

Twelve-Year Follow-up Study of Khmer Youths Who Suffered Massive War Trauma as Children

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ABSTRACT

Objective: Twenty-seven of 40 Khmer adolescent youths who had survived the horrors of the Pol Pot regime (1975–1979) as children and 4 of 6 who had escaped this war were reinterviewed for the fourth time, during the summer of 1996, to determine their diagnostic status for posttraumatic stress disorder (PTSD) and/or depression and their functional status with regard to occupational and/or educational pursuits. They had been interviewed initially in 1983–1984 and again 3 (1987) and 6 (1990–1991) years later. **Method:** PTSD was determined using the Diagnostic Interview for Children and Adolescents, and depression was assessed using the Schedule for Affective Disorders and Schizophrenia for School-Age Children. **Results:** The point prevalence rates of PTSD were comparable with those found 6 years earlier, and rates of depression were much lower but had increased somewhat over the ensuing 6 years. The onset of PTSD was quite variable, with 18% of subjects (7/40) developing PTSD at least 5 years after cessation of the Pol Pot hostilities. Subjects with PTSD were more likely to recall specifically traumatic war memories, whereas those without PTSD were more likely to recall memories of loss and/or displacement. Most subjects were functioning well, regardless of diagnostic status. **Conclusions:** Although its onset is quite variable, PTSD persists in war-traumatized Cambodian refugee youths. PTSD and depression appear to follow different pathways over time. PTSD need not be associated with major functional impairment. *J. Am. Acad. Child Adolesc. Psychiatry*, 1999, 38(9):1173–1179. **Key Words:** trauma, refugees, posttraumatic stress disorder.

The long-term effects of severe war trauma suffered during childhood have yet to be completely defined but have important theoretical implications for developmental psychopathologists as well as clinical implications for caregivers. Longitudinal studies of war-traumatized children followed through crucial developmental nodal points are in short supply. This report attempts to provide information addressing this issue in a group of Khmer refugees followed over a 12-year period.

In 1983–1984, our research group interviewed 40 Khmer adolescents at a Portland high school who had endured the horrors of the Pol Pot era in Cambodia as children (ages 8 to 12 years) from 1975–1979. Six stu-

dents who had escaped before the Pol Pot takeover were also interviewed. There was an available pool of 52 Khmer students in this school at the time. Six refused to be interviewed because their parents would not consent. These students had arrived in the United States approximately 2 to 3 years earlier (i.e., 4–5 years posttrauma) (Kinzie et al., 1986). This group was reinterviewed at 3 years (Kinzie et al., 1989), at 6 years (Sack et al., 1993), and now again at 12 years. Thus, *DSM-III-R* diagnoses have been generated at 4 different points in time. The purpose of this report is to present point prevalence rates of posttraumatic stress disorder (PTSD) and depression, the 2 most common diagnoses found previously. We also wished to determine measures of current functional status and to relate present diagnostic status with current memories of the war experience, now almost 20 years old.

The horrors of the Pol Pot regime in Cambodia from 1975 to 1979 have now been well documented (Becker, 1986; Hawk, 1982). These youths as children were subject to trauma that seemed both cumulative and relentless. Almost all lost one or more members of their family. Many witnessed atrocities, and some even had to endure

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seeing their own family members executed. Most were separated from family and forced to work in labor camps, often with little food. In addition to trauma and loss of loved ones, most suffered from malnutrition. Some were taught to spy on their elders in return for favors of food. Overall, at least a quarter of the population of Cambodia succumbed to this political nightmare.

METHOD

Subjects

The 46 subjects were initially interviewed as students at a Portland Public high school in 1983–1984 (Kinzie et al., 1986). Forty had survived the Pol Pot horrors and 6 had escaped just before the takeover. Twenty-seven (68%) of the 40 survivors and 4 of the 6 nontraumatized subjects were interviewed for the fourth time in 1996. Five subjects refused. Ten could not be located. Tracking down subjects required a great deal of diligence. Two of the authors (C.H. and D.D.) attended Khmer social functions to reestablish contact with the subjects, their friends, or relatives. The tragic murder in February 1996 of Dr. Haing Ngor, who won an Academy Award for his acting role in the movie *The Killing Fields*, seemed to play an important role in keeping several subjects from agreeing to participate again. Their old fears of reprisal for talking were again revived. Seventeen were interviewed in their homes, and 14 were interviewed by telephone. All subjects signed a written consent and were reimbursed \$25 for the interview.

Instruments

The same *DSM-III-R* version of the PTSD section of the Diagnostic Interview for Children and Adolescents (DICA) was used as in the previous 6-year follow-up (Sack et al., 1993; Welner et al., 1987). Probes were made at each wave to ensure that no new trauma had occurred after arrival in the United States. The section on depressive disorders in the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS) (Puig-Antich, 1983; Puig-Antich et al., 1980) was again administered as before along with questions of family, income, occupation, and educational pursuits to determine functional status. (The *DSM-III-R* criteria for PTSD do not include a functional impairment criterion, so this was assessed separately.) Finally, several questions about the subjects' worst memories of the war were elicited at various points in the interview. For the first 2 waves of data collection, depression was determined by using the SADS (Spitzer and Endicott, 1979). (The reason for using an "adult"

instrument during the first 2 waves [1983–1984, 1986–1987] was that the authors were not familiar with the K-SADS instrument at that earlier time.) Several additional questions about alcohol use and abuse were added to the interview protocol to assess this dimension. Alcohol abuse was diagnosed according to *DSM-III-R* criteria.

To make comparisons across time on the same sample, we used instruments designed primarily for children and adolescents. Since the diagnostic categories of depression and PTSD vary little between children and adults in the *DSM-III-R*, we felt it was permissible to extend these instruments into the adult years on this sample.

Not only was the diagnosis of PTSD made using the *DSM-III-R* criteria, but also the total number of DICA-generated PTSD symptoms was counted and divided by the total of 18 to give a percentage of total PTSD symptoms endorsed for the 3-, 6-, and 12-year follow-up waves as shown in Table 1. A separate category of PTSD-NOS (not otherwise specified) was created to identify subjects who had 5 or more PTSD symptoms but did not meet full diagnostic criteria.

Interviewers

C.H. and D.D. conducted all of the interviews. They had been trained in the use of the K-SADS (to a κ of 0.9) and other instruments during the prior epidemiological study of a probability sample of 209 Khmer adolescents in 2 western communities in 1990–1991 (Sack et al., 1994).

Comparability of Interviews

Subjects first interviewed in 1983–1984 were assessed with the *DSM-III* versions of PTSD and depressive disorders. At the 3-year follow-up, the research team rescored the earlier *DSM-III* data using *DSM-III-R* criteria. These PTSD criteria were then subsequently adopted in the last 2 interview waves. The psychometric properties of these instruments in this population have been reported previously (Sack et al., 1993).

RESULTS

Table 2 shows the demographic features of these subjects across the 4 interview waves. Note that gender ratios varied with interview waves because different subjects participated at different times (Table 3). A majority of the subjects were working and/or pursuing educational goals. Only 2 of the 31 subjects were receiving welfare; almost two thirds had married. Family adjust-

TABLE 1
DSM-III-R Diagnoses of PTSD, Depression, and Alcohol Abuse and Percentage Who Endorsed PTSD Symptoms

	1983–84 Time 0 (<i>N</i> = 46)	1987 3 Years (<i>N</i> = 30)	1990 6 Years (<i>N</i> = 31)	1996 12 Years (<i>N</i> = 31)
PTSD diagnosis (%)	50	48	38	35
Endorsed PTSD symptoms (%)	—	47	40	34
Depression diagnosis (%)	48	41	7	14
Alcohol abuse (no.)	0	1	0	2

Note: PTSD = posttraumatic stress disorder.

TABLE 2
Demographics of Khmer Adolescents

	1983–84 Time 0 (<i>N</i> = 46)	1987 3 Years (<i>N</i> = 30)	1990 6 Years (<i>N</i> = 31)	1996 12 Years (<i>N</i> = 31)
Average age (yr)	17	20	23	29
Female/male	19/27	10/20	9/22	14/17
Married	—	3/30	10/31	19/31
Divorced	—	—	—	4/19
Working	—	—	—	26/31 ^a
On welfare	—	6/30	4/29	2/31
Pursue education	—	—	—	16/31
At sometime over past 6 years wanted to return to live in Cambodia	—	—	—	11/31
Want to remain in the U.S., but will visit Cambodia in the future	—	—	—	19/31

^a Some subjects have to stay home temporarily to take care of their young children while others are in search of work.

ment issues were not explored in this study, but of note is that 4 subjects had already experienced divorce.

Table 1 shows the point prevalence of the PTSD diagnoses over the 12-year time span. The point prevalence of major depressive disorders and alcohol abuse is also shown. (No cases of dysthymia were found, and 1 case of adjustment reaction with depressive features was diagnosed at the 12-year follow-up.) No probes for other anxiety disorders were made, since PTSD and depression had been, by far, the 2 most common diagnoses in earlier studies.

Of note is the persistence of the PTSD diagnosis between 6 and 12 years (38% and 35%, respectively). On the other hand, there was a steady drop in the frequency of endorsed PTSD symptoms over a 9-year period (47% to 34%). Rates of depression dropped precipitously from 3 to 6 years, but increased somewhat from 6 to 12 years (7% to 14%).

It is also noteworthy that none of the 6 students who were unexposed to the Pol Pot regime received a diagnosis at any of the 4 data waves. These students served as a small comparison sample to the 40 in the trauma-exposed group.

Table 3 provides the raw data for Table 1 and details each of the 46 subjects' diagnoses at the 4 waves of data collection. This includes the 6 subjects who escaped the Pol Pot regime, as well as the 40 Pol Pot survivors. The most striking feature of the PTSD diagnosis is its undulating variability among these youths over time. Some show PTSD early, with its later disappearance (subjects 8, 9, 15, 18, 20, 33, 42). In others, it appears in a delayed fashion: 7 (18%) of the 40 Pol Pot–exposed subjects demonstrated PTSD at some time *later* than the initial wave in

1983–1984 (thus at least 5–8 years after the end of hostilities) (subjects 2, 17, 19, 28, 39, 40, 44). One subject (subject 2) received this diagnosis for the first time at the 12-year follow-up. Indeed, 2 subjects (subjects 37 and 38) now newly qualified for a PTSD-NOS diagnosis also at the 12-year follow-up. On the other hand, 12 of 17 subjects with PTSD at time 1 continued to show evidence of it at either the 6- or the 12-year follow-up. (Three subjects with initial PTSD were not seen at either subsequent time.) Overall, 27 of the 40 Pol Pot–exposed youths (67%) endorsed PTSD at some time over the course of 12 years. Such findings illustrate the chronicity of this condition.

The diagnosis of depression followed a different course, rising somewhat from 6 to 12 years. Only subjects 21 and 40 endorsed symptoms of depression at 6 years. At 12 years there were 5 cases of depression (subjects 1, 6, 17, 21, 38). Two of these cases were associated with alcohol abuse (subjects 1 and 21), and one case was diagnosed as an adjustment reaction with depression (subject 38). No cases of dysthymia were found. A great majority of subjects drank no alcohol at all.

In a retrospective examination of the interview protocols, it was noted that 14 of 17 subjects with either PTSD or PTSD-NOS had a conscious memory (now almost 20 years old) that contained a specific traumatic element. Examples are: "I keep remembering the execution of two lovers." "I was tied to a tree in the morning and was told I would have my head chopped off that evening." "People were trying to shoot me." "I saw a cadre kill a baby by throwing it in the air and catching it with his bayonet."

In contrast, 12 of the 14 Pol Pot survivors who were free of PTSD had childhood memories of the war that

TABLE 3
DSM-III-R Diagnosis of PTSD/Depression Over 12 Years by Individual Subject

Subject No.	Sex	PTSD				Depression			
		1983-84	1987-88	1990-91	1996-97	1983-84	1987-88	1990-91	1996-97
1	M	+	0	0	+	+	0	0	+ ^a
2	F	0	-	-	+	+	-	-	0
3	F	+	+	-	-	+	0	-	-
4	F	+	+	-	+	+	+	-	0
5	M	0	0	0	0	0	0	0	0
6	M	+	-	-	+	+	-	-	+
7	M	0	0	-	-	0	0	-	-
8	F	+	-	-	0	+	-	-	0
9	F	+	+	+	0	+	+	0	0
10	M	0	0	0	0	0	0	0	0
11 ^b	M	0	0	0	0	0	0	0	0
12 ^b	M	0	0	0	0	0	0	0	0
13	M	0	-	0	0	0	-	0	0
14 ^b	F	0	0	0	-	0	0	0	-
15	M	+	+	0	0	+	+	0	0
16	F	0	-	0	0	0	-	0	0
17	M	0	-	+	+	0	-	0	+
18	F	+	+	+	0	+	+	0	0
19	M	0	0	+	0	0	0	0	0
20	M	+	0	+	0	+	0	0	0
21	M	+	+	+	+ ^a	+	+	+	+ ^a
22	M	+	+	+	-	0	+	0	-
23	M	0	0	-	-	0	0	-	-
24	M	0	0	-	-	0	0	-	-
25	F	0	-	-	-	0	-	-	-
26	F	+	+	0	+	+	+	0	0
27	M	+	-	-	-	+	-	-	-
28	F	0	+	-	-	0	+	-	-
29	M	+	+	-	-	+	+	-	-
30	F	+	-	+	-	+	-	0	-
31 ^b	M	0	-	-	-	0	-	-	-
32 ^b	F	0	0	-	0	0	0	-	0
33	M	+	0	0	0	+	0	0	0
34	F	+	+	+	-	+	+	0	-
35	F	+	-	-	+	+	-	-	0
36	F	+	+	0	-	0	0	0	-
37	F	0	0	0	+ ^{NOS}	+	0	0	0
38	M	0	-	0	+ ^{NOS}	0	-	0	+
39	M	0	0	0	+	0	0	0	0
40	M	0	+	+	+	0	0	+	0
41 ^b	M	0	-	0	0	0	-	0	0
42	F	+	-	0	0	+	-	0	0
43	F	0	-	0	0	0	-	0	0
44	M	0	0	+	0	0	0	0	0
45	M	0	0	0	-	0	0	0	-
46	M	0	0	0	-	0	0	0	-
Totals	27 M 19 F	20/40 (6 ^b) 50%	13/25 (5 ^b) 48%	11/27 (4 ^b) 38%	9/27 (4 ^b) 35%	19/40 (6 ^b) 48%	10/25 (5 ^b) 41%	2/27 (4 ^b) 7%	4/27 (4 ^b) 14%

Note: PTSD = posttraumatic stress disorder; NOS = not otherwise specified; + = PTSD, depression; 0 = no PTSD, depression; - = not seen; +^{NOS} = PTSD-NOS.

^a Alcohol abuse.

^b Not exposed to Pol Pot regime.

contained themes of dislocation and/or loss but were relatively trauma-free. Examples are: "I had to walk back to my hut alone from the rice fields." "I saw dead bodies." "I ran to another village because I was starving." "They kept sending us to different camps." This difference in the 2 groups was significant ($p \leq .001$).

DISCUSSION

To our knowledge, this is the first long-term follow-up study of a group of war-traumatized children followed from adolescence into adulthood using standardized diagnostic instruments. These youths not only survived the trauma of a brutal war, but suffered multiple losses: family members, location, economic security, and the multiple stressors of relocation as well.

Remarkable is the finding that despite the persistence of PTSD over time, these Khmer youths appeared to make the transition into American culture quite successfully. Most subjects were pursuing either occupational or educational goals. Only 2 subjects were receiving financial aid. (Both had severe PTSD.) Almost two thirds felt that the United States was now their permanent home. It is important to note that our ascertainment of functional status was quite limited and did not include areas such as interpersonal or marital functioning, level of employment, etc. Thus these findings must be seen as incomplete and will need further confirmation. The ability to function well was also reported by Mollica et al. (1997), who found no relationship between war trauma and social functioning in a sample of 182 Khmer adolescents living in a refugee camp on the Thai-Cambodian border.

In a prior study of a probability sample of 209 Khmer youths and their parents, we found that these Cambodian youths were functioning relatively well. Diagnostic status did not relate to functional status as measured by either school grades or the Social Adjustment Scale (Sack et al., 1995a). Such a favorable outcome is in contrast to a number of follow-up studies of American Vietnam combat veterans, where comorbid drug use (Reifman and Windle, 1996) and antisocial behavior (Barrett et al., 1996) are strongly associated with persistent PTSD.

The persistence of PTSD symptoms over time is also well documented in reactions to "single blow" trauma in children and adolescents, i.e., for traffic accidents (follow-up time: 12-15 weeks) (Di Gallo et al., 1997); hurricanes (follow-up time: 10 and 21 months) (LaGreca et al., 1996; Shaw et al., 1996); bus-train collision (follow-up time: 7

years) (Tyano et al., 1996); and an earthquake (follow-up time: 3 years) (Goenjian et al., 1997). Lenore Terr's (1983) pioneer 4-year follow-up of the children of Chowchilla was the first such study to demonstrate systemically the serious and persistent effects of trauma in children.

Two war-related follow-up trauma studies in children and adolescents also show this PTSD persistence: for Iraq (follow-up time: 5.7 years) (Abdul-Khalek, 1997) and in Iran (follow-up time: 2.5 years) (Almquist and Brandell-Forsberg, 1997). One can see that while these 2 studies comprise less than a decade of follow-up time and do not usually cross important developmental nodal points, they do reinforce the findings of the present study.

A large number of PTSD follow-up studies of war-related trauma in adults are uniform in demonstrating the chronic nature of this syndrome: prisoners of war (Tennant et al., 1997); concentration camp survivors (Drozdek, 1997); Vietnam veterans (Grayson et al., 1996); Operation Desert Storm veterans (Southwick et al., 1995); World War II veterans (Lee et al., 1995); and Yom Kippur War veterans (Solomon and Kleinhaus, 1996). Amir et al. (1996) showed that battle-derived PTSD appeared to be the most severe form of trauma when its victims were compared with victims of terrorism, traffic accidents, and work-related accidents in adults.

Not only was PTSD persistent in our sample, but also it showed a delayed onset in a sizeable number of subjects. The literature on the onset of PTSD in children and adolescents is sparse, but the clinical implications are significant. Clinicians need to be aware that the absence of PTSD following trauma at one point in time does not guarantee its future absence. Nevertheless, the number and intensity of the PTSD symptoms appeared to be diminishing over time in our sample of youths.

In war-traumatized refugee subjects, trauma is relentless, comes in many forms, and is woven into a fabric of constant fear, separation and/or loss of family members, and the subsequent stress of the resettlement process. What aspects of this long process of terror and displacement over time are related to the diagnosis of PTSD? The construct of PTSD has at times been criticized for capturing stressor effects of more than trauma per se (Breslau and Davis, 1987). In previous studies of a probability sample of Khmer youths, we found that past trauma events they reported were highly predictive of current PTSD symptoms (Sack et al., 1996). This study further strengthens that link by showing that a specific conscious memory of a specific traumatic incident (in contrast to memories of

loss, displacement, etc.) was associated with the current diagnosis of PTSD. While this might seem obvious, it is important to emphasize that PTSD appears quite specifically related to *trauma*, and not other forms of multiple stressors and/or loss, in this sample. It would seem that conscious memories of past war trauma are a necessary component of PTSD. However, one must be cautious in making such an interpretation, since Southwick et al. (1997) has shown that traumatic memories in Gulf War veterans were not fixed or indelible, but rather somewhat inconsistent over a 2-year period. It is possible that PTSD is shaping the memory responses, rather than memory shaping PTSD. Only further detailed prospective studies will be able to sort out this important issue.

At the 6-year follow-up study, these subjects had shown a significant drop in depression (41% at 3 years to 6% at 6 years.) Both Beiser and Fleming (1986) and Westermeyer et al. (1989) have shown that rates of depression in Southeast Asian adult refugees decline significantly over time as resettlement adjustment occurs. Since our previous work had shown that current depressive symptoms were related to intercurrent stressors and not prior trauma, we assume our subjects here are showing a similar pattern of depression relating to recent, rather than past, stressors (Sack et al., 1996). Indeed, 2 of our current subjects with depression also have continuing alcohol problems as well as PTSD, and another had depression associated with an adjustment reaction.

Clinical Implications

In assessing and treating the war-traumatized refugee patient, the clinician needs to appreciate the chronic, undulating symptom profile of PTSD and the possibility of its delayed onset, years after the initial trauma. As well, the clinician needs to appreciate the multiple forms of stress these patients may have suffered in addition to war trauma: the stress of resettlement itself and the continuing everyday stress of being in a new country with its continuing uncertainties. It is wise for the clinician to sort out these various forms of trauma and stress in a sequential, developmental fashion (Sack, 1998).

The Mystery of Resiliency

Given the horrific war trauma these subjects experienced over an almost 4-year period, it is surprising that the prevalence rates of PTSD were not 100%! Could some of our subjects have been underreporting their symptoms? This was certainly a possibility in our initial

interviews, where we could see several of our male subjects become tearful and tense, even as they denied PTSD symptoms. In subsequent interviews, the intensity of the symptoms seemed to have lessened and denial was not as noticeable during interviews. In our earlier epidemiological study, we interviewed both adolescent *and* parent, and we noted that parents were often unaware of PTSD symptoms in their offspring (Sack et al., 1994). Yet we found—and have reported—an intergenerational association of PTSD in parent and child (Sack et al., 1995b).

Does this imply a genetic predisposition, or simply a common experience of trauma among families? We do not completely understand why some of our youths' experience so much less PTSD aftermath than others. The factors that clearly explain resilience in these subjects have yet to be elucidated.

There are several methodological weaknesses in the present effort. The sample is small and by no means representative. In addition, it contained only three quarters of the original cohort. That 5 subjects were located but refused to participate underscores the difficulty that working with traumatized individuals entails. Terr (personal communication, 1996) pointed out that the more traumatized an individual has been, the less likely that person will be willing to engage in a research protocol. Thus, it is unlikely that the inclusion of these 5 subjects would have lowered the prevalence rates of psychopathology. In the earlier 3-year follow-up study (Kinzie et al., 1989) there was no difference in the initial diagnostic status between participants and nonparticipants.

In any case, because all subjects came from one location, it is impossible to generalize these findings to all Cambodian youths surviving Pol Pot. We had insufficient time and funding for a thorough probing of *all* war memories in these subjects. Moreover, because the *DSM-III-R* criteria for PTSD do not specify *frequency* of PTSD symptoms over time, no such data were collected, nor did the constraints of time allow the use of more formal measures of functioning, coping, or social support. Nevertheless, these findings at 12 years reflect in general terms the 6-year follow-up data (Sack et al., 1993) and the functional data on a probability sample of 209 adolescents (Sack et al., 1995a).

In conclusion, this follow-up study of severe childhood war trauma shows (1) persistent high rates of PTSD over time without associated major functional impairment, (2) considerable variability of the onset of PTSD following war trauma, (3) the uncoupling of

PTSD and depression over time, and (4) the association of current PTSD with a rather specific childhood traumatic memory (in contrast to memories of loss or displacement), now 20 years in the past. The capacity of these subjects to transcend their suffering and become productive adult citizens is a tribute to their courage and endurance and shows that prior war trauma, in childhood, need not be incapacitating in its long-term impact.

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