 1): The total CPTS-RI mean scores were 19.9 at the first assessment and 9.3 at follow-up,  $z = -8.78$ ,  $p = .000$ ; the total parent Rutter scales mean scores were 8.3 and 7.3, respectively,  $z = -3.33$ ,  $p = .001$ ; the total teacher Rutter scales mean scores were 10.5 and 8.4, respectively,  $z = -3.80$ ,  $p = .000$ . During the preceding 12 months, children had experienced significantly fewer traumatic events: for total scores on the Gaza Traumatic Events Checklist,  $z = -4.62$ ,  $p = .000$ .

Stepwise logistic regression analyses were completed to establish which variables at the time of the first assessment (demographic variables, experience of traumas, ratings of mental health symptoms) were associated with continuation of symptoms after 1 year. The presence of moderate to severe PTSD reactions at follow-up was best predicted by caseness on the teacher Rutter scales at the initial assessment ( $B = 1.1$ ,  $p = .04$ ). In a linear regression analysis, with the total CPTS-RI score at follow-up as the dependent variable, this was best predicted by the total number of traumas experienced by the child at the initial assessment ( $B = .49$ ,  $p = .05$ ).

Ratings on each PTSD item had significantly decreased at follow-up (Wilcoxon matched-pairs signed-ranks test), with all differences at  $p < .001$ . The frequencies of all CPTS-RI items at the initial assessment and at 1-year follow-up are presented in Table 2. The ranking order of frequencies did not, however, change, with the items of identifying events as traumatic (24.8%), concentration impairment (28.8%), anhedonia (15.4%), social avoidance (14.9%), and regular fear (12.9%) most frequently reported.

Three case vignettes are summarized in the Appendix.

## DISCUSSION

This longitudinal study found a decrease in rates and severity of PTSD reactions in a sample of children who had experienced earlier war trauma. Continuing PTSD symptoms were predicted by the amount of traumatic experiences, which confirmed the main hypothesis of the study. At the time of follow-up, there was peace in the region, although socioeconomic adversities remained,

**Table 2. PTSD Symptoms (CPTS-RI Items) at Initial Assessment and 1-Year Follow-up**

CPTS-RI Item % (Frequent—Most of the Time)	First Assessment	1-Year Follow-up
Identified as Traumatic (A1)	43.1	24.8
Regular Fear (A2)	37.0	12.9
Repetitive Images (B1)	16.8	3.4
Repetitive Thoughts (B1)	13.8	5.2
Nightmares (B2)	13.1	8.6
Fear of Recurrence (B3)	10.5	4.7
Anhedonia (C4)	37.2	15.4
Emotional Detachment (C5)	8.8	3.5
Emotional Avoidance (C1)	10.0	3.0
Emotional Numbing (C6)	5.0	2.5
Easily Startled (D5)	5.0	6.0
Sleep (D1) Disturbance	3.0	1.8
Memory Difficulties (D3)	5.0	1.4
Concentration Difficulties (D3)	42.7	18.8
Social Avoidance (C2)	27.6	14.9
Upset by Reminders (B4)	18.8	7.3
Somatic Complaints (B5)	9.6	1.3
Behaviour Outburst (D2)	2.9	2.1
Guilt	6.7	2.5
Sense of Foreshadowing	4.6	2.1

A–D: Items included in DSM-IV criteria (American Psychiatric Association: 309.81 Posttraumatic Stress Disorder).

particularly for children living in refugee camps. One characteristic of this population was its geographical stability, that is, absence of immigration, which possibly explains the high participation rate at follow-up. Despite the reduction in PTSD reactions, a substantial proportion of children still reported symptoms such as the identification of traumatic events, anhedonia, impairment of concentration, regular fear, social avoidance, and nightmares.

An even higher proportion of the sample still presented with clinically significant general mental health problems (in 20.9% of children as rated by parents and almost a third of children as rated by teachers). The relationship between PTSD reactions and other psychiatric disorders was not examined. Previous studies have found that psychiatric disorders such as depression can be either secondary reactions or more related to recent psychosocial stressors (Savin et al., 1996). The authors have found a similar association between socioeconomic adversities and anxiety disorders in another sample of children living in this area (Thabet & Vostanis, 1998).

Any longitudinal data arising from one assessment should of course be interpreted with caution. The overall evidence from the PTSD literature is that symptoms peak during the first year after the trauma (in the case of acute 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). In the sample of children of this study, who had been exposed to longstanding conflict, a “peak” period is obviously more difficult to define or identify.

The prediction of continuing PTSD reactions by the level of earlier exposure to war or other types of trauma is consistent with previous findings (Nader et al., 1990; Qouta, Punamaki, & El Sarraj, 1995; Savin et al., 1996). Although the development of psychopathology is usually related to multifactorial aetiology, direct recollection of violence is at least partly implicated in the findings. Post-war social stresses may have contributed in the maintenance of mental health problems.

Limitations of the study were the lack of more detailed diagnostic interviews with the children or the investigation of potential mediating factors, particularly related to the impact of trauma on parents. Carers’ ability to cope with the traumatic event has been associated with outcome of PTSD in children (Ahmad & Mohamad, 1996; Laor et al., 1997; Swenson et al., 1996).

The predictive value of teacher ratings at the initial assessment over continuing PTSD reactions, despite their discrepancy with parent ratings, was an interesting but unexpected finding. At both assessments, teachers reported significantly higher rates of mental health problems than parents. Lack of agreement between different informants is consistent with previous findings (e.g., Kolko & Kazdin, 1993). Possible reasons could be a more frequent expression of problems within the school setting, or under-reporting of problems by parents because of the cultural perception and stigma of mental illness within that society.

Although teachers rated types of general mental health concern, such as broad behavioral and emotional difficulties, there was an association with presence of moderate to severe PTSD reactions at follow-up. This may reflect the complexity and psychiatric comorbidity in these more severe cases.

In any case, this has important implications for the detection of traumatized and at risk children, and joint work with child mental health services. Particularly in relatively confined communities, school could provide the base for inter-agency partnership. A local forum of teachers, social workers, and health professionals could develop screening procedures. These should be based on both symptomatic presentation of PTSD and other mental health problems, and existence of known vulnerability factors (e.g., death or other loss in the family, family conflict, peer relationship difficulties). The role of parents and the extended family is also essential in the identification and management of children with PTSD. Their involvement in the screening process (preferably jointly with teachers) should take into account their cultural beliefs about mental health issues. For example, some form of individual contact, reassurance and education on the impact of trauma on children would be preferable to mere questionnaire screening. Future research in children traumatized by war should aim at a better understanding of children's and carers' beliefs about the traumatic events, and their coping strategies.

### *Implications for Intervention*

Findings from longitudinal observational studies on children exposed to war or community violence are important for the understanding of the development and outcome of child psychopathology, and thus the planning and establishment of intervention programs. Despite some evidence of "natural remission" of posttraumatic stress reactions in the absence of further adverse life events, a substantial proportion of children continue to suffer from symptoms directly related to their early experiences. Such symptoms are identifying events as traumatic, recurrent fear, lack of pleasure, poor concentration, and avoidance of certain social situations. An even larger proportion of children continue to present with general mental health problems within the home or school environment.

For these reasons, early identification of high risk children is essential in implementing treatment and preventing secondary psychosocial impairments. School could provide the basis for screening, detection, and intervention in populations who have experienced war trauma, in partnership with parents and extended family networks. Training programs for teachers, particularly in United Nations Schools, such as providing education for refugee children, could improve the recognition and management of child mental health problems. Although the discussion of specific interventions for traumatized children was beyond the remit of this study, an intervention trial is currently being planned in the Gaza strip.

*Acknowledgements*—The authors are grateful to all families and teachers who participated in this project. We wish to thank Professor R. Pynoos and Professor M. Rutter for their permission and support in using the CPTSD-RI and the Rutter Scales, respectively, as well as Dr. Saeed Haque for advice on the statistical analysis.

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## APPENDIX

*Case Vignette 1*

Eyhab, a 10-year-old boy, lived in the Jabalia camp, north of Gaza city. He came from a refugee family and was the eldest of five children. His father was unemployed. Eyhab had no previous history of mental or physical illness, and his development was within normal milestones. Eyhab had heard of the killing of a friend and the arrest of a friend and uncle. When his uncle was released from prison, he witnessed post-torture skin marks on his back. Eyhab presented with mild post-traumatic stress reactions and parent-reported mental health problems, but was functioning well at school. His problems (parent-rated and mild PTSD) persisted at follow-up, and Eyhab still had vivid recollection of several traumatic events.

*Case Vignette 2*

Omar, a 7-year-old boy, also lived in the Jabalia refugee camp with his parents and seven siblings. His mother had been exposed to tear gas during the last month of her pregnancy. Omar was born prematurely. According to his mother, “he was traumatized when he was a foetus. One day, during a confrontation with the army, they threw a gas bomb inside our home. I inhaled gas and suffocated. They took me to hospital, where I was induced.”

Omar's father was unemployed, suffered from depression, and is still being treated with antidepressants. Omar's language development was delayed (he started to talk at 2 1/2 years). He witnessed night raids and the beating of a friend. Both his parents and teacher rated significant levels of mental health problems on the Rutter scales, and Omar reported mild post-traumatic stress reactions. The parent-rated mental health problems and most of the PTSD symptoms had subsided at follow-up, although Omar continued to experience difficulties at school.

### *Case Vignette 3*

Najla, a 12-year-old girl, lived in the Khan Younis refugee camp, south of Gaza city. She had seven brothers and one sister. Najla witnessed a range of traumatic events, such as the beating and killing of a friend, the shooting of a close relative, her father's arrest and imprisonment for 2 years, the arrest of another friend, tear gas inhalation, closure and demolition of a friend's home. Her mother recalled that the army set one of their rooms on fire, and she attacked one of the soldiers with a gasoline cooker. Her father recalled the army entering their home and beating the family up. The father threatened to set everybody on fire with a gas bomb. The army left but returned later that night, beat him up, and arrested him.

Najla's development was normal. She had recurrent abdominal pains, was underachieving at school, and presented with behavioral problems in the same setting (but not at home). Najla reported moderate post-traumatic stress reactions, which had decreased (but were still present) at follow-up. She continued to experience difficulties at school after 1 year and still recollected several war traumas.