

A Longitudinal Study of Changes In Psychological Responses to Continuous Terrorism

Marc Gelkopf, PhD,^{1,2} Zahava Solomon, PhD,³ and Avraham Bleich, MD^{2,4,5}

¹ The Department of Community Mental Health, University of Haifa, Israel

² NATAL: The Israel Trauma Center for Victims of Terror and War, Tel Aviv, Israel

³ Adler Research Center for Child Welfare and Protection, University of Tel Aviv, Tel Aviv, Israel

⁴ The Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel

⁵ Lev Hasharon Mental Health Center, Pardessia, affiliated with the Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel

ABSTRACT

Objective: The impact of ongoing terror over time has received little attention. This study assesses longitudinally prevalence and predictors of posttraumatic stress symptoms' trajectories, namely resistance, resilience, late-onset and chronicity in the course of intensive and ongoing terror.

Method: Two surveys were performed at a two-year interval among 153 Jewish Israeli adults.

Results: Results show probable PTSD prevalence, number of traumatic stress related symptoms (TSRS), and rate of severe posttraumatic symptomatology (PTSS) to increase over time (from 18.2% to 31.2%). With this, many (66.7% of those with PTSD and 39.3% of those with PTSS at wave 1) recovered. Late-onset of severe PTSS (19.6% of the sample) was predicted by income reduction, a major lifetime traumatic event, sense of threat, dissociation, coping via disengagement and low mood. Chronicity was predicted by sense of threat, pessimism, dissociation and disengagement.

Conclusions: Continuous exposure to terror has a strong negative impact on mental health. Secondly, even within a chronic situation of terror, a large proportion of individuals with elevated levels of posttraumatic symptomatology recover over time; third, prolonged exposure to terror may also exacerbate symptomatology, but not per-se trigger new PTSD cases.

INTRODUCTION

Terrorism strives to undermine morale, erode sense of personal security, and spread panic in the general population for the purpose of political gain. In the last decade, a variety of studies (1-6) have systematically assessed the impact of terrorism on the mental health of those exposed to it. The studies have identified a range of detrimental mental health effects, including, among others, elevated levels of distress (1-6), lowered sense of security (5, 6), posttraumatic symptomatology (2, 3, 5, 7), and depression or low mood (7-11).

Most of the research, however, has focused on the impact of a lone terror attack (1-6, 9). Little attention has been paid to the impact of repeated terrorist attacks. Key exceptions are several cross-sectional (7, 10-15) and longitudinal (16, 17) studies carried out in Israel in the wake of the ongoing terror attacks that started in 2000.

The present study is a longitudinal assessment of the impact of continuous terror attacks. It has three main aims. First, it examines the prevalence of posttraumatic stress symptoms at different points of time. This comes to answer the epidemiological question of whether populations exposed to continuing terror become habituated to it or increasingly vulnerable.

Second, it examines the trajectories of stress responses in a situation of ongoing terror, namely the prevalence of resistance and of late-onset, recovered and chronic PTSD and of severe posttraumatic symptomatology. Study of trajectories is important to gain a better picture of the natural patterns of resistance, improvement, deterioration, and chronicity (18, 19). While PTSD trajectories

Address for Correspondence: ✉ Marc Gelkopf, PhD, Department of Community Mental Health, University of Haifa, Haifa, Israel

✉ emgelkopf@013.net.il

after trauma have been studied (18, 20, 21), only one study has assessed trajectories of distress in the course of ongoing terror (22). The present study aims to expand the knowledge in this important field.

Finally, the study examines the predictors of the above-mentioned trajectories. Various studies have assessed risk factors for development of posttraumatic symptomatology. Findings implicate female gender (23), depression (24), low education (25), prior exposure to traumatic life events (26), degree of exposure to terror (27), income loss (28), sense of threat (29), lack of social support (30), coping by means of avoidance (31), or disengagement (4), dissociation (26) and pessimism (32). Studies have also found social support (7), active coping (4), and sense of security to be protective of the development of posttraumatic symptomatology. The question is whether the same risk factors that predict the development of symptomatology following single traumatic events predict its development in the course of continuous traumatic exposure.

The study was carried out on an adult sample of the urban Jewish population of Israel in the wake of continuous terrorist attacks. Since late September 2000, the beginning of the Al-Aqsa Intifada, Israel has experienced repeated deadly terror attacks perpetrated in public places, most often in its towns and cities. By May 2004, 1,030 persons had been killed and 5,788 injured in more than 13,000 terrorist attacks (33). The attacks disrupted daily life, and created an atmosphere of fear, insecurity and shared national crisis. The first wave of data collection took place in Spring 2002 after 19 months of the Intifada, and the second wave took place in Spring 2004, after 43 months of the Intifada. Around both periods of assessment terrorist acts were carried out against the civilian population.

MATERIALS AND METHODS

SAMPLE

A two-wave longitudinal telephone survey was performed by a polling institute at a two-year interval. Using a within strata random digit dialing methodology described in the paper on the first wave of the study, we reached a representative sample of 512 Jewish and Arab adults living in urban and rural communities (7). For the second wave, and for the sake of having a homogenous sample, we isolated the urban Jewish inhabitants, who numbered 406 persons, and, randomly (excel random number generator) selected 250 of them. Of these, 211 (84.4%) could be located; 153 (61.2%) of them agreed to be re-interviewed.

Mean age was 38.2 (sd=15.5); there were 83 (54.2%) women; 55 (38.5%) declared having lower than average income, 46 (32.2%) average income and 42 (29.4%) higher than average income. Seven (4.6%) had only elementary education, 65 (42.5%) high school education and 81 (52.9%) higher education. Six (4.2%) were orthodox, 21 (14.7%) religious, 44 (30.8%) traditional, and 72 (50.3%) secular. And 68 (55.6%) were born outside of Israel.

Comparison to data provided by the Israel Central Bureau of Statistics indicates that the sample is representative of the entire Israeli Jewish population of the state (34).

The participants (n=153) and non-participants (n=253) were similar on demographic variables, in their level of exposure to terror, in the objective risk they faced, and in their stress-related symptomatology.

INSTRUMENTS

The respondents were asked questions drawn from several questionnaires widely used in the study of trauma and coping (7-11, 35-37). The set of questions was pilot adapted and validated (12). Participants were asked to reply to the questions with respect to "the last year." The 48 questions were identical in both waves, the coping measure (13 questions) was only administered in the first wave, and the major traumatic events measure (non-terror related) (14 questions) in the second wave.

WAVES 1 AND 2

Background variables: Gender, age, education, religiosity, residence, immigration status, and income were recorded.

Exposure was assessed by subjects being asked 1) whether they had been exposed to a terrorist attack, 2) whether they had a friend or family member who had been exposed, and 3) whether they or their friends or family members were physically injured in the attack. Based on these questions, the responses were aggregated to form two distinct exposure axes: 1) direct exposure (not exposed, exposed uninjured, exposed injured), 2) indirect exposure (friend / family exposed uninjured, injured and deceased).

Trauma and stress related mental health symptoms were measured using a modified version of the Stanford Acute Stress Reaction Questionnaire (SASRQ) (35) widely used in trauma related surveys (2). At Wave 1, it had a Cronbach alpha of .91 (7). The SASRQ was used instead of a regular PTSD questionnaire because it is more adapted to assess continued exposure, which was the case during this period of continuous and intense terrorist attacks.

The modified SASRQ consists of 23 statements, assessing persistent re-experiencing (Cluster B), avoidance

(Cluster C), hyperarousal (Cluster D), dissociative, and functioning impairment symptoms or behavior following the “security situation.” Subjects were asked to rate their agreement with each statement on a 5-point Likert scale and to report whether they had felt or behaved in the stated manner less or more than one month. Subjects were designated as having the symptom if they at least “agreed” (3rd choice) with the statement tapping it and reported having had it for at least one month.

Four indices were computed from the SASRQ:

1. Number of traumatic stress related symptoms (TSRS) calculated by summing up the endorsements on the 17 items of the three core PTSD clusters.
2. Probable PTSD based on DSM-IV criteria.
3. Posttraumatic stress severity (PTSS) is a dichotomous measure created for the purpose of the present study. The measure is based upon a cut-off score of the SASRQ and distinguishes severe trauma symptomatology from non-severe. The cut-off score was created to reduce false negatives (to decrease the likelihood of failing to identify cases as having significant PTSD-like distress) as well as avoid using rudimentary measures with little statistical validity to assess significant symptomatology (see 7 and 22). Because the SASRQ does not provide an accepted cut-off, and there was no independent “gold standard” on which to rely, such as a clinical diagnosis, the sum score of symptom endorsement on the SASRQ on wave 1 subjects in the complete first wave (7) (n=512) was used in order to establish the most optimal cut-off point for sensitivity and specificity with reference to probable PTSD diagnosis. To perform this, the Receiver Operating Characteristic (ROC) curve was used and performed using probable PTSD (n=48) as the reference variable. The perfect scale has an area under curve (AUC) of 1.0, the present AUC for the SASRQ was .98 ($P \leq 0.001$). The most appropriate cut-off point with a sensitivity of .98 and a specificity of 0.91 was 6.5. The resulting cut-off score was 6 or fewer symptoms indicating “non-severe” PTSS, and 7 or more “severe” PTSS. To partially validate this cut-off point those above and below it were compared on low mood and sense of personal threat. The two measures are described in the following. The comparison showed significant group differences in both. Subjects categorized as having severe PTSS scored higher on depression than those categorized as having non-severe PTSS ($t_{511} = 9.1, p < .0001$), and had a greater sense of personal threat ($t_{511} = 5.9, p < .0001$). Thirteen of the 28 (46.4%) and 25 of the 47 (53.2%) severe PTSS cases had no PTSD at wave 1 and 2 respectively.

We defined four trajectories based mainly on the categorization of Bonanno (18) and Layne et al. (19): resistant, chronic, recovered and late-onset, and categorized subjects both on PTSD and PTSS and relevant for the assessment of the impact of ongoing terror. Resistant describes subjects who did not meet the criteria for PTSD or severe PTSS at either wave. Chronic describes subjects who met the criteria at both waves. Recovered describes subjects who met the criteria at wave 1 but not at wave 2. Late-onset describes subjects who did not meet the criteria at wave 1 but did at wave 2. The definition of “late-onset” was chosen instead of “delayed” because the setting of the study does not permit us to know in full certainty whether the appearance of late symptomatology is a delayed reaction or is due to a new trauma.

4. Dissociation was assessed categorically. Subjects who endorsed at least one of the four dissociative items were categorized as having dissociation. Cronbach alpha for the four dissociation items was .67.

Low mood was assessed by a single item, “I feel depressed or gloomy.” Respondents were asked to rate themselves on a 5-point Likert scale (from 0, not true at all, to 4, very true). A score of 2 or higher was taken to indicate low mood.

Sense of Threat was assessed by two statements that indicated respondents’ current sense of threat to themselves (personal) and to their relatives (family), on a 5-point Likert scale from “not at all” (0) to “very much” (4). A score of 3 or more was taken to indicate a low sense of safety. Cronbach alpha for these two items was found to be .83 (during the first wave), and a test-retest assessment on a sample of students was found to be satisfactory (see 7 for a description of the procedure).

Optimism was assessed by two items adapted from the Future Orientation Scale (36). These queried the respondents’ current optimism about their personal future and about the future of the State of Israel. Responses were on a 6-point Likert scale ranging from (1) very much agree to (6) do not agree at all; a score of 3 or less was taken to indicate an optimistic orientation. Cronbach alpha for these two items was found to be .57, and a test-retest assessment on a sample of students was found to be satisfying (7).

WAVE 1 ONLY

Means of coping were assessed using a modified version of the COPE questionnaire (37), consisting of 13 questions referring to distinct coping methods. Participants

were asked to indicate how often they used each method on a 5-point scale. A principal component analysis with Varimax rotation with an Eigenvalue above 1 brought a 4 factor solution composed of “social action and support”; “denial”; “disengagement”; and “detachment.” Cigarette/ alcohol and tranquillizer use was added as a separate a priori factor in the analyses. A description of the analysis and items can be found elsewhere (29).

WAVE 2 ONLY

Major lifetime non-terror related traumatic events were assessed using a modified version of the Traumatic Event Questionnaire (38). Respondents were asked to indicate (yes/no) whether they had ever experienced each of seven non-terror related traumatic events (e.g., severe road accident, physical or other abuse, serious illness, war-related trauma, other life threatening situation) and, if so, whether they had been physically hurt (yes/no). They were again asked to indicate whether someone close (friend or family) had ever experienced each of the events and, if so, whether they had been physically hurt.

PROCEDURE

For the first wave, interviewers (supervised by the first author and a clinical psychologist) conducted interviews on April 30 and May 1, 2002, by which time Israelis had suffered 19 months of terror. The second wave was carried out during the last week of April, 2004, following 43 months of terror.

The Helsinki Ethics Committee of the Lev Hasharon Mental Health Center approved the studies and informed consent was obtained verbally at the beginning of the interviews.

ANALYSES

Univariate analyses were used for wave 1 and 2 comparisons. Chi square analyses were done to assess changes in PTSD and PTSS status over the 2 waves. An ANOVA was performed to assess changes in TSRS over the 2 waves comparing the four longitudinal patterns. Four x 2 MANOVA (for continuous variables) and 4 x 2 Chi square analyses (for categorical variables) were done to compare PTSS and PTSD trajectories on independent variables. Independent variables found to differ significantly between trajectories were entered in two logistic (resistant vs. late-onset and resistant vs. chronic PTSS), one stepwise linear regression (for the TSRS change score between wave 1 and 2) and one MANOVA (for the chronic vs. recovered PTSS trajectory). Logistic and

linear regression analyses were performed so as to assess the difference between groups of individuals with distinct trajectories. Repeated measures were not performed as we did not assess discrete events over time and therefore results would not be affected by autocorrelation issues.

The MANOVA was performed instead of a regression analysis due to the small sub-sample sizes.

RESULTS

TERROR EXPOSURE

As can be seen in Table 1, 25 individuals were personally exposed at wave 1. Five previously unexposed individuals were newly exposed at wave 2. Fifty-eight individuals were indirectly exposed, six knew family or close friends who were exposed but remained uninjured between waves, nine knew people who were injured between waves and in one case a friend or relative died in between waves.

Univariate analyses found no significant relation between personal exposure or indirect exposure at wave 1 or in between waves on either PTSD, PTSS or PTSS severity. None of these exposure variables were thus entered in subsequent analyses.

NON-TERROR RELATED LIFETIME TRAUMATIC EVENTS

Fifty-three persons (43.6%) had had a prior to wave 1 lifetime traumatic experience and 17 (11.1%) had suffered physical consequences from this experience; 83 persons (54.2%) knew someone close who had a prior traumatic experience and 58 (37.9%) knew someone who suffered physical consequences from this experience.

TRAJECTORIES

As shown in Table 2, results show significant changes from wave 1 to 2 in probable PTSD and severe PTSS:

Table 1. *Exposure Categories at Wave 1 and Wave 2*

	Since the beginning of Intifada at Wave 1		Between Wave 1 and 2	
	N	%	N	%
Exposure to Terror				
<i>Personal Exposure</i>				
1. No personal exposure	128	83.7	148	96.7
2. Personal exposure	25	16.3	5	3.3
<i>Indirect exposure</i>				
1. No exposure	95	62.1	137	89.5
2. Friend/ family exposure, uninjured	19	12.4	6	3.9
3. Friend/ family exposure, injured	35	22.9	9	5.9
4. Friend/ family exposure, death	4	2.6	1	0.7

Table 2. Trajectories of Probable Posttraumatic Stress Disorder (PTSD), Severe Posttraumatic Stress Symptoms (PTSS) and Number of Traumatic Stress Related Symptoms (TSRS)

	Trajectory		TSRS Wave 1		TSRS Wave 2		Wave 1		Wave 2		Statistics
	N	%	Mean	SD	Mean	SD	N	%	N	%	
Probable PTSD											
Resistant to probable PTSD	121	79.1	2.58	2.66	3.37	3.46	15	9.8	22	14.4	$\chi^2=4.85, p=.03$
Late-onset PTSD	17	11.1	4.71	3.03	12.17	3.59					
Chronic PTSD	5	3.3	13.60	3.37	13.20	2.39					
Recovered PTSD	10	6.5	12.30	3.46	8.20	5.55					
Severe PTSS (> 6 symptoms)											
Resistant to severe PTSS	95	62.1	1.99	1.89	2.06	1.92	28	18.2	48	31.2	$\chi^2=13.93; p=.001$
Late-onset severe PTSS	30	19.6	2.90	2.19	10.77	3.33					
Chronic severe PTSS	17	11.1	12.30	3.46	12.29	2.71					
Recovered from severe PTSS	11	7.2	8.81	1.98	3.27	2.20					
TSRS (number of symptoms), range 0-17, Mean (sd)							3.91 (4.1)		5.00 (4.9)		F=10.02; p=0.002

Table 3. Univariate Analysis Comparing PTSS and PTSD Trajectories on Independent Variables

		Severe Posttraumatic symptomatology (PTS)					Posttraumatic Stress Disorder (PTSD)				
		Resistant N=95	Late-onset N=30	Chronic N=17	Recovered N=11	Statistics	Resistant N=121	Late-onset N=17	Chronic N=5	Recovered N=10	Statistics
Traumatic stress related symptoms (Wave 1)	Av. Sd	1.99 1.9	2.90 2.2	12.29 3.5	8.91 1.97	F=130.1 ***	2.57 2.7	4.71 3.0	13.60 3.6	12.30 3.5	F=9.9 ***
Reduction in income (between Wave 1 & 2)	N %	21 22.1	19 63.3	4 23.5	2 18.2	X ² =19.7 ***	31 25.6	11 64.7	1 20.0	3 33.3	X ² =11.1 **
Major Traumatic Life event	N %	37 38.9	9 30.0	5 29.4	2 18.2	X ² =2.59 ns	44 36.4	5 29.4	3 60.0	1 10.0	X ² =4.47 ns
Felt personal threat (Wave 2)	Av. Sd	1.9 1.0	2.43 1.4	2.76 1.1	1.64 1.4	F=18.3 ***	1.31 1.1	2.47 1.5	3.20 1.1	2.60 1.5	F=11.1 ***
Optimistic regarding the country (Wave 2)	Av. Sd	4.22 1.5	3.57 1.6	2.24 1.4	4.36 1.4	F=8.9 ***	4.1 1.5	2.8 1.7	2.4 1.7	3.1 2.0	F=5.5 ***
Dissociation criteria (Wave 2)	N %	15 15.8	13 43.3	14 82.4	6 54.5	X ² =35.97 ***	28 23.1	7 41.2	4 80.0	9 90.0	X ² =26.02 ***
Coping by Disengagement (Wave 1)	Av. Sd	1.14 1.0	2.15 1.2	2.94 1.4	1.73 1.4	F=16.2 ***	1.42 1.2	2.03 1.2	3.20 1.4	1.95 0.9	F=4.7 **
Coping by social action and support (Wave 1)	Av. Sd	1.71 0.8	1.47 1.0	2.45 0.8	1.96 0.7	F=5.62 ***	1.74 0.8	1.33 0.9	3.04 0.5	2.18 0.93	F=6.67 ***
Low Mood (Wave 2)	Av. Sd	0.54 0.87	1.97 1.6	1.82 1.1	0.91 1.0	F=17.34 ***	0.67 1.0	2.39 1.3	2.80 0.8	1.50 0.9	F=19.61 ***

Note: *= $p<.05$, **= $p<.01$, ***= $p<.001$, ns=not significant.

17/138 (12.32 %) of those without probable PTSD at wave 1 became late-onset PTSD cases; 10/15 (66.67%) of those with probable PTSD at wave 1 recovered; 30/125 (24 %) of those without severe PTSS at wave 1 became late-onset severe PTSS cases; 11/28 (39.29%) of those with severe PTSS at wave 1 recovered.

An ANOVA at wave 1 shows TSRS to differ significantly in the four probable PTSD trajectories ($F=59.91, p<.001$) and also within each of the PTSS trajectories

($F=130.08, p<.001$). Post-hoc Scheffe tests shows the TSRS scores to be significantly different between all trajectories in both the PTSD and PTSS assessment except for the difference between resistant and the delayed onset trajectories which were not found to differ significantly.

DIFFERENCES BETWEEN TRAJECTORIES

Table 3 presents the mean scores and standard deviations or the number of cases and percentages in each

Table 4. Final Model of the Logistic Regression With Late-Onset PTSS Versus Recovered to PTSS, and MANOVA Comparison of Chronic PTSS vs. Recovered from PTSS

	B	S.E.	Wald	Sig.	Exp(B)	95% CI for Exp(B)	
						Lower	Upper
Resistant to PTSS vs. Late-onset PTSS							
Major traumatic life event	2.07	.89	5.39	.02	7.94	1.38	45.67
Income reduction between Wave 1 and 2	-1.83	.73	6.29	.01	0.16	0.04	.67
Sense of personal threat at Wave 2	1.23	.35	12.41	.001	3.43	1.72	6.82
Dissociation criteria at Wave 2	-1.56	.72	4.69	.03	0.29	0.05	0.86
Disengagement coping mode	0.91	.36	6.33	.01	2.47	1.22	5.00
Low Mood at Wave 2	0.67	.28	5.83	.01	1.95	1.13	3.35
Resistant to PTSS vs. Chronic PTSS							
Sense of personal threat at Wave 2	1.39	.55	6.32	.01	4.02	1.36	11.88
Not Optimistic about the future of the state at Wave 2	-0.78	.36	4.65	.03	0.46	0.23	0.93
Dissociation criteria at Wave 2	-2.43	1.00	5.91	.01	0.09	0.01	0.63
Disengagement coping mode	1.27	.47	7.35	.01	3.56	1.42	8.92
Chronic PTSS vs. Recovered from PTSS							
Not Optimistic about the future of the state at Wave 2		1.02	7.16	0.13			
Dissociation criteria at Wave 2		7.10	5.07	0.33			

Note: Total predicted percentage of variance in the resistant to PTSS versus late-onset PTSS logistic regression =88.8%; 94.7% for the resistant group, and 70.0% for the late-onset PTSS. Total predicted percentage in the resistant to PTSS versus chronic PTSS logistic regression =94.6%; 97.9% for the resistant group, and 76.5% for the late-onset PTSS.

trajectory of the independent variables found to differentiate significantly between trajectories using 4 x 2 MANOVA or 4 x 2 Chi square analyses. This table also presents the “major traumatic life events” and “income reduction between wave 1 and 2” variables as 2 X 2 Chi square comparisons discerned between some of the trajectories.

PREDICTORS OF CHANGES FROM NON-SEVERE PTSS AT WAVE 1 TO SEVERE PTSS AT WAVE 2

To examine predictors of symptomatology severity change comparing resistant vs. late-onset PTSS cases as the dependent variable, the final results showed that late-onset PTSS could be predicted on the basis of a major traumatic life event (non-terror related), income reduction between wave 1 and 2, sense of personal threat at wave 2, dissociation at wave 2, having higher levels of disengagement as a coping means and low mood. The model explained 88.8% of the variance (Table 4).

PREDICTOR OF DIFFERENCE BETWEEN RESISTANT AND CHRONIC PTSS

Examining the predictors of resistant vs. chronic PTSS, the results show that chronic PTSS could be predicted on the basis of a sense of personal threat at wave 2, lack of

optimism about the future of the state at wave 2, dissociation criteria at wave 2 and a disengagement coping mode. The model predicted 94.6% of the variance (Table 4).

PREDICTORS OF CHANGE FROM SEVERE PTSS TO NON-SEVERE PTSS

Examining predictors of symptomatology severity change comparing chronic to recovered PTSS cases as the dependent variable, the result showed that chronicity could be predicted on the basis of sense of a lack of optimism as to the future of the state and a sense of personal threat at wave 2 (Table 4).

PREDICTORS OF TSRS CHANGE

To examine the predictors of TSRS change between wave 1 and wave 2, a stepwise hierarchical regression was performed. At step 1, TSRS at wave 1 accounted for 14.6% of the variance; at step 2 major lifetime traumatic life events accounted for 5.5% of the variance; at step 3 income reduction between wave 1 and 2 accounted for 6.9%; at step 4 sense of threat at wave 2 accounted for 17.0%, at step 5 mental disengagement accounted for 7.6%, at step 6 dissociation accounted for 9.2% and at step 7 low mood at wave 2 accounted for 6.8% of the variance. The model explained 67.6% of the variance (Table 5).

Table 5. Final Stage of Linear Regression Assessing Predictors of Changes in Traumatic Stress Related Symptoms (TSRS) Between Wave 1 and Wave 2

	B	SE	95% CI		Sig.	R ² change
			Lower	Upper		
TSRS at Wave 1	-0.79	0.06	-0.90	-0.66	.001	.15
Major traumatic life event	-2.33	0.78	-3.74	-0.92	.001	.06
Income reduction between Wave 1 & 2	-0.98	0.50	-0.02	1.96	.05	.07
Personal sense of danger at Wave 2	0.97	0.19	0.60	1.36	.001	.17
Disengagement coping mode	0.66	0.20	0.28	1.05	.001	.08
Dissociation criteria at Wave 2	2.79	0.54	1.73	3.86	.001	.09
Low Mood at Wave 2	1.15	0.21	0.74	1.55	.001	.07

DISCUSSION

The study findings show the strong impact of continuous exposure to terror. The prevalence of probable PTSD, the mean number of symptoms, and the rate of severe posttraumatic symptomatology (PTSS) all increased between the study waves. These findings differ from those of longitudinal studies on the impact of a single terrorist attack, which consistently show a reduction in symptomatology over time (4, 5). They raise questions about the ability to habituate to ongoing terror and lend further support to the view that ongoing stressors are an important risk factor for the development of PTSD (39).

Roughly the same amount of time elapsed between the start of the Intifada and wave 1 as between wave 1 and wave 2. Interestingly, the late-onset cases of probable PTSD and of severe posttraumatic symptomatology as a result of the terror attacks identified at wave 2 were similar in number to the cases of probable PTSD and of severe symptomatology that were identified at wave 1. Therefore the development of late-onset cases and of severe symptomatology seem to be linearly associated with the amount of time that passed.

At the same time, the findings also point to spontaneous recovery. About two-thirds of those with probable PTSD and around two-fifths of those with severe posttraumatic symptomatology at wave 1 had spontaneously recovered two years later. These findings are consistent with those of studies showing substantial rates of recovery among PTSD victims following a single terror attack (5)

and similar rates of recovery from combat related PTSD (40). The findings of such rates of recovery despite the ongoing terror are anomalous, especially in view of the finding that exposure to threat is a risk factor that impedes recovery. A partial explanation might be that the sense of threat of the general public declined substantially between waves either due to a reduction of objective threat or because individuals adapt to extreme situations by reducing the amount of felt threat.

Another set of findings shows that many persons who were not identified with probable PTSD developed or retained severe posttraumatic symptomatology over time. Late-onset severe symptomatology increased at about twice the rate as probable PTSD (24% vs. 12.3%). Over 11% of the respondents had chronic severe symptomatology, in contrast to just over 3% who had chronic probable PTSD. These findings suggest that prolonged exposure may increase the level of symptomatology more than it triggers new PTSD cases. Since posttraumatic symptoms can be disruptive even if they do not align themselves in the categories of the diagnosable disorder, the findings suggest that screening for traumatic reactions should not be restricted to screening for PTSD but include screening for severe symptomatology.

The assessment of risk factors indicates that increase in number of symptoms is predicted by similar factors as those that have been found to predict PTSD: prior traumatic life events (5, 25, 26), income reduction (11), low mood (24), sense of threat (29), dissociation (15) and coping by disengagement (4). Nonetheless, different factors were found to predict different trajectories. The likelihood of developing late-onset severe posttraumatic symptomatology was predicted by income reduction, a prior traumatic life event, sense of threat, dissociation, coping via disengagement and low mood. Recovery, meaning the “bouncing back” from severe PTSS to non-severe PTSS was predicted only by optimism about the future of the state and the absence of dissociation. Chronicity of PTSS was predicted by the presence of a personal threat, the lack of optimism about the future of the state, dissociation and a disengagement coping mode. In other words, while numerous factors apparently contribute to the development of symptoms in the first place, only two factors play a significant role in maintaining severe symptomatology, namely dissociation and pessimism.

Sense of threat, it is of note, contributes to the development and worsening of symptomatology, while pessimism seems to play a role only in the maintenance of severe

symptomatology. The power of pessimism about the future of the state to impede recovery may stem from the fact that the terror is directed at the state, not at individuals. We may assume that pessimism about the future of the state – the sense that the state will not be able to defend itself and its citizens – augments the sense of threat that persons feel in face of the terror.

Income reduction was also found to be a major risk factor. This supports the “Conservation of Resources” (COR) theory (22) that suggests loss of resources to be a major traumatogenic factor.

The present study lends support to the versatile aspects of dissociation. Indeed, this study also adds empirical evidence that a dissociative state may, on the one hand, exacerbate symptomatology over time, or second, be a risk factor for delayed onset of symptomatology as well as hamper recovery.

Finally, and in line with other studies assessing the impact of different coping means (4), “disengagement” which is a “giving up” in coping, and thus the expression of despair and the expression of the belief that nothing can be done to improve the situation or oneself, is a major risk factor for symptom exacerbation, late-onset development of symptomatology as well as chronicity.

Three of the examined predictors did not prove to be risk factors, namely exposure, gender and coping by social action and seeking social support. Indeed, as in cases of exposure to a national terror attack, neither direct nor indirect exposure was predictive of high levels of posttraumatic stress symptoms (5). This finding may be accounted for in either of two ways. One is that those who experience terrorism may understate their distress and continue with their lives without being affected by it (41, 42). The other is that it reflects the wide ranging impact of the pervasive traumatic reality in Israel, which has affected virtually the entire population (29). This interpretation is consistent with Silver et al.’s (4) conclusion that the psychological impact of a major national trauma is not limited to those who experience it directly.

The second was gender. Female gender was not found to be a risk factor for increases in posttraumatic symptomatology over time. That is, proportionately speaking, no more women than men developed symptoms between the study waves. This finding is very surprising in view of the fact that more women than men had PTSD in wave 1 (7), as well as in a subsequent cross-sectional study carried out at the same time as the wave 2 assessments (12). It is also surprising in view of the overwhelming findings in the literature showing that women are more

prone than men to developing symptomatology following traumatic events (23). Could it be that initially, after exposure, women are more at risk than men to develop symptoms of PTSD, but that as time goes by and stressors become chronic differential psychological processes come into play for men and women whereby either men become more at risk, and/or women become less at risk? Obviously further longitudinal studies are required to determine whether ours is a reliable finding.

The last was coping with social action and support. In a previous study on the entire wave 1 sample we have found lack of coping by social action and support to be a predictor for posttraumatic symptomatology (29) two years after the start of the Intifada. The present results suggest that coping by social action and support may be limited in its efficacy over time. A major reason for this may be found in Hobfoll’s COR theory suggesting that as traumatic situations become chronic there is a depletion of the needed resources to cope with trauma (22). Coping by social means in chronic stress situations, especially within families or within small communities, may over time become a burden instead of a resource (29).

The findings have several therapeutic implications. First, as the number of people suffering from traumatic symptomatology grows, so does the need to improve existing therapies (43, 44). Second, with this, great care must be taken to give individuals exposed to trauma the opportunity to get well without treatment, as high percentages of persons exposed to traumatic events are resistant to their potentially damaging mental health consequences and many who initially are not recover spontaneously. Therapeutic approaches administered just after trauma, such as psychological debriefing may even be detrimental to recovery (45).

Third, since the number of new PTSD cases increases linearly under continuing terror attacks, at least as much effort should be put into strengthening resiliency as into treating new PTSD cases. Fourth, given the various factors found to predict changes in symptomatology, resiliency/resistance oriented treatments should incorporate techniques for coping with resource loss, working through major life events, creating a sense of security, avoiding dissociative states, and enriching the coping repertoire. Finally, the findings suggest that bolstering optimism and sense of security, both at a personal and a national level, may be useful in treating persons with severe symptomatology. These suggestions point towards the need to develop different levels of intervention, for different populations and at different stages of exposure (46, 47).

This study has several methodological limitations. The trajectory groups were relatively small in size and consisted only of Jews living in urban areas, raising questions about the generalizability of the findings to other groups in Israel. Some of the independent measures used were also one- and two-item questions whose validity can be questioned, and the PTSS severity measure has not been validated against an independent "gold standard," therefore measurement error in the outcomes cannot be ruled out as an explanation of the findings. As we did not use any control group that had not experienced chronic traumatic stress our results may be the product of a general lack of sense of security and not per-se traumatic stress. Finally, as these studies were telephone surveys it is possible we did not contact individuals who were physically injured, and might have higher levels of posttraumatic symptomatology,

To conclude, the present study suggests that chronic stress has an incremental impact on a nation, that most factors found to affect mental health in cases of non-chronic exposure also affect individuals exposed to chronic trauma, but that different factors may be involved in the development over time of distinct trajectories of posttraumatic symptomatology.

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