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Acute Stress Symptoms During the Second Lebanon War in a Random Sample of Israeli Citizens

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The aims of this study were to assess prevalence of acute stress disorder (ASD) and acute stress symptoms (ASS) in Israel during the second Lebanon war. A telephone survey was conducted in July 2006 of a random sample of 235 residents of northern Israel, who were subjected to missile attacks, and of central Israel, who were not subjected to missile attacks. Results indicate that ASS scores were higher in the northern respondents; 6.8% of the northern sample and 3.9% of the central sample met ASD criteria. Appearance of each symptom ranged from 15.4% for dissociative to 88.4% for reexperiencing, with significant differences between northern and central respondents only for reexperiencing and arousal. A low ASD rate and a moderate difference between areas subjected and not subjected to attack were found.

In the second Lebanon war in July–August 2006 most towns and villages in the north of Israel came under Hizbullah missile attack while the central area was not struck. The 3,970 missiles launched against northern Israel, causing civilian fatalities and injuries created an intense threat to citizens dwelling in the north. Central Israel, although within range of the missiles and verbally threatened by the Hizbullah, was not actually targeted.

Warfare, threatening life and property, is a major stressor on a population's psychological well-being (Hashemian et al., 2006). In the immediate phase, it may generate acute stress symptoms (ASS) or acute stress disorder (ASD). The ASS symptoms include dissociation, reexperiencing, avoidance, and anxiety and arousal in reaction to trauma, which may be experienced at different levels of severity (Bryant & Harvey, 2000; Harvey & Bryant, 1998; 1999; Staab et al., 1996). The criteria for ASD includes experiencing at least three dissociative symptoms, one reexperiencing symptom, marked avoidance, and marked arousal, in reaction to exposure to an event that was perceived as a threat (American Psychiatric Association, 1994; Bryant & Harvey, 2000).

To our knowledge, ASD in the midst of ongoing war has so far not been researched, although some studies have assessed stress reactions soon after a terror attack (Cohen Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002; Rubin, Brewin, Greenberg, Simpson, & Wessely, 2005; Schuster et al., 2001). Only one of these used the ASD questionnaire (Cohen Silver et al., 2002). These authors found that 9 to 23 days following the September 11, 2001 (9/11) terrorist attack in New York City 12.4% of a random sample of the U.S. population met ASD criteria. On average, respondents reported 4.9 ASS. With different stress symptom questionnaires, the experience of substantial stress was indicated in more than 44% of a random sample of the U.S. adult population, 3 to 5 days after 9/11 (Schuster et al., 2001), and in 31% of Londoners 11 to 13 days after the bombing attacks in London in July 2005 (Rubin et al., 2005).

Watching TV coverage was found to exacerbate stress symptoms following 9/11 (Cohen Silver et al., 2002; Schuster et al., 2001). In Israel, proximity to terror attacks and objective risk were not related to stress symptoms (Bleich, Gelkopf, Melamed, & Solomon, 2006; Cohen & Eid, 2007; Sharlin, Moin & Yahav, 2006).

Our aim in this study was to assess the prevalence of ASD and ASS in Israeli individuals residing in parts of Israel subject and not subject to attack during the Lebanon war, and to evaluate the effects of demographic characteristics and prior exposure on the severity of ASS.

METHOD

Participants

The study was conducted during the third week of the Second Lebanon War. A random sample of 133 residents of the heavily attacked northern Israeli cities and villages and 102 residents of central Israel was selected by means of telephone directories. One respondent, aged over 18, from each household was asked to answer the questionnaire. In the north, 586 calls were not answered, four lines were not connected, and 66 phone numbers called belonged to companies or public institutions. Ninety-eight people refused to participate. The high rate of unanswered calls was due to many families leaving their homes and moving to safer areas. In central Israel, 346 calls were not answered, five lines were not connected, 53 phone numbers called belonged to companies

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or were public phones, and 111 people refused to participate. The response rate (participants to those who answered calls) was 57.6% for the north and 47.9% for the center. The interviewers were students studying social work. They received brief training on the principles and diagnostics of ASS and ASD and specific training for conducting the ASDI interview. The institutional review board of Haifa University approved the study.

Thirty-eight percent of the northern sample and 31% of the central sample were men. The mean ages of the two samples were, respectively, 50.2 years ($SD = 16.9$) and 41.2 years ($SD = 12.4$), $t(233) = 4.13$, $p < .05$; mean years of education were, respectively, 13.0 ($SD = 3.2$) and 15.3 ($SD = 2.8$), $t(233) = 5.49$, $p < .05$; more people in the northern sample were married (73.7% and 57.8%), χ^2 (1, $N = 235$) = 6.51, $p < .05$. The northern and central groups did not differ significantly in economic status and rate of new immigrants.

Measures

Demographic data consisted of age, gender, education, religion, marital status, number of children, and perceived economic status.

War-related data included (a) rating of perceived proximity of falling missiles on a 3-point scale (1 = *very close*, 2 = *not very close*, 3 = *far*); (b) number of hours respondents watched TV coverage per day; and (c) previous exposure to terror attacks, assessed by asking whether the respondent had ever been at the site of a terror attack, had been injured, or if a relative had been injured in a terror attack.

The Acute Stress Disorder Interview (ASDI; Bryant & Harvey, 2000) contains 19 dichotomously scored yes/no questions that relate to dissociative symptoms (five items), reexperiencing (six items), avoidance (four items), and arousal (six items). Summing the affirmative responses provides a total ASS score, ranging from 1 to 19. Acute stress disorder was affirmed if three out of five dissociative symptoms, and one out of each of the other symptom groups, were found, and if the criteria for the presence of a stressor were met. The requirement of the existence of an intense stressor was met if affirmative answers were given to its three items (perceived risk of harm, intense fear, and helplessness). Internal consistency in the present study was .89.

Data Analysis

The χ^2 and t tests were conducted to examine differences between the northern and central samples in demographics, war-related variables, and acute stress. Relationships between demographic and war-related variables and ASS were examined by hierarchical regression analysis. Demographic variables were entered in the first step and war-related variables in the second step.

RESULTS

War and Terror Exposure

Time spent watching TV coverage was high in both groups, but significantly higher in the north. More than 20% of central respondents had themselves been exposed to a terror attack during the years of the Intifada, or their relatives or friends had been so exposed, but few in either group had been injured (Table 1).

Acute Stress Disorder and Acute Stress Symptom Prevalence and Severity

Figure 1 shows percentages of respondents who met criteria for full ASD and each group of symptoms. Only 6.8% of the northern

Table 1. Frequencies of War and Terror Experience Variables in Respondents in Northern and Central Israel ($N = 235$)

	North $n = 133$		Center $n = 102$		
Variable	*n*	%	*n*	%	χ^2
Watch TV coverage					
0–2 hours per day	23	17.29	50	49.02	
2–8 hours per day	23	17.29	27	26.47	
>8 hours per day	87	65.42	25	24.51	
Was ever in a terror attack previously	9	6.77	22	21.57	11.26*
Was injured in a terror attack	3	2.25	2	1.96	<1
Relative or friend was injured in a terror attack					30.49**
No	123	92.48	65	63.73	
Family members	1	0.75	9	8.82	
Friends/acquaintances	9	6.77	28	27.45	

*$p < .01$. **$p < .001$.

Table 2. Means and Standard Deviations for Acute Stress Symptoms in Respondents in Northern and Central Israel ($N = 235$)

	Northern $n = 133$		Central $n = 102$		
Variable	*M*	*SD*	*M*	*SD*	*t*(197)
Experience of stressor	1.18	1.04	1.30	1.04	<1
Acute stress severity	6.28	3.81	5.30	2.99	2.19*
Dissociative symptoms	0.90	0.98	0.74	1.04	1.18
Reexperiencing	2.56	1.00	1.57	0.68	3.37**
Avoidance	1.29	1.09	1.14	1.21	<1
Arousal	2.54	1.79	1.84	1.66	3.02**

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

sample and 3.9% of the central sample met ASD criteria. Differences were not significant for ASD, $\chi^2(1, N = 235) < 1$, Criterion A (experiencing the situation as an intense stressor), $\chi^2(1, N = 235) < 1$, Criterion B (dissociation), $\chi^2(1, N = 235) < 1$, and Criterion D (avoidance), $\chi^2(1, N = 235) = 3.43$, *ns*. A significantly higher rate of northern respondents met Criteria C (reexperiencing), $\chi^2(1, N = 235) = 6.45$, $p < .01$, and E (arousal), $\chi^2(1, N = 235) = 7.12$, $p < .01$ (Figure 1).

No difference was found in mean scores of the experience of the situation as a stressor, of dissociation, and of avoidance. Only

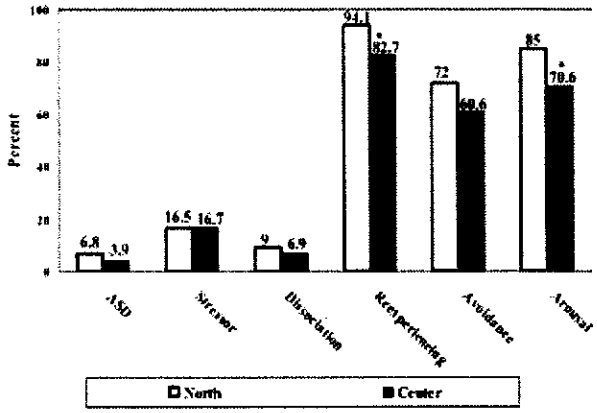

Figure 1. Prevalence of acute stress disorder and crireria by area (*$p < .01$).

levels of arousal and total ASS scores were significantly higher in the northern respondents (Table 2).

Relationships Among Study Variables

Table 3 shows the results of hierarchical regression analyses for ASS. In the first step, demographic variables were entered, and they explained 22% of ASS variance. Of these, living in the north,

Table 3. Multiple Regression Analysis Predicting Acute Stress Symptoms and Symptoms-Related Impairment ($N = 235$)

Variable	*B*	*SE B*	β	
Step 1				$R^2 = .22$
Area of residence[a]	0.58	0.15	.19**	
Age	−0.28	0.01	−.30***	
Gender[b]	0.65	0.13	.20**	
Marital status[c]	−0.31	0.14	−.12	
Education	−0.43	0.02	−.15*	
Economic status	0.40	0.10	−.23**	
Step 2				$R^2 = .44$
Area of residence[a]	2.44	0.60	.22**	
Age	0.60	0.03	−.15*	
Gender[b]	0.90	0.82	.07	
Marital status[c]	−0.10	0.71	−.13	
Education	−0.12	0.23	−.11	
Economic status	−1.29	0.75	−.15*	
Watching TV coverage	−0.11	0.01	.02	
Experienced stressor	1.32	0.38	.48***	
Previously was in a terror attack[d]	0.06	0.59	−.07	
Relative or friend injured in a terror attack[d]	0.19	0.12	.04	

[a]0 = center, 1 = north. [b]0 = male, 1 = female. [c]0 = not married, 1 = married. [d]0 = no, 1 = yes.
*$p < .05$. **$p < .01$. ***$p < 0.001$.

younger age, female gender, lower education, and worse economic status were significantly related to higher ASS. In the second step, war and terror exposure variables were entered, and together they explained 44% of ASS variance. Of the demographic variables, gender and education ceased to be significant. Area of residence, age, economic status, and perceiving the situation as a stressor made a significant contribution to the explained variance of ASS.

DISCUSSION

A low number of citizens met ASD criteria, but a high number of both samples experienced ASS. The prevalence of ASD in the northern and central samples was lower than the ASD prevalence (12.4%) in the U.S. population shortly after the 9/11 terrorist attack (Cohen Silver et al., 2002). The present results are in line with the low psychological distress also found in Israeli adults (Bleich et al., 2006) and adolescents (Cohen & Eid, 2007; Sharlin et al., 2006) during the Al-Aqsa Intifada. However, the more distressed individuals might have been those who refused to participate or could not be located as they had left the north for the duration of war. Thus, the actual levels of stress in the population might have been higher than found in the present study.

The northern sample showed a higher severity of ASS symptoms than the central sample, but the rates of ASD and of dissociative and avoidance symptoms were not different in the two groups. These results are in contrast to previous studies in the United States (Cohen Silver et al., 2002; Schuster et al., 2002), which reported that direct exposure to the traumatic event and closer proximity predicted higher ASS or PTSD symptoms. They are in accord with previous reports (Cohen Silver et al., 2002) that perceiving the war as an intensive stressor and as a threat to oneself was related to higher level of symptoms. The possibility of missiles reaching central Israel and threatening Israel's existence, as well as concern for the safety of the soldiers, were perceived as major stressors, which increased ASS among the central citizens.

This study is among the few that have assessed acute stress reactions to war or terror, and contributes knowledge to this field. The relatively small sample and the high percentages of refusals and unanswered calls reduce its generalizability. Due to the cross-sectional design of the study, causal inferences are not possible. Using telephone interviews to assess psychological states, rather than a clinical face-to-face evaluation, increases the likelihood of misclassification regarding the outcome measures. Further studies should be initiated to examine the long-term effects of war situations on mental and physical health.

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