



The contribution of personal and exposure characteristics to the adjustment of adolescents following war

T. Lavi ^{a,*}, O. Green ^{b,1}, R. Dekel ^{b,1}

^aSderot Resilience Center, Simtat Haplada, 8 st. Peretz Center, Sderot, Israel

^bSchool of Social Work, Bar Ilan University, Ramat-Gan 52900, Israel

A B S T R A C T

Keywords:

Adolescence
War
Terror
Earlier traumatic event
Exposure

The study examined the unique contribution of both personal characteristics and several types of exposure variables to the adjustment of Israeli adolescents following the Second Lebanon War. Two thousand three hundred and fourteen adolescents, who lived in areas that were the target of multiple missile attacks, completed self-report questionnaires assessing personal characteristics of gender and early traumatic events, subjective exposure (i.e., measures of fear and shortage of basic necessities during the war), objective exposure (i.e., exposure to missile attacks, knowing someone who was wounded or killed) and media exposure. Fifteen percent of the adolescents reported moderate or severe post-traumatic symptoms. Girls and adolescents who experienced earlier traumatic events were at higher risk for distress. While the level of direct exposure contributed to greater distress, the contribution of subjective exposure was significantly stronger. The discussion deals with the unique contribution of both subjective and objective characteristics to post-war adjustment.

© 2012 The Foundation for Professionals in Services for Adolescents. Published by Elsevier Ltd. All rights reserved.

Introduction

In recent years, considerable attention has been devoted to the impact of traumatic events on children and adolescents. Studies of their reactions to devastating natural disasters, acts of violence, injuries from motor vehicle and other accidents and life-threatening medical illnesses reveal that exposure to such events may cause children and adolescents significant distress and psychological impairment (Bonanno, Brewin, Kaniasty, & La Greca, 2010; Comer & Kendall, 2007; La Greca & Prinstein, 2002). Research conducted among children and adolescents exposed to war and terror around the world revealed a considerable variance in prevalence and severity of Post-Traumatic Stress Disorder (PTSD), ranging from 4.5% to 70% (Nader, Pynoos, Fairbanks, al-Ajeel, & al-Asfour, 1993; Schwarzwald, Weisenberg, Solomon, Waysman, & Klingman, 1993; Thabet & Vostanis, 2000). In Israel, research conducted on youth exposed to war and terror events found PTSD rates ranging from 11% to 27% following intensive periods of terror attacks (Pat-Horenczyk et al., 2007; Solomon & Lavi, 2005).

The literature suggests that in addition to PTSD, we must also look at measures which reflect a general adaptation to life, such as life satisfaction (Shamai & Kimhi, 2006). Indeed, the relatively few studies which have directly addressed this issue found that people living under threat reported less satisfaction from their lives in comparison to unexposed populations (Besser & Neria, 2009; Shamai & Kimhi, 2006). However, in contrast to these findings, a comprehensive social survey

* Corresponding author. 13th Aharonovits st., Rehovot 76347, Israel. Tel./fax: +972 8 8576455, +972 50 7222153 (mobile).

E-mail addresses: Tamar@lavi.ws (T. Lavi), ohad.grn@gmail.com (O. Green), rachel.dekel@biu.ac.il (R. Dekel).

¹ Tel./fax: +972 3 5735554.

conducted in Israel during the years 2002–2004, a period of extensive terror, revealed no immediate or delayed effect on adult Israelis' life satisfaction (Romanov, Zusman, & Zusman, 2010).

The literature on individual adjustment following exposure to war and terror is divided into two main fields of investigation, which at times are presented as contradictory (Herman, 1992). One field addresses the subjective predictors for a post-traumatic response, among them the personal characteristics, personality, and childhood and life events of the traumatized person, as well as his/her subjective perceptions of the traumatic events. The second field addresses the objective predictors, among them the duration of the traumatic event, its intensity, and the individual's proximity and level of exposure to it (Noy, 1987; Schiff, 2006). The literature suggests that the relations between the objective and subjective measures of traumatic experiences are not yet clear and need to be further examined (see Boals & Schuettler, 2009; Brock, 2002).

The current study has adopted a comprehensive perspective that examines the unique contribution of a person's personal characteristics (gender, earlier traumatic life events) and both subjective exposure (sense of fear and sense of shortage of basic necessities during the war) and objective exposure (level of exposure to missile attacks, knowing someone who was wounded or killed, media exposure) to the variance of adolescents' adjustment following the Second Lebanon War.

Personal characteristics and adjustment following war

Female adolescents, like female adults, seem to be more vulnerable and report higher levels of general distress and post-traumatic symptoms than their male counterparts (Giaconia et al., 1995; Laufer & Solomon, 2009). These higher levels could stem from different perceptions and interpretations that girls and boys ascribe to stressful events: Girls tend to focus on the feelings of fear and worry that the events evoke whereas boys tend to minimize the threat of the event (e.g., Muldoon, 2003). However, the differences could also stem from the difference in gender willingness to acknowledge and admit distress, especially during adolescence. According to this explanation, the difference in distress levels does not necessarily reflect a true gender difference, but rather differences in reporting styles (Laufer & Solomon, 2009).

As for pre-traumatic life events, little is known about the role they play as risk factors for adjustment among adolescents following exposure to additional traumas such as war or terror. Evidence suggests that traumatic events do not occur in isolation and that their emotional impact is related to other events in life both before and after the additional trauma (Ginzburg, 2006). Moreover, some researchers argue that even stressful life events that are not defined as traumatic according to the DSM may lead to post-traumatic stress when combined with exposure to an additional event (Gold, Marx, Soler-Baillo, & Sloan, 2005).

The literature views difficult life events as stressors that deplete the individual's resources, rendering him more vulnerable to subsequent coping and adjustment problems (Holmes & Masuda, 1974). Regarding the relationship between pre-traumatic life events and PTSD among adolescents exposed to war and terror, some evidence indeed suggests that post-traumatic symptoms are more likely to appear among children with a history of traumas or anxiety (Copeland, Kessler, Angold, & Costello, 2007; Solomon & Laufer, 2004).

Objective and subjective exposure to war and adjustment

While the DSM-IV (APA, 2000) includes objective and subjective features of exposure, only a few studies have assessed subjective features such as feelings of fear and horror among adolescents (Giannopoulou et al., 2006; Laufer & Solomon, 2006; see Trickey, Siddaway, Meiser-Stedman, Serpell, & Field, 2012 for meta-analysis). Thus, while the associations between subjective perceptions during a traumatic event and the subsequent psychological adjustment among adults are well based and empirically supported (Brewin, Andrews, & Rose, 2000; Solomon, Mikulincer, & Hobfoll, 1987), there is little known regarding the interplay between subjective and objective features. Several studies suggest that the subjective experience of an event, as manifested in the threat appraisal of an event, was the strongest predictor for post-traumatic stress symptoms (i.e., Dyregov, Gupta, Gjestad, & Mukanoheli, 2000; Laufer & Solomon, 2006). However, studies examining the relationships between these factors among adolescents are scarce.

The diverse objective characteristics of exposure to war are a major factor in explaining the variance observed among individuals in their adjustments. Some studies highlight the number of events, their intensity, their duration and the individual's exposure and proximity to them (Schiff, 2006) as the major predictors of psychological distress (Ajdukovic & Ajdukovic, 1998; Punamaki, Qouta, & El-Sarraj, 2001). Others emphasize the strong contribution made by specific stressogenic stressors such as loss (Canetti et al., 2000), injury, availability of shelter (Dyregov, 2002) and shortage of supplies (Hoven et al., 2004).

In recent years, an additional stressor – media exposure – has been examined. Alongside its central role as a means of communication used to educate and inform the public, the media may also inadvertently increase psychological distress. Several studies which examined the psychological distress of youth following terror attacks such as the Oklahoma City bombing and the WTC attack on 9/11 found positive associations between exposure to media reports and psychological distress (Hoven et al., 2004; Pfefferbaum et al., 2001). In some cases, exposure to the media had a stronger relationship to mental health than actual examples of direct exposure such as proximity to the event and/or having family members who were wounded or killed (Hoven et al., 2004).

The current study

The 2006 Lebanon war was a 33 day military conflict between Hezbollah paramilitary forces in Lebanon and the Israeli army. During this time, massive bombardment caused death, injuries and extensive destruction to civil infrastructure both in Lebanon and along the northern Israeli border. When the war began, children and youth were in the midst of their summer vacations. All summer camps and activities were abruptly stopped and were replaced by stays in shelters. In many cases the shelters were small, crowded and unequipped for such lengthy stays (i.e., there was poor air circulation, no running water or toilets, no beds, etc.). Approximately 600,000 citizens or one third of the population of the northern region fled their homes due to fears of rocket shelling. The estimated 4000 missiles (Ministry of Foreign Affairs, 2007) absorbed by the northern region during the month-long war caused 50 deaths, 2500 injuries ranging in severity from light to serious (Magen David Adom, 2006), and damage to 12,000 houses (Yehoshua, 2006) among Israeli civilians.

The current study aimed to evaluate the adjustment of adolescents exposed to an intense month of rocket shelling. As adolescents tend to hide their difficulties from their parents and school counselors, we chose to use self-report questionnaires, reputedly the most efficient tool for large-scale evaluation of distress among children and adolescents (i.e., Pat-Horenczyk, 2006; Saltzman, Pynoos, Layane, Steinberg, & Aisenber, 2001). Further, in accordance with studies concerning efficient screening in school settings, we also evaluated exposure parameters and associated distress rather than psychological attributions (i.e., Berger, Pat-Horenczyk, & Gelkopf, 2007; Layne et al., 2001; Pat-Horenczyk et al., 2007; Saltzman et al., 2001). In summary, the following study examined the unique contribution of adolescents' personal characteristics, subjective exposure and objective exposure features to the variance of the adjustment measures as manifested by post-traumatic symptoms, levels of distress and life satisfaction. The unique composition of a study examining a large sample of school children within a relatively small age range in the aftermath of exposure to a short but intense war will contribute to distress evaluation and will facilitate identification of individual and groups at risk. Further, the findings will contribute to the implementation of the findings in school-based prevention and intervention programs.

Method

Participants and procedures

The study participants were comprised of 2314 seventh and eighth graders. Their ages ranged from 12 to 15 ($M = 13.5$, $SD = .67$). Fifty-one point six percent were females. Participants were students at 14 public local and regional schools situated along Israel's northern border. After obtaining approval from the chief scientist at the Ministry of Education, 20 high schools located in the North of Israel were invited to participate in this study. Nineteen school principals agreed to participate but ultimately due to time constraints as the year ended, questionnaires were distributed in only 14 of those schools. In small schools, the questionnaires were administered to all seventh and eighth grade classrooms. In large schools, three classes of each grade were randomly selected. The questionnaires were administered eight to ten months after the war by trained social workers and social science students who had participated in a training session. All in all, 3241 pupils filled out the questionnaire, but eventually only 2314 participants were included in the study due to the following exclusions: Pupils who did not fill out the questionnaires on their own (48); pupils who filled out the questionnaire only partially (660), and pupils who were physically wounded during the war (219).

Measures

Socio-demographic background

This questionnaire included questions regarding gender, class, and country of birth.

Earlier traumatic life events

Participants were asked to indicate whether they had experienced a traumatic event in the past (the students were given examples such as a disease, a car accident, a terror event).

Subjective exposure

Sense of fear during the war. This scale included five statements in accordance with the A2 criteria for PTSD in the DSM-IV-R (APA, 2000) (e.g., "during the war I felt that my life was in danger"). The statements were rated on a 5 point Likert scale ranging from 1 ("not at all") to 5 ("a lot"). Scores were calculated as the mean level of the adolescents' responses. Cronbach's alpha in the current study was .89.

Sense of shortage. This scale included three statements regarding participants' sense of shortage of basic necessities (e.g., clothing, food, a bed). Items were rated on a 4 point Likert scale ranging from 0 ("not at all") to 3 ("very much"). Scores were calculated as the mean level of the adolescents' responses. Cronbach's alpha in the current study was .67.

Objective exposure

Exposure to war was assessed based on several measures which have been used in earlier studies (see Laufer & Solomon, 2006; Lavi & Solomon, 2005 for details on each of the measures).

Level of exposure. This item addressed the number of nearby missile attacks and was divided into three levels: no exposure, exposure on one to two occasions, and exposure on more than three occasions.

Psychological proximity. This item was based on whether the participant knew someone who was wounded or killed in the war (yes/no questions).

Exposure via media. This item looked at the frequency with which participants watched media reports on the war. The item included a 5 point Likert scale ranging from 1 (“several times a day”) to 5 (“I tried to avoid watching”).

Adjustment

PTSD. PTSD was measured using the *Children’s Post Traumatic Stress Reaction Index CPTS-RI* (Frederick, Pynoos, & Nader, 1992). This questionnaire has 20 items and, as it is based on DSM-IV PTSD symptoms, it allows the examination of both the intensity and the number of post-traumatic stress (PTS) symptoms. Subjects indicate their responses on a 5-point Likert scale, with scores ranging from 0 (“not at all”) to 4 (“all the time”). The Global Symptom Score consists of the sum of the scores with possible scores ranging from .00 to 80.00 and is divided into five levels of intensity: 0–11 (doubtful), 12–24 (mild), 25–39 (moderate), 40–59 (severe), 60–80 (very severe). The CPTS-RI has been widely used in trauma studies on youth and has high reliability and validity. Cronbach’s alpha in the current study was .88.

Distress. Distress was measured using the Brief Symptoms Inventory (BSI) (Derogatis & Melisaratos, 1983). The BSI is a self-report symptom inventory designed to assess the psychological symptom status among both clinical and non-clinical samples. It is comprised of 53 items selected to reflect the nine primary symptom dimensions: anxiety, somatization, social alienation, paranoid ideation, obsessive compulsive symptoms, hostility, phobic anxiety, depression, and interpersonal sensitivity. Each item of the BSI is rated on a 5-point Likert scale ranging from 0 (“not at all”) to 4 (“extremely”). This questionnaire has been used in several studies of trauma in Israel (e.g. Lavi & Solomon, 2005). Cronbach’s alpha for the total score found was .96.

Life satisfaction. This item was measured using a single 11 point Likert scale ranging from 0 to 10. The respondents were asked this question: “If ‘10’ is the best possible life for you and ‘0’ is the worst possible life for you, how in general would you rate your life at the moment?” This measure was adopted from the HBSC (Health Behavior in School-aged Children) questionnaire, which was previously tested on a larger index in Israel (Harel-Fisch et al., 2010).

Results³

Adolescents’ reports on post-war adjustment

PTS

Results indicated that 53.9% of the adolescents reported post-traumatic symptoms on a level described as “negligible” (the lowest possible level), 31% as “mild,” 11.8% as “moderate,” and 3.2% as “severe.”

Additional psychiatric symptoms

In order to test the differences in the nine sub-scales between the level of distress among Israeli youth exposed to the war and the norms for youth of this age (as measured by Canetti, Shalev, & De-Nour, 1994), a series of *t*-tests was performed. The list of symptoms for which a noticeable difference was found is detailed below (in parentheses – both the norm value and the *t* value): somatization, $M = .54$, $SD = .70$ ($M = .45$, $t = 6.61$); obsessive compulsive symptoms, $M = .68$, $SD = .73$ ($M = .90$, $t = -14.17$); depression, $M = .63$, $SD = .75$ ($M = .80$, $t = -10.46$); phobia, $M = .51$, $SD = .66$ ($M = .45$, $t = 4.59$); psychotic symptoms, $M = .47$, $SD = .66$ ($M = .40$, $t = 5.49$). It is worth noting that in most cases where there was a noticeable difference, its significance was negligible. Additionally, in the few cases where the difference was relatively significant (i.e., depression and obsessive compulsive symptoms), Israeli youth from the North reported less distress than the standard for their age.

Life satisfaction

The average level of life satisfaction was 7.77 ($SD = 1.78$). In comparison to a study of life satisfaction among Israeli youth which was conducted two years before the war (HSBC), it was found that there were no differences between Israeli youth from the North two years after the war and the national average ($M = 7.8$) (Harel-Fisch et al., 2010).

³ As the sample was large, a *p* value of .01 was used to determine significance.

The association between personal characteristics and adjustment

Gender. A difference was found between boys and girls across all three adjustment measures. The girls reported experiencing more severe post-traumatic and psychiatric symptoms than boys and were less satisfied with their lives (see Table 1).

Traumatic life events. It was found that those who reported prior negative life events experienced more severe post-traumatic and psychiatric symptoms than those who didn't report such events. In addition, the life satisfaction of those who reported prior negative life events was lower (see Table 1).

Grade. It was revealed that students from the seventh grade experienced more severe post-traumatic symptoms than students from the eighth grade (see Table 1).

The association between subjective and objective features of exposure and adjustment measures

Level of fear. A strong positive correlation was found between level of fear during the war and level of PTS ($p < .01$, $r = .59$) and level of fear during the war and psychiatric distress ($p < .01$, $r = .39$). A negative though less strong correlation was found between level of fear and life satisfaction ($p < .001$, $r = -.16$).

Shortages during the war. A strong positive correlation was found between the intensity of the shortages and the levels of PTS ($p < .001$, $r = .32$) and between the intensity of the shortages and the levels of psychiatric distress ($p < .001$, $r = .32$). A strong negative correlation was found between the intensity of the shortages and life satisfaction ($p < .001$, $r = -.25$).

Level of exposure to missile attacks. Multi-variable analysis with PTS, additional psychiatric distress and life satisfaction as the dependent variables, and level of exposure as the independent variable, revealed a significant main effect for exposure ($p < .001$, $F(6,4546) = 6.08$). However, a significant univariate effect was evident only with relation to PTS (see Table 2). Post-hoc Scheffe revealed that those who were directly exposed to missile attacks on many occasions reported higher levels of PTS than those who were directly exposed only a few times or not at all.

Exposure proximity. Multi-variable with the three adjustment measures as the dependent variables, and knowing someone who was injured or killed (yes/no) as the independent variable, revealed a significant effect, $F(6,4240) = 3.24$; $p < .01$. Univariate effects were found only for PTS and BSI. Post-hoc Scheffe revealed that those who knew someone who was wounded or killed reported higher general distress and higher levels of PTS than those who didn't.

Two one-way Manovas, in which the independent variables were the participant's level of closeness to the wounded or dead (family member, friend, neighbor, other), showed no significant effect – neither for closeness to the wounded person ($F(9,1044) = 1.25$, n.s.) nor for closeness to the deceased ($F(9,776) = 1.72$, n.s.).

Exposure via the media. Multi-variable analysis with the adjustment measures as the dependent variables, and level of exposure to the media as the independent variable, revealed a significant overall effect ($F(12,6104) = 7.54$; $p < .001$). A significant univariate effect was found with relation to PTS and psychiatric distress. Post-hoc Scheffe revealed that those who actively tried to avoid watching television reported higher levels of distress in comparison to the rest of the students. In addition, a higher level of PTS was reported by those who watched television many times during the day than by those who watched once a day, a few times a week, or almost not at all. With regard to additional psychiatric distress, the Post-hoc Scheffe showed that those who actively tried to avoid watching television reported higher psychiatric distress than those who watched once a day.

Table 1

Means and standard deviations of adjustment measures according to personal characteristics.

	Post-traumatic distress (PTS)			Psychiatric distress (BSI)			Life satisfaction (QOL)		
	Mean (SD)	SD	t(df = 2312)	Mean (SD)	SD	t(df = 2312)	Mean (SD)	SD	t(df = 2312)
<i>Gender</i>									
Girl	1.82	.46	-13.4***	.79	.55	-10.28***	7.67	1.78	2.51***
Boy	1.53	.56		.52	.68		7.86	1.79	
<i>Earlier traumatic life events</i>									
No	1.66	.52	-3.9***	.64	.61	-3.6***	7.82	1.75	3.7***
Yes	1.85	.65		.86	.80		7.34	1.90	
<i>Grade</i>									
7th	1.74	.56	4.87***	.67	.66	.83	3.02	.62	1.2
8th	1.63	.51		.65	.62		2.99	.64	

*** $p < .001$.

Table 2
Means and standard deviations of adjustment measures according to exposure variables.

Name of the variable	Post-traumatic distress (PTS)	Additional psychiatric distress (BSI)	Life satisfaction (QOL)
<i>Direct exposure</i>			
Not exposed to missiles (a)	1.55 (.44)	.59 (.59)	7.8 (1.76)
Exposed a few times (b)	1.66 (.53)	.65 (.64)	7.78 (1.83)
Exposed many times (c)	1.72 (.57)	.7 (.65)	7.75 (1.76)
F	15.9*** a < b,c	2.4	.63
<i>Psychological proximity</i>			
Did not know any wounded (a)	1.54 (.52)	.62 (.62)	7.83 (1.74)
Knew one wounded (b)	1.73 (.55)	.68 (.70)	7.60 (1.89)
Knew one dead (c)	1.75 (.54)	.77 (.61)	7.86 (1.71)
F	7.11*** b,c > a	6.68*** c > a	2.45
<i>Media exposure</i>			
I saw the news many times a day (a)	1.72 (.55)	.68 (.66)	7.75 (1.80)
I saw them once a day (b)	1.56 (.46)	.56 (.56)	7.88 (1.63)
A few times a week (c)	1.55 (.46)	.58 (.59)	7.85 (1.68)
Almost did not watch (d)	1.48 (.48)	.60 (.63)	7.82 (1.84)
I tried to avoid watching (e)	1.95 (.53)	.77 (.70)	7.69 (1.87)
F	20.04*** e > a,b,c,d a > b,c,d	3.99*** e > b	.48

****p* < .001.

Multivariate analyses

In order to assess the contribution of the study variables to the variance in the adjustment measures, three-step regression analyses were conducted. In the first step, the variables of gender and traumatic life events were entered. The grade variable was entered only in the analysis of PTS. In the second step, the following exposure variables were entered: direct exposure (this variable was entered as a categorical variable yes/no, since there were no differences between those who were exposed at different levels), psychological exposure, and sense of shortage. Indirect exposure was included as a dummy-variable representing the “trying to avoid watching TV news” group versus each of the three voluntarily exposed groups (watched a little, watched once a day, or watched many times a day). Sense of fear at the time of war was excluded on account of its high correlation to the outcome variables (PTS-*r* = .6, GSI-*r* = .4). Table 3 presents the *B*, Beta coefficients and *R* change of each of the variables in each of the steps.

PTS

The variables explained 21% of the variance, as shown in Table 3. In the first step, gender was found to contribute strongly to PTS (girls reported higher PTS than boys), as was the variable of previous traumatic life events (adolescents who experienced a previous traumatic life event reported higher post-traumatic stress). Grade also contributed, as seventh grade students reported more distress than eighth graders did. In the second step, in which exposure variables were added, it was

Table 3
Results of Hierarchical Regression predicting adjustment.

Variables	PTS				BSI				QOL			
	<i>B</i>	SD	Beta	<i>R</i> ² change	<i>B</i>	SD	Beta	<i>R</i> ² change	<i>B</i>	SD	Beta	<i>R</i> ² change
Step 1												
Gender	.29	.02	.27***	.09	.27	.03	.21***	.05	-.96	.03	-.08***	.01
Traumatic life events	.16	.04	.08***		.19	.05	.09***		-.15	.05	-.07**	
Grade	.1	.03	-.09***									
Step 2												
Gender	.26	.02	.24***	.12	.24	.03	.18***	.10	-.08	.03	-.06**	.04
Traumatic life events	.11	.03	.06***		.15	.04	.07***		-.12	.05	-.05**	
Class	-.11	.02	-.1***									
Avoid watching vs watched a little	-.34	.05	-.22***		-.09	.07	-.05					
Avoid watching vs watched a couple of times a week	-.31	.06	-.17***		-.11	.07	-.05					
Avoid watching vs watched a couple of times a day	-.17	.05	-.14***		-.02	.06	-.02					
Sense of shortage	.29	.02	.28***		.35	.02	.30***		-.26	.05	-.22***	
Direct exposure	.06	.03	.04									
Psychological proximity	.09	.02	.07***		.09	.03	.06***					
<i>R</i> ²	.21***				.15***				.05***			

p* < .01; *p* < .001.

found that both stronger feelings of shortage and an acquaintance with victims were associated with higher PTS. In addition, as all the dummy variables of media exposure were significant, we can conclude that avoiding TV exposure altogether is associated with greater distress than watching any amount of TV.

Additional psychiatric distress

The variables in the regression explained 15% of the variance. In the first step, gender was found to be a significant contributor (girls reported greater psychiatric distress than boys), as was the variable of previous traumatic life events (adolescents who experienced a traumatic life event in the past reported greater psychiatric distress than adolescents who did not report previous traumatic life events). In the second step, where exposure variables were added, it was found that the feeling of shortage contributed (adolescents who suffered from a greater degree of shortage reported more psychiatric distress). Acquaintance with victims also contributed (adolescents who indicated an acquaintance with someone who had been wounded or killed reported greater psychiatric distress).

Life satisfaction

The variables in the regression explained only 5% of the variance, as shown in Table 3. In the first step, gender was found to contribute (girls reported a lower level of life satisfaction than boys), as was the variable of a previous traumatic life event. In the second step, in which exposure variables were added, it was found that only the feeling of shortage contributed to lower life satisfaction.

Discussion

The rate of PTSD reaction index score suggested that in the face of extensive exposure, 15% of the participants reported moderate and severe levels of PTSD symptoms. These findings are in line with findings reported by Schwarzwald et al. (1993), who examined Israeli youth who experienced similar exposure during the 1990–91 Gulf War (Schwarzwald, Weisenberg, Solomon, & Waysman, 1994) and to other studies conducted in Israel (Laufer & Solomon, 2006; Pat-Horenczyk et al., 2007; Thabet & Vostanis, 2000). The rates reported in this study are low compared to studies conducted in war-zones around the world such as Bosnia, the Palestinian territories and Lebanon (Lavi & Solomon, 2005; Papageorgiou et al., 2000; Smith, Perrin, Yule, & Rabe-Hesketh, 2001) and may point to the relatively healthy adaptation of Israeli youth ten months after the war. These relatively low rates of distress could also be attributed to the extensive interventions in schools following the students' return to school after summer vacation. The Counseling Service of the Ministry of Education set up a special project to provide psychotherapeutic services to 2850 children identified through the school system as suffering from post-traumatic distress related to the war (Cohen, Roer-Strier, Finger, & Menahem, submitted for publication). Also, additional variables such as social support might have moderated these effects (Trickey et al., 2012). Both gender and former traumatic life events seem to be significant risk factors. According to our findings, girls (compared to boys) and youth who experienced former, pre-war traumatic life events (compared to youth who did not) exhibited significantly more distress. The gender-related finding is in accordance with previous studies conducted among youth exposed to terror and war (Galea et al., 2002; Jones & Kafetsios, 2005; Roussos et al., 2005; Schiff, 2006; Yablon, Itzhaki, & Pagorek-Eshel, 2011).

A possible explanation for this finding is that coping mechanisms involving verbal expression such as seeking emotional support and ruminating about problems are more frequently used by females than males. Unfortunately, these coping mechanisms seem to be highly related to distress (Skinner & Zimmer-Gembeck, 2007; Tamres, Janicki, & Helgeson, 2002). Rumination has negative implications for the onset and stability of distress. The direct focus on negative feelings seems to exacerbate them; it also increases recall of negative experiences, interferes with direct action to solve problems, and impedes the use of cognitive distraction to relieve distress.

Regarding the findings that seventh graders are more vulnerable to PTSD than eighth graders, one explanation might be that in their transition from elementary to secondary school, immediately after the end of the war, the seventh graders lost the support of long-standing classmates, friends and teachers from their former schools. In addition, the transition to secondary school can itself be regarded as a stressful event (Seidman, Lambert, Allen, & Aber, 2003).

With regard to experiencing former traumatic life events, our findings support the vulnerability hypothesis. It seems that previous traumatic life events make current traumas more difficult to deal with. Indeed, the number of previous traumatic life events was found to predict present PTSD symptom severity, especially in adolescents (Copeland et al., 2007; Solomon & Laufer, 2004). This finding is in keeping with studies conducted among youth who experienced other types of traumatic events (an illness, a serious injury, etc.), showing that those who reported previous negative and traumatic events suffered from more distress than those who didn't (Currier, Jobe-Shields, & Phipps, 2009; Shemesh et al., 2003; Zatzick et al., 2006).

Direct exposure was associated with a higher degree of distress. Regarding the bivariate associations, the level of PTS among those who were exposed extensively was significantly higher than among those who were not exposed at all or those who were exposed only a few times. No significant differences were found among those exposed in the "mid levels." One explanation for this finding could be that once a person found him/herself within range of rocket fire, it did not matter how many rockets continued to fall as he/she had already reached a certain level of distress, and that level did not change much.

Psychological proximity, or knowing someone who was wounded or killed in the war, was found to be associated with higher distress. This association is consistent with earlier studies among Israeli youth who were exposed to terror (Stein, 2000), among adolescents who experienced the Gulf War (Schwarzwald et al., 1993) and among adolescents exposed to

the terrorist attack in Oklahoma City (Pfefferbaum et al., 1999). Adolescence seems to be an especially vulnerable stage of psychological development, and adolescents who know someone who was injured or killed in an event are at greater risk for psychological distress (Pynoss & Eth, 1985). Being acquainted with or knowing a person who has been hurt or killed in a traumatic event increases one's distress, as the threat has become that much closer and more concrete (McDermott & Palmer, 2002).

The results of our study emphasize the existence of a positive correlation between one's subjective experience – i.e., one's sense of mortal fear, and also fears regarding shortages of food, housing, clothing, etc. – and mental distress. These findings are consistent with those of other studies published both in Israel and abroad (Brock, 2002; Giannopoulou et al., 2006; Sagi-Schwartz, 2008). The persistent feeling of fear prevents victims from resuming their former daily lives and coping efficiently with their trauma, the eventual result of which is higher levels of distress and traumatic symptoms (Ehlers & Clark, 2000). Some researchers find that an individual's subjective experience of an event, expressed in his/her feelings of threat and distress, is the best indicator of his/her future post-traumatic symptoms (Gavrilovic, Lecic-Tosevski, Knezevic, & Priebe, 2002).

The finding that subjective features make a greater contribution to one's adjustment than objective exposure is in line with other studies (Giannopoulou et al., 2006; Sagi-Schwartz, 2008) and may have clinical implications when attempting to identify at-risk groups.

The correlation between media exposure (i.e., TV news watching) and PTSD symptoms suggests that both the highly exposed group and the group who avoided almost all exposure to TV were equally at risk, as they were the ones who reported the highest rates of PTSD symptoms. While there is a need in periods of war and terror to limit media exposure, especially for children and youth, it is also clear that avoiding it altogether is not helpful and should not be seen as an effective way to reduce distress.

The percent of variance explained in life satisfaction was very low, and among the exposure variables only a sense of shortage contributed negatively and significantly. These findings might be explained in several ways. One possible explanation lies in the passage of time. In research conducted by the Israeli Central Bureau of Statistics, people's life satisfaction was found to plummet after a terrorist attack but then rose again quickly as time passed (Romanov et al., 2010). Accordingly, in this study, the passage of time may have contributed to the feeling of satisfaction people once again had about their lives.

Another explanation, contrary to the first, does not see exposure to war in and of itself as having the strongest influence on life satisfaction. Rather, it is the effects of war – e.g., a worsening financial situation, a necessity to relocate because of damage to previous lodgings, fears about the future – which may determine how satisfied individuals will be with their lives in the aftermath of the war (Berman, 2001). This explanation finds support in the existing correlation between former life experience, sense of shortage and life satisfaction.

The current study suffers from several limitations. First, it is a retrospective cross-sectional study conducted with a specific population at a specific time. Second, it is possible that the way in which the questionnaires were distributed – i.e., in classrooms, where there is little privacy – influenced both the willingness of the participants to answer and the type of answers they gave. Research assistants were present in the classrooms in order to help alleviate these problems; however, many questionnaires were only partially completed by the students and therefore had to be excluded from the scope of the study. It is also possible that psychological distress itself was one reason some participants were unable to complete the questionnaires; if so, inclusion of their data could have led to different conclusions. In addition, our methodology – i.e., self report questionnaires administered within the classroom – did not permit a careful measurement of personality factors. In order to expand the understanding of adolescents' responses, future studies should examine such factors and deepen the understanding of the relations between such measures and the psychological adjustment to exposure.

In summary, this study indicates that ten months after massive exposure to missile shelling, Israeli youth were fairly resilient. Nevertheless, the frequency with which these young people reported suffering from moderate to severe levels of PTSD symptoms is critical when considered in absolute numbers; the prevalence of PTSD among young people may very well place a heavy burden on the Israeli educational system and society as a whole. Furthermore, the impact of former life events on adjustment implies the cumulative effect of traumatic exposure, the reasonable conclusion of which is that all youth exposed to the 2006 Lebanon war are at risk for developing post-traumatic symptoms if the future presents them with additional exposure to trauma. Considering the fragile political situation in Israel and other regions in the world, identifying individuals at risk as well as promoting the recovery and resilience of adolescents living in exposed areas is vital to social and economic well-being.

References

- Ajdukovic, M., & Ajdukovic, D. (1998). Impact of displacement on the psychological well-being of refugee children. *International Review of Psychiatry*, 10, 186–195.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders*. text revision (DSM-IV-TR) (4th ed.). Washington, DC: American Psychiatric Association.
- Berger, R., Pat-Horenczyk, R., & Gelkopf, M. A. (2007). School-based intervention for the prevention and treatment of elementary students' terror-related distress in Israel: a randomized control trial. *Journal of Traumatic Stress*, 20(4), 541–551.
- Berman, H. (2001). Children and war: current understandings and future directions. *Public Health Nursing*, 18, 243–252.
- Besser, A., & Neria, Y. (2009). PTSD symptoms, satisfaction with life, and prejudicial attitudes toward the adversary among Israeli civilians exposed to ongoing missile attacks. *Journal of Traumatic Stress*, 22, 268–275.
- Boals, A., & Schuettler, D. (2009). PTSD symptoms in response to traumatic and non-traumatic events: the role of respondent perception and A2 criterion. *Journal of Anxiety Disorders*, 23, 458–462.

- Bonanno, G. A., Brewin, C. R., Kaniasty, K., & La Greca, A. M. (2010). Weighing the costs of disaster: consequences, risk and resilience in individuals, families, and communities. *Psychological Science in the Public Interest*, 11, 1–49.
- Brewin, C., Andrews, B., & Rose, S. (2000). The relation of fear, helplessness and horror to posttraumatic stress disorder: investigating DSM-IV criterion 2. *Journal of Traumatic Stress*, 13, 499–509.
- Brock, S. E. (2002). Identifying individuals at risk for psychological trauma. In S. E. Brock, P. J. Lazarus, & S. R. Jimerson (Eds.), *Best practices in school crisis prevention and intervention* (pp. 367–383). Bethesda: National Association of School Psychologists.
- Canetti, L., Bachar, E., Bonne, O., Agid, O., Lerer, B., De-Nour, A. K., et al. (2000). The impact of parental death versus separation from parents on the mental health of Israeli adolescents. *Comprehensive Psychiatry*, 41, 360–368.
- Canetti, L., Shalev, A. Y., & Kaplan De-Nour, A. (1994). Israeli adolescents' norms of the Brief Symptom Inventory (BSI). *Israel Journal of Psychiatry and Related Sciences*, 31, 13–18.
- Cohen, E., Roer-Strier, D., Finger, S., & Menahem, M. Shared fate – therapists' professional and personal benefits and perils in conducting child therapy following the shared traumatic reality of war, submitted for publication.
- Comer, J. S., & Kendall, P. C. (2007). Terrorism: the psychological impact on youth. *Clinical Psychology: Science and Practice*, 14, 179–212.
- Copeland, W., Keeler, G., Angold, A., & Costello, J. (2007). Traumatic events and posttraumatic stress in childhood. *Archives General of Psychiatry*, 64, 577–584.
- Currier, J. M., Jobe-Shields, L. E., & Phipps, S. (2009). Stressful life events and posttraumatic stress symptoms in children with cancer. *Journal of Traumatic Stress*, 22, 28–35.
- Derogatis, L. R., & Melisaratos, N. (1983). The brief symptom inventory: an introductory report. *Psychological Medicine*, 13, 595–605.
- Dyregov, K. (2002). Assistance from local authorities versus survivors' need for support after suicide. *Death Studies*, 26, 647–668.
- Dyregov, K., Gupta, L., Gjestad, R., & Mukanohele, E. (2000). Trauma exposure and psychological reactions to genocide among Rwandan children. *Journal of Traumatic Stress*, 12, 3–21.
- Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy*, 38, 319–345.
- Frederick, C. J., Pynoos, R. S., & Nader, K. (1992). *The child posttraumatic stress disorder reaction index, a copyrighted instrument*.
- Galea, S., Ahern, J., Resnick, H., Kilpatrick, D., Bucuvalas, M., Gold, J., et al. (2002). Psychological sequelae of the September 11 terrorist attacks in New York. *The New England Journal of Medicine*, 346, 982–987.
- Gavrilovic, J., Lecic-Tosevski, D., Knezevic, G., & Pribe, S. (2002). Predictors of posttraumatic stress in civilians 1 year after air attacks: a study of Yugoslavian students. *The Journal of Nervous and Mental Disease*, 190, 257.
- Giaconia, R. M., Reinherz, H. Z., Silverman, A., Pakiz, B., Frost, A. K., & Cohen, E. (1995). Traumas and posttraumatic stress disorder in a community population of older adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 34, 1369.
- Giannopoulou, I., Strouthos, M., Smith, P., Dikaikou, A., Galanopoulou, V., & Yule, W. (2006). Post-traumatic stress reactions of children and adolescents exposed to the Athens 1999 earthquake. *European Psychiatry*, 21, 160–166.
- Ginzburg, K. (2006). Comorbidity of PTSD and depression following myocardial infarction. *Journal of Affective Disorders*, 94, 135–143.
- Gold, S. D., Marx, B. P., Soler-Baillo, J. M., & Sloan, D. M. (2005). Is life stress more traumatic than traumatic stress? *Journal of Anxiety Disorders*, 19, 687–698.
- Harel-Fisch, Y., Radwan, Q., Walsh, S. D., Laufer, A., Amitai, G., Fogel-Grinvald, H., et al. (2010). Psychosocial outcomes related to subjective threat from armed conflict events (STACE): findings from the Israeli-Palestinian cross-cultural HBSC study. *Child Abuse & Neglect*, 34, 623–638.
- Herman, J. L. (1992). *Trauma and recovery*. New York: Basic Books.
- Holmes, T. H., & Masuda, M. (1974). Life change and stress susceptibility. In B. S. Dohrenwend, & B. P. Dohrenwend (Eds.), *Stressful life events: Their nature and effects* (pp. 567–568). New York.
- Hoven, C. W., Duarte, C. S., Wu, P., Erickson, E. A., Musa, G. J., & Mandell, D. J. (2004). Exposure to trauma and separation anxiety in children after the WTC attack. *Applied Developmental Science*, 8, 172–183.
- Jones, L., & Kafetsios, K. (2005). Exposure to political violence and psychological well-being in Bosnian adolescents: a mixed method approach. *Clinical Child Psychology and Psychiatry*, 10, 157.
- La Greca, A. M., & Prinstein, M. J. (2002). Hurricanes and earthquakes. In A. M. La Greca, W. K. Silverman, E. M. Vernberg, & M. C. Roberts (Eds.), *Helping children copewith disasters and terrorism* (pp. 107–138). Washington, DC: American Psychological Association.
- Laufer, A., & Solomon, Z. (2006). Posttraumatic symptoms and posttraumatic growth among Israeli youth exposed to terror incidents. *Journal of Social and Clinical Psychology*, 25, 429–447.
- Laufer, A., & Solomon, Z. (2009). Gender differences in PTSD in Israeli youth exposed to terror attacks. *Journal of Interpersonal Violence*, 24, 959–986.
- Lavi, T., & Solomon, Z. (2005). Palestinian youth of the Intifada: PTSD and future orientation. *Journal of the American Academy of Child & Adolescent Psychiatry*, 44, 1176–1184.
- Layne, C., Pynoos, R., Saltzman, W., Arslanagic, B., Black, M., Savak, N., et al. (2001). Trauma/grief-focused group psychotherapy: school based postwar intervention with traumatized Bosnian adolescents. *Group Dynamics: Theory, Research and Practice*, 5, 277–290.
- McDermott, B. M., & Palmer, L. J. (2002). Postdisaster emotional distress, depression and event-related variables: findings across child and adolescent developmental stages. *Australian and New Zealand Journal of Psychiatry*, 36, 754–761.
- Magen David Adom. (2006). *War summary*. Retrieved September 14th, 2011, from <http://www.mdais.org/316/4527.htm>.
- Ministry of Foreign Affairs. (2007 July 12). *Second Lebanon war: One year after*. Retrieved September 28th, 2011, from <http://www.mfa.gov.il/MFA/About+the+Ministry/Behind+the+Headlines/The+Second+Lebanon+War+++One+year+later++July+2007.htm>.
- Muldoon, O. T. (2003). Perceptions of stressful life events in Northern Irish school children: a longitudinal study. *Journal of Child Psychology and Psychiatry*, 44, 193–201.
- Nader, K. O., Pynoos, R. S., Fairbanks, L. A., al-Ajeeel, M., & al-Asfour, A. (1993). A preliminary study of PTSD and grief among the children of Kuwait following the Gulf crisis. *The British Journal of Clinical Psychology*, 4, 407–416.
- Noy, S. (1987). Battle intensity and the length of stay on the battlefield as determinants of the type of evacuation. *Military Medicine*, 152, 601–607.
- Papageorgiou, V., Frangou-Garunovic, A., Iordanidou, R., Yule, W., Smith, P., & Vostanis, P. (2000). War trauma and psychopathology in Bosnian refugee children. *European Child & Adolescent Psychiatry*, 9, 84–90.
- Pat-Horenczyk, R. (2006). Terror in Jerusalem: Israelis coping with “emergency routine” in daily life. In J. Kuiansky (Ed.), *Terror in the Holy land* (pp. 267–278).
- Pat-Horenczyk, R., Abramovitz, R., Peled, O., Brom, D., Daie, A., & Chemtob, C. M. (2007). Adolescent exposure to recurrent terrorism in Israel: posttraumatic distress and functional impairment. *American Journal of Orthopsychiatry*, 77, 76–85.
- Pfefferbaum, B., Nixon, S. J., Krug, R. S., Tivis, R. D., Moore, V. L., Brown, J. M., et al. (1999). Clinical needs assessment of middle and high school students following the 1995 Oklahoma City bombing. *American Journal of Psychiatry*, 156, 1069–1074.
- Pfefferbaum, B., Nixon, S. J., Tivis, R. D., Doughty, D. E., Pynoos, R. S., Gurwitch, R. H., et al. (2001). Television exposure in children after a terrorist incident. *Psychiatry: Interpersonal & Biological Processes*, 64, 202–211.
- Punamaki, R. L., Qouta, S., & El-Sarraj, E. (2001). Resiliency factors predicting psychological adjustment after political violence among Palestinian children. *International Journal of Behavioral Development*, 25, 256.
- Pynoos, R. S., & Eth, S. (1985). Children traumatized by witnessing acts of personal violence: homicide, rape or suicide behavior. In S. Eth, & R. S. Pynoos (Eds.), *Post-traumatic stress disorder in Children*. Washington DC: American Psychiatric Press.
- Romanov, D., Zussman, A., & Zussman, N. (2010). Does terrorism demoralize? Evidence from Israel. *Economica*, 79, 183–198.
- Roussos, A., Goenjian, A. K., Steinberg, A. M., Sotiropoulou, C., Kakaki, M., Kabakos, C., et al. (2005). Posttraumatic stress and depressive reactions among children and adolescents after the 1999 earthquake in Ano Liosia, Greece. *American Journal of Psychiatry*, 162, 530–537.
- Sagi-Schwartz, A. (2008). The well being of children living in chronic war zones: the Palestinian-Israeli case. *International Journal of Behavioral Development*, 32, 322.

- Saltzman, W., Pynoos, R., Layane, C., Steinberg, A., & Aisenber, E. (2001). Trauma and grief focused intervention for adolescents exposed to community violence: results of a school based screening and group treatment protocol. *Group Dynamics: Theory, research and practice*, 5(4), 291–303.
- Schiff, M. (2006). Living in the shadow of terrorism: psychological distress and alcohol use among religious and non-religious adolescents in Jerusalem. *Social Science & Medicine*, 62, 2301–2312.
- Schwarzwald, J., Weisenberg, M., Solomon, Z., & Waysman, M. (1994). Stress reactions of school-age children to the bombardment by scud missiles: a 1-year follow-up. *Journal of Traumatic Stress*, 7, 657–667.
- Schwarzwald, J., Weisenberg, M., Waysman, M., Solomon, Z., & Klingman, A. (1993). Stress reactions of school-age children to the bombardment by Scud missiles. *Journal of Abnormal Psychology*, 102, 404–410.
- Seidman, E., Lambert, L. E., Allen, L. R., & Aber, J. L. (2003). Urban adolescents' transition to junior high school and protective family transactions. *The Journal of Early Adolescence*, 23, 166–193.
- Shamai, M., & Kimhi, S. (2006). Exposure to threat of war and terror, political attitudes, stress, and life satisfaction among teenagers in Israel. *Journal of Adolescence*, 29, 165–176.
- Shemesh, E., Keshavarz, R., Leichtling, N. K., Weinberg, E., Mousavi, A., Sadow, K., et al. (2003). Pediatric emergency department assessment of psychological trauma and posttraumatic stress. *Psychiatric Services*, 54, 1277–1281.
- Skinner, E. A., & Zimmer-Gembeck, M. J. (2007). The development of coping. *Annual Review of Psychology*, 58, 119–144.
- Smith, P., Perrin, S., Yule, W., & Rabe-Hesketh, S. (2001). War exposure and maternal reactions in the psychological adjustment of children from Bosnia-Herzegovina. *Journal of Child Psychology and Psychiatry*, 42, 395–404.
- Solomon, Z., & Laufer, A. (2004). In the shadow of terror: changes in world assumptions in Israeli youth. *Journal of Aggression, Maltreatment & Trauma*, 9, 353–364.
- Solomon, Z., & Lavi, T. (2005). Israeli youth in the second Intifada: PTSD and future orientation. *Journal of the American Academy of Child & Adolescent Psychiatry*, 44, 1167–1175.
- Solomon, Z., Mikulincer, M., & Hobfoll, S. E. (1987). Objective versus subjective measurement of stress and social support: the case of combat-related reactions. *Journal of Consulting and Clinical Psychology*, 55, 577–583.
- Stein, E. (2000). *Children's reactions to the stressful situation aroused by the intermediate phase of the peace process*. Unpublished doctoral dissertation, Bar Ilan University, Ramat Gan.
- Tamres, L. K., Janicki, D., & Helgeson, V. S. (2002). Sex differences in coping behavior: a meta-analytic review and an examination of relative coping. *Personality and Social Psychology Review*, 6, 2–30.
- Thabet, A. A., & Vostanis, P. (2000). Post traumatic stress disorder reactions in children of war: a longitudinal study. *Child Abuse & Neglect*, 24, 291–298.
- Trickey, D., Siddaway, A. P., Meiser-Stedman, R., Serpell, L., & Field, A. P. (2012). A meta analysis of risk factors for post-traumatic stress disorder in children and adolescents. *Clinical Psychology Review*, 32, 122–138.
- Yablon, Y. B., Itzhaky, H., & Pagorek- Eshel, S. (2011). Positive and negative effects of long-term bombardment among Israeli adolescents: the role of gender and social environment. *Child and Adolescent Social Work Journal*, 28, 189–202.
- Yehoshua, Y. (2006 August 15). The missiles hits in Israel. *Yediot Aharonot*, 8.
- Zatzick, D., Russo, J., Grossman, D. C., Jurkovich, G., Sabin, J., Berliner, L., et al. (2006). Posttraumatic stress and depressive symptoms, alcohol use and recurrent traumatic life events in a representative sample of hospitalized injured adolescents and their parents. *Journal of Pediatric Psychology*, 31, 377–387.