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POSTTRAUMATIC SYMPTOMS AND POSTTRAUMATIC GROWTH AMONG ISRAELI YOUTH EXPOSED TO TERROR INCIDENTS

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This study assessed the pathogenic and salutogenic effects of exposure to terror among Israeli youth. A total of 2,999 adolescents from grades seven through nine in four areas of differing exposure to terror were assessed for objective exposure and subjective exposure to terror, and for posttraumatic symptoms and posttraumatic growth. Two-thirds of the subjects faced at least one terror incident, and one-fourth were exposed to more than three different terror incidents. We found a low correlation between objective and subjective exposure. Results show that 41.1% of the participants report mild to severe posttraumatic symptoms, while 74.4% report feelings of growth. Objective and subjective measures of exposure were associated with both posttraumatic stress and psychological growth. Additionally, religious adolescents reported greater feelings of growth, and girls reported more feelings of growth than boys. The pathogenic and salutogenic effects of terror are discussed.

Exposure to war and political violence has been repeatedly implicated in a range of pathological effects and behavior problems among children and adolescents. Studies carried out on youth in conflict areas as far apart as Ireland, Rwanda, the Middle East, and former Yugoslavia point to somatic problems (Llabre & Hadi, 1994); truncated moral growth (Ferguson & Cairns, 1996); attention, memory, and learning problems (Qouta, Punamaki, & El-Saraaj, 1995b; Saigh, Mroueh, & Bremner, 1997; Walton, Nuttall, & Nutall, 1997); nightmares and sleep problems (Baker, 1990; Punmaki, 1998; Ronen & Rahav, 1992; Walton et al., 1997); depres-

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sion (Hadi, 1999; Papageorgiou et al., 2000; Zivcic, 1993); and anxiety (Milgram & Milgram, 1976; Vizek-Vidovic, Kutervac-Jagodic, & Arambasic, 2000) as resultant pathologies. Studies on Palestinian, Lebanese, and Israeli children point to behavioral problems such as disobedience, violence, and risk taking (Baker, 1990; Garbarino & Kostelny, 1996; Punamaki & Sulleiman, 1990; Qouta, Punamaki, & El-Saraaj, 1995a; Ronen & Rahav, 1992; Zahr, 1996).

At the same time, several researchers have recorded positive effects on youth exposed to violent conflict. These include increase in pro-social behavior (Macksoud & Aber, 1996; Saric, Zuzul, & Kerestes, 1994), elevated self-esteem (Baker, 1990), and greater well-being (Bachar, Canetti, Bonne, Denour, & Shalev, 1997). These findings support the salutogenic approach (Antonovsky, 1987), which contends that stressful events may have positive outcomes. The salutogenic orientation regards health-illness as a continuum, not as a dichotomy, and searches for factors that may contribute to the shift of people from the disease end to the ease end. Although most studies tend to focus on pathogenic outcomes and ignore successful or healthy outcomes, substantial numbers of people do well despite experiencing stressful situations (Antonovsky & Bernstein, 1986). Adopting this approach, the present study investigates both pathogenic (posttraumatic stress symptoms) and salutogenic (posttraumatic growth) outcomes among adolescents exposed to terror.

Posttraumatic stress disorder (PTSD) is one of the most prevalent psychological disturbances among individuals exposed to traumatic events. Very high rates of this disorder have been reported among young people exposed to a variety of war-related stresses. Over 70% of Kuwaiti youths exposed to the Iraqi incursion showed moderate to extreme posttraumatic responses (Nader, Pynoos, Fairbanks, Al-Ajeel, & Al-Asfour, 1993). Among Palestinian youths aged 9–18 whose homes had been shelled, 59% reported such symptoms (Thabet, Abed, & Vostanis, 2002). Of Bosnian youths aged six–16, 41% reported clinical levels of posttraumatic symptoms (Allwood, Bell-Dolan, & Husain, 2002). Over half (53.1%) of the Israeli youngsters exposed to multiple incidents of terror reported moderate to very severe posttraumatic symptoms, and 20.5% met criteria for the disorder (Lavi, 2004).

According to the DSM-IV, PTSD may develop when a person experiences, witnesses, or is confronted with an event or events that involve actual or threatened death or serious injury to the self or others (APA, 1994). The DSM-IV also indicates that for PTSD to develop, objective exposure to a threatening event is insufficient. It is also necessary that the person exposed feel fear, helplessness, or horror.

With regard to the necessity of direct exposure, many studies have in-

deed found that youths' risk of developing posttraumatic symptoms rises with their level of exposure (Garbarino & Kostelny, 1996; Macksoud & Aber, 1996; Qouta et al., 1995b; Thabet & Vostanis, 1999), and proximity or psychological closeness to victims (Schwartzwald, Weisenberg, Waysman, Solomon, & Klingman, 1993). However, research suggests that persons not directly exposed can also develop stress responses. Studies conducted after the terror attack on the World Trade Center, for example, identified a high level of distress among persons living outside New York City and its environs (Cohen-Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002; Schlenger, Caddell, Ebert, Jordan, & Batts, 2002). These findings indicate that even indirect exposure may have a pathogenic impact and point to the role of the subjective perception of threat in the development of stress responses. Indeed, several studies have found that the subjective experience of an event, as manifested in feelings of threat, was the most significant predictor of posttraumatic stress symptoms (Dyregrov, Gupta, Gjestad & Mukanoheli, 2000; Gavrilovic, Lecic, Knezevic, & Priebe, 2002). In light of these findings, the present study includes both an objective measure of exposure (number of terror incidents) and a subjective measure (fear felt at the time of the incident).

Posttraumatic growth has received considerably less attention than the negative outcomes of traumatic exposure. Posttraumatic growth is defined by significant changes for the better in self-image, world-view, and relations with others as a result of exposure to a traumatic incident (Tedeschi, 1999). Tedeschi and Calhoun (1996) list five areas of possible improvement or growth after trauma: new possibilities, relating to others, personal strength, spiritual change, and appreciation of life. They found that of the students in their sample who had experienced a negative event, 60% reported mild to considerable posttraumatic growth. Moreover, both their and others' findings show that persons who experienced serious incidents reported greater posttraumatic growth than those who had experienced more moderate ones (Park, Cohen, & Murch, 1996; Tedeschi & Calhoun, 1996). Further research indicates that posttraumatic growth, like posttraumatic symptoms, may occur in persons not directly exposed to trauma. In a study conducted in Britain after the September 11 terrorist attacks in the U.S., respondents reported both positive and negative changes following the event (Linley, Joseph, Cooper, Harris, & Meyer, 2003).

In a recent comprehensive literature review Linley and Joseph (2004) state that there is a lack of studies examining growth among children and youth. Yaskowich (2002) found that children with cancer showed levels of posttraumatic growth similar to those reported by adults who experienced trauma, and Milam, Ritt-Olson, and Unger (2004) found

some levels of growth reports among Hispanic adolescents as an outcome of various traumatic events. However, to the best of our knowledge, posttraumatic growth has not been assessed in adolescents in the wake of terror. This is the aim of the present research.

The relations between posttraumatic growth and posttraumatic symptoms are not clear, and results of studies that addressed these relations are mixed. Some studies have found negative correlations between growth or benefit finding and symptoms of distress after traumatic experience (e.g., Aldwin, Levenson, & Spiro, 1994; Evers et al., 2001; Frazier, Conlon, & Glaser, 2001; McMillen, Smith, & Fisher, 1997), while others have found positive correlations (e.g. Best, Streisand, Catania, & Kazak, 2001; Cadell, 2000; Lev-Wiesel & Amir, 2003). Other studies failed to find any correlation (e.g. Elder & Clipp, 1989; Joseph, Williams, & Yule, 1993; Lehman et al., 1993). According to Linley & Joseph (2004), growth and distress are not opposite sides of the same dimension but rather seem to be two separate, independent dimensions consisting of a range of possible associations. Hence, this study will try to investigate the relations between the positive and negative outcomes of trauma.

Since September 2000 Israel has been hit by numerous and deadly terror attacks, many of them by suicide bombers. These attacks, which were carried out in public places, killed hundreds and injured thousands of civilians, including many children and adolescents. The present study assesses the salutogenic and pathogenic effects of exposure to terror among Israeli adolescents, using measures of objective and subjective exposure. It has four aims: (1) to examine the levels of objective and subjective exposure of Israeli youth to terror, (2) to identify salutogenic and pathogenic effects among youths exposed to terror and the relations between these two effects, (3) to explore whether growth and distress are bipolar or bivariate dimensions, and finally (4) to examine how the level of objective and subjective exposure to terror is associated with posttraumatic stress symptoms and posttraumatic growth.

METHOD

PARTICIPANTS AND METHODOLOGY

This study examined 2,999 adolescents in grades 7–9, from 11 schools in Israel. The response rate was 92.1%. Using cluster sampling the schools were drawn from four areas, which differ in their level of exposure to terror attacks [$F(3,2983) = 745.37, p < 0.001$]: (1) areas within the Green Line (internationally accepted border) that were not exposed to terror ($M = .97, SD = 1.63$); (2) areas within the green line that were exposed to

terror ($M = 1.97$, $SD = 2.07$); (3) areas in Judea and Samaria which had low levels of terrorist incidents ($M = 2.19$, $SD = 1.98$); and (4) areas of Judea and Samaria and the Gaza Strip with high levels of terrorist incidents ($M = 6.88$, $SD = 3.13$). In each zone, we randomly chose one secular and one religious high school (except for Zone 4, which has no secular school).

After receiving the necessary permits from the Ministry of Education, and the school principals' and participants' consent, during May through June 2002, we asked all students in grades 7–9 present on the day of testing to fill out the study questionnaires. On average, the students completed the questionnaires within 45 minutes in the presence of a research assistant.

The subjects were 42.2% boys and 57.8% girls. Their age distribution was: 35.5%, 13 years old; 36.5%, 14 years old; 26.9%, 15 years old; and 1%, 16 years old. With respect to religiosity, 0.7% identified themselves as ultra-orthodox, 39.0% as religious, 27.4% as traditional, and 32.9% as secular. With regard to economic status, 0.6% of the students classified their status as very low, 4.3% as low, 70.4% as similar to their friends, 20.4% as above that of their friends, and 4.3% as very high.

MEASURES¹

Personal Data

Data were gathered on gender, grade, religiosity, political stance, economic status, and parents' level of education and occupation. In addition, the students were asked to answer whether any negative life events, from a list of negative life events, had ever happened to them in the past (past life events; PLE) (e.g., divorce of parents, severe illness) and in the previous year (recent life vents; RLE) (e.g., a parent's unemployment, traffic accidents).

Objective Exposure to Terror

To assess the objective exposure to terror, we used the Exposure-to-Terror Questionnaire (Lavi, 2004). In the form used for this study, the questionnaire contains 17 statements covering different kinds of traumatic incidents connected to terror. Examples are: "Stones were thrown at a car in which an acquaintance was traveling," and "I was injured in a terror attack." Respondents were asked to indicate which ones had happened to them. Objective exposure to terror was calculated as the total

1. All measures were administered in Hebrew.

number of terror incidents to which the respondent was exposed such that scores could range from 0 to 17.

Subjective Exposure

For each terror incident to which the respondents reported having been exposed, they were asked to indicate the level of fear they felt at the time on a four-point scale, ranging from 1 (not frightened) to 4 (very scared). Subjective exposure was calculated as the mean level of the respondent's responses.

Posttraumatic Stress Symptoms

Posttraumatic stress symptoms were assessed using the CPTS-RI (Child Posttraumatic Stress Reaction Index; Frederick & Pynoos, 1988). This is a self-report questionnaire that assesses the severity of posttraumatic stress in youth. It contains 20 statements of symptoms reflecting three symptom categories: intrusion, avoidance, and hyperarousal. For every statement, respondents were asked to indicate how much it reflected their feelings on a 5-point scale (0 = not at all; 4 = very much). The sum of all the items represents the Global Symptom Score (GSS), which can range from 0 to 80. The GSS can be divided into five levels of symptom severity: 0–11 (doubtful), 12–24 (mild), 25–39 (moderate), 40–59 (severe), and 60–80 (very severe). The CPTS-RI has high reliability, with $\alpha = 0.86$ in the Hebrew version (Schwarzswald et al., 1993) and $\alpha = 0.91$ in the current study.

Prior to answering the CPTS-RI scale, youth were asked to recall and describe the terror incident that had the most profound effect on them. Then they were asked to answer the CPTS-RI questionnaire regarding this incident. All of the subjects had answered this questionnaire and hence, the statistical analysis of posttraumatic stress symptoms was done for all subjects.

Posttraumatic Growth Inventory

To assess posttraumatic growth we used the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996), adapted by the authors of the present study. The original questionnaire contains 21 items divided into five categories: new possibilities ($\alpha = .75$), relating to others ($\alpha = .81$), personal strength ($\alpha = .71$), spiritual change ($\alpha = .69$), and appreciation of life ($\alpha = .69$). The questionnaire was translated into Hebrew using back translation. Pilot interviews with Israeli youth revealed the need to change the PTGI scale to 4 points (1 = no change to 4 = significant change) rather than the original six-points scale, as the distinction among the categories was blurred. In addition we added two growth scales: the youths' feelings of responsibility ($\alpha = .88$) (eight items, such as "I feel that my family trusts me") and the youths' connection to their communities and land ($\alpha = .80$) (four items, such as "I feel more con-

nected to Israel"). The need to expand the questionnaire and to include these categories arose from the pilot interviews that suggested that issues of responsibility and connection to the place of residence were of great concern of these youths. The full questionnaire contains 33 items. For each item, respondents were asked to indicate the level of change that they had experienced as a result of exposure to a terror on a four-point scale (1 = no change; 4 = significant change). The growth score was calculated as the mean of all of the responses (range = 1-4 $M = 2.04$, $SD = .67$). The reliability of the questionnaire with the two additional subscales was $\alpha = .94$.

RESULTS

Objective Exposure to Terror Incidents. Findings show that close to a fifth (19.2%) of the participants were exposed to one terror incident, around a quarter (25.9%) to two or three terror incidents, and another quarter (25.0%) to four or more terror incidents. Only under a third of the respondents (29.9%) were not exposed to any terror incident.

The most prevalent incidents reported were knowing a person who was killed (37.5%) and knowing an injured person (30.4%). Stone throwing at a relative was reported by 20.6% of the respondents, and a relative having been injured in a terror attack by 17.5%. Smaller proportions reported losing a close relative in a terror incident (11%), having been shot at (4%), and having been injured (1.6%).

Subjective Exposure. Out of the 17 terror incidents queried, the three most frightening ones, resulting in intense fear, were those in which a relative died ($M = 2.79$), was shot at ($M = 2.56$), or was injured ($M = 2.47$). The respondents rated shots fired at themselves as the sixth most frightening terror incident ($M = 2.38$). Incidents that were only somewhat less frightening included stones being thrown at an acquaintance's car ($M = 1.58$), shots fired at an acquaintance ($M = 1.95$), and stones being thrown at a car in which the respondent was riding ($M = 1.96$).

Low but significant association was found between the objective level of exposure (number of terror incidents) and level of fear ($r = .087$, $p < 0.001$, $n = 2,092$).

Posttraumatic Stress Symptoms. The data show that 26.5% of the subjects reported mild posttraumatic symptoms, 10.1% moderate symptoms, 4.0% severe symptoms, and 0.7% very severe symptoms. More than half (58.3%) of the respondents did not meet the symptom criteria for PTSD.

Levels of Posttraumatic Growth were divided as follows: no growth

(mean scores of 1-1.5), low levels of growth (1.5-2.5), high levels of growth (2.5-3.5), and very high levels of growth (3.5-4).

While only a very small percentage of respondents (1.9%) reported very high levels of posttraumatic growth, around a quarter (24.6%) reported high levels and almost half (47.9%) reported some growth, albeit low. Around a quarter (25.6%) reported no growth.

Posttraumatic growth and posttraumatic symptoms were significantly correlated ($r = 0.4$, $p < 0.001$, $n = 2,254$) with the likelihood of growth increasing with the number of posttraumatic symptoms.

Exposure, Posttrauma, and Growth. Significant positive correlations were found between objective exposure (number of terror incidents) and both posttraumatic symptoms ($r = .22$, $p < 0.001$, $n = 2,256$) and posttraumatic growth ($r = .28$, $p < 0.001$, $n = 2,968$). That is, the higher the objective exposure, the more posttraumatic symptoms the respondent was likely to report and the more growth.

Similarly, significant positive correlations were found between subjective exposure and both posttraumatic symptoms ($r = .35$, $p < 0.001$, $n = 1,673$) and feelings of growth ($r = .31$, $p < 0.001$, $n = 2082$). That is, the greater the subjective exposure, the more symptoms and the more growth the respondent was likely to report. The correlation between subjective exposure and these outcome variables is stronger than that between objective exposure and the outcome variables.

Analyses of the correlation between level of fear and posttraumatic symptoms and posttraumatic growth were calculated separately for the various exposure groups (i.e., one terror incident, two or three incidents, four or five incidents, and six or more incidents). Results indicated that the relationship between fear and posttraumatic symptoms, and between fear and posttraumatic growth, were strongest for subjects who had been exposed to four or five terror incidents ($r = .40$ for posttraumatic symptoms and $r = .37$ for growth), followed by subjects who were exposed to six or more incidents ($r = .39$ for posttraumatic symptoms and $r = .35$ for growth), subjects who were exposed to two or three incidents ($r = .33$ for posttraumatic symptoms and $r = .30$ for growth), and subjects who were exposed to one terror incident ($r = .28$ for posttraumatic symptoms and $r = .23$ for growth). As a result, the interaction between objective exposure and fear was calculated as a separated variable in the following regression models.

Two separate linear regression analyses in three steps were performed to assess the contribution of the variables studied to posttraumatic stress symptoms and posttraumatic growth. In the first step, sociodemographic variables (gender, grade, religiosity, recent negative life events, and past negative life events) were entered. The second step included objective and subjective exposure to terror incidents, and the

TABLE 1. Linear Regression for Prediction of Posttraumatic Symptoms and Posttraumatic Growth

Variables	Global Symptom Score (GSS)		Average Growth	
	β	Adj. Rsq.	β	Adj. Rsq.
First stage		3.3%		8.7%
Gender ¹	-.04		-.11***	
Grade ²	-.06**		-.04	
Religiosity ³	-.08**		-.25***	
PLE ⁴	.10***		.10***	
RLE ⁵	.09***		.02	
Second stage		13.5%		11.3%
Gender ¹	.03		-.05*	
Grade ²	-.08***		-.06**	
Religiosity ³	.00		-.16***	
PLE ⁴	.06**		.06**	
RLE ⁵	.08***		.01	
Objective exposure	.17***		.19***	
Subjective exposure	.33***		.28***	
Third stage		0.5%		0.4%
Gender ¹	.03		-.05*	
Grade ²	-.08***		-.06**	
Religiosity ³	.00		-.16***	
PLE ⁴	.05*		.05**	
RLE ⁵	.07**		.00	
Objective exposure	.16***		.18***	
Subjective exposure	.31***		.26***	
Intr. Object.-subject.	.07**		.06**	
Total percentage of explained variance		17.3%		20.4%

¹ Gender (m=1, f=0); ² Grade (grade 7=1 to grade 9=3); ³ Religiosity (1=ultra-orthodox to 4=secular); ⁴ PLE=past life events; ⁵ RLE=recent life events. * $p < .05$; ** $p < .01$; *** $p < .001$.

third included the interaction between subjective and objective exposure. The findings are presented in Table 1.

The total explained variance in posttraumatic symptoms was 17.3%. As can be seen, demographic variables (gender, age, religiosity) and previous life stresses (PLE and RLE) accounted for only a small portion of this variance (3.3%). Younger adolescents tended to report more posttraumatic symptoms than older ones, as did those who had experienced more serious incidents in the past in general and in the previous year in particular. Gender, however, made no significant contribution to the variance, while the initially significant contribution of religiosity disappeared when the exposure variables were included in the regression.

The two exposure variables included in the second stage of the regression contributed another 13.5% to the explained variance in posttraumatic symptoms. Relatively strong partial links were found between both subjective ($\beta = .33$) and objective exposure ($\beta = .17$) and posttraumatic symptoms. Those who reported greater objective exposure and stronger fear tended to report more posttraumatic symptoms.

The interaction between objective and subjective exposure, which was entered in the third stage, had a marginal contribution to the explained variance of posttraumatic symptoms (0.5%) and a low, although significant, coefficient correlation.

As for posttraumatic growth, the explained variance was 20.4%, less than half of it due to the demographic variables and previous life events (8.7%). The strongest contributions were made by religiosity; religious respondents reported more growth than their traditional or secular peers. Grade, serious life incidents in the past, and gender had also made significant, albeit relatively small, contributions to the variance in posttraumatic growth. Younger adolescents, those who had experienced more serious incidents previously in their lives, and girls tended to report more growth.

The addition of the two exposure variables to the regression in the second stage added another 11.3% to the explained variance in growth, above and beyond demographic variables. The contribution of subjective exposure was relatively ample ($\beta = .28$), and that of objective exposure smaller ($\beta = .19$) but still significant. In other words, both objective and subjective exposure contributed significantly to the variance in personal growth, with greater exposure fostering greater growth.

In the third and final stage, the interaction between objective and subjective exposure was included. The interaction variable had a marginal contribution to the explained variance of growth (0.4%), and a very low, although significant, coefficient.

DISCUSSION

Findings show that during the current wave of terror Israeli adolescents are exposed to high levels of stress, with over 70% of the study participants having experienced one or more terror incident within a period of one year. With this, the levels of exposure varied: from 30% or so who were not exposed to any terror incident to around a quarter who experienced four or more incidents, either to themselves or to friends or relatives. It should be pointed out, however, that the youths who were not directly exposed to any of the terror incidents queried were fully cognizant of many of them through the daily reports on TV and radio and in the press. Since exposure through the media may result in vicarious ef-

fects (e.g., Cohen-Silver et al., 2002; Linley et al., 2003; Schlenger et al., 2002) it was important to assess levels of growth and distress among all participants.

Interestingly, the adolescents' sense of fear (subjective exposure) was only weakly linked to their objective level of exposure. It is consistent with findings (Thabet et al., 2002) suggesting that indirect exposure can produce more fear than direct exposure in Palestinian youth. It is worth noting that both Palestinian and Israeli societies are relatively small communities, both in terms of land area and population size. This might intensify the impact of the terror for those who do not experience it directly by increasing both the potential for victimization and the emotional identification with the victims. Along similar lines, several studies that examined the role of the media, especially television, in exposing children to traumatic incidents, including the Challenger space shuttle disaster (Terr et al., 1999), the World Trade Center attack (Schuster et al., 2001), and the Iraqi invasion of Kuwait (Nader et al., 1993) showed that learning about a traumatic event through the media could cause fear and posttraumatic symptoms even among children and adults who live in unaffected areas.

The adolescents' sense of fear did vary with the nature of the terror incident, however. Incidents that evoked the greatest fear were those that threatened the lives and safety of close relatives. Such incidents evoked even greater fear than incidents that threatened the respondents themselves. This finding is consistent with findings by Lavi (2004) among both Israeli and Palestinian children. It is also consistent with findings that show that various forms of war-related psychological stress (e.g., posttraumatic symptoms, anxiety, and depression) among young persons tend to be stronger when the traumatic event involved loss of or separation from parents (Chimienti, Nasar, & Khalifeh, 1989; Macksoud & Aber, 1996; Zvizdic & Buttolo, 2001) or displacement from home (Ajdukovic & Ajdukovic, 1998; Chimienti et al., 1989; Kuterovac, Dyregrov, & Stuvland, 1994; Zivcic, 1993). These findings show how greatly harm to the protected environment of youngsters threatens their well-being and peace of mind.

Our findings show that 42% of the Israeli adolescents who participated in the study suffered from a moderate to severe level of posttraumatic symptoms. Comparison to other war zones is problematic because of differences in social context and levels of exposure, as well as in research tools. It may be noted, however, that studies of Palestinian, Kuwaiti, Eritrean, and Bosnian children and adolescents report that between 43% to 73% of them suffered from moderate to clinical levels of PTSD (Farwell, 1999; Macksoud & Aber, 1996; Nader et al., 1993;

Smith, Perrin, Yule, Hacam, & Stuvland, 2002; Thabet & Vostanis, 1999; Thabet et al., 2002).

The relatively lower percentage of Israeli youths suffering from posttraumatic symptoms may be attributed to the relative stability of life in Israel. Despite the violence, the children continued to go to school fairly regularly and their parents to their jobs. The government remained stable and, aside from occasional strikes, government services continued to be provided. In the other regions studied, social crisis, poverty, and sometimes societal disintegration constituted added stresses that may have contributed to the development of posttraumatic symptoms there (Allwood et al., 2002; Walton et al., 1997). In fact, a study of youth in Northern Ireland found that those who lived in economically well-off areas functioned better under terror than their poorer peers (Muldoon & Trew, 2000).

About three quarters (74%) of the Israeli adolescents queried reported some degree of posttraumatic growth. The reported percentages of growth in other studies using Tedeschi & Calhoun's PTGI scale (Tedeschi & Calhoun, 1996) are diverse. While Weiss (2002) found that 98% of women with breast cancer and 88% of their husbands reported growth, Milam et al. (2004) found that only 29% of Hispanic adolescents reported growth in response to various stressful events in the last three years. A possible explanation for these diversities is the difference in the stressful or traumatic experience measured, age and other social characteristics of survivors, and the posttraumatic environment.

Our findings show that there is a positive correlation between growth and posttraumatic symptoms. This finding is consistent with the positive correlations previously found among child Holocaust survivors (Lev-Wiesel & Amir, 2003), parents of children with pediatric leukemia (Best et al., 2001), and AIDS caregivers (Cadell, 2000). However, several studies have found either no correlations (e.g., Elder & Clipp, 1989; Joseph et al., 1993; Lehman et al., 1993) or even negative correlations between growth and PTSD and other distress measures (e.g., Aldwin et al., 1994; Evers et al., 2001; Frazier et al., 2001; McMillen et al., 1997).

The literature regarding the relationships between pathogenic and salutagenic outcomes is equivocal. Two possible explanations addressed these relations (Breznitz & Eshel, 1983; Waysman, 1994). One view, supported by findings of negative correlations, holds that growth and distress may be considered as bipolar, consisting of a single dimension with opposite endpoints. This bipolar explanation considers it impossible to find both positive and negative outcomes in response to trauma within the same person. An alternative view, supported by findings of positive correlation similar to ours, suggests that growth and distress may be two separate, independent dimensions of experience. That

is, a high score on one dimension does not necessarily imply low scores on the other. This "two dimensional stress response perspective" posits that most people will respond to even extreme stress with some mixture of both resilience and vulnerability. This view is in line with a recent review by Linley & Joseph (2004), which also suggests that growth and distress should be considered as bivariate independent dimensions and not two ends of a continuum.

Garmezy (1991) has also stated that the hallmark of resilience is adaptive functioning, despite feelings of distress and negative affect. The current findings confirm this point of view. It is also in line with results obtained by Elder & Clipp (1989), who have found that the more resilient people are not necessarily symptom-free in terms of emotional distress and impairment. Similarly, Holman & Silver (1992) found that survivors of childhood incest with the highest resilience scores nonetheless reported more than twice the distress than in a nonpatient population.

In a similar vein, Waysman, Solomon, & Schwarzwald (1998) claimed that positive and negative outcomes are manifestations of different aspects of the personality. Whereas the negative effects of trauma express themselves mainly as psychological symptoms, the positive effects are manifested in world-view, self-esteem, and relation to one's surroundings. The results of the current study thus point to the complexity of the human response to traumatic stress and suggest that most trauma victims may be able to compartmentalize their response to trauma: negative effects occur, but they usually do not interfere with subsequent psychological development. Conversely, these findings also indicate that even when a person is able to grow and experience positive changes following a traumatic experience, this does not undo the ongoing suffering that the event has created. Moreover, according to Tedeschi (1999) the growth process itself is a "distressing process which often involves transitory symptoms of anxiety, depression or posttraumatic stress disorder" (p. 322).

In addition to the positive correlation between posttraumatic symptoms and posttraumatic growth found in the present study, both increased with the degree of both objective and subjective exposure. The more acts of terror to which the youths were exposed and the more fear they felt, the greater was both their growth and their posttraumatic symptomatology. These findings are consistent with previous findings linking level of exposure to posttraumatic symptoms (Garbarino & Kostelny, 1996; Macksoud & Aber, 1996; Qouta et al., 1995b; Schwarzwald et al., 1993; Thabet et al., 1999) and growth (McMillen et al., 1997; Tedeschi & Calhoun, 1996).

At the same time, both outcomes correlated much more strongly with

subjective exposure than with objective exposure. Findings showing that subjective exposure was more strongly implicated in posttraumatic symptoms than objective exposure were similarly reported in an earlier study of children in Israel (Waysman, Schwarzwald, Weisenburg, & Solomon, 1992), as well as in studies of children in Rwanda (Dyregrov et al., 2000) and students in Yugoslavia (Gavrilovic et al., 2002). There is also evidence that subjective exposure is a stronger predictor of PTSD among youth one year after the trauma than objective exposure (Asarnow et al., 1999). These findings provide empirical support for Lazarus et al.'s (1985) claim that subjective appraisal plays a significant role in coping with stressful events and that it is the interpretation of the event, rather than exposure per se, that determines its psychological outcome.

Our findings indicate that the correlation between subjective exposure and both posttraumatic symptoms and posttraumatic growth was at its peak among subjects who were exposed to four or five terror incidents and not among subjects exposed to six or more incidents. It was also found that the interaction between subjective and objective exposure had a significant effect (although relatively small) on both posttraumatic symptoms and posttraumatic growth. This might suggest that level of reaction to traumatic events tends to intensify as a result of level of exposure (either subjectively or objectively) up to a certain level beyond which the reaction begins to decline or at least maintains the same level. Some researchers believe that the relationship between exposure and growth may be curvilinear. A certain level of event severity may be required for growth to occur, but at extreme levels, it serves to undermine growth (Linley & Joseph, 2004; Powell, Rosner, Butollo, Tedeschi, & Calhoun, 2003).

These similarities notwithstanding, the two outcomes had markedly different sociodemographic correlates. The sociodemographic variables explained a substantially greater portion of the variance in growth than in posttraumatic symptoms. While they explained only 3.3% of the variance in symptoms, they explained some 8.7% of the variance in growth—almost three times as much. This difference lends additional support to the two-dimensional view, showing that posttraumatic stress and posttraumatic growth are distinct entities that may be the result of a traumatic incident but are also linked to other and different variables. Similarly, a study on former POWs shows that some demographic differences (officers vs. non-officers) were related to the positive changes after the trauma but not to the negative ones (Waysman, 1994). Antonovsky (1985) claimed that the ability to adjust to a stressor depends on the individual experiences and available resources. It may be that different sociodemographic groups have different social resources that may account for the differences in their coping and adaptation.

This study shows that religiosity was not related to posttraumatic symptoms, but was strongly associated with growth. This may indicate that although posttraumatic symptoms and posttraumatic growth share some similarity, they seem to be distinct variables and have different predictors. The fact that religiosity was found to be associated with growth is in line with Linley and Joseph's (2004) literature review, reporting religious believers to be more apt to report growth. This may be explained by Tedeschi's (1999) claim that growth requires investing the traumatic incident with meaning and that religious belief can help do this. Research shows that participation in religious activities has been related to posttraumatic growth (Pargament, 1997; Tedeschi & Calhoun, 1995), suggesting that persons experiencing posttraumatic growth seek out religious experiences or, alternatively, that their religious participation primes them for spiritual growth (Tedeschi & Calhoun, 1996).

This study has been carried out in Israel and this may raise questions about the generalizability of its findings. Although Israel is similar in many aspects to other Western countries that are now under the threat of terror, military and security issues have always been part of life in Israel and that may affect the reaction to the threat of terror. There is a need for further studies, in different countries, regarding the effect that terror has on youth well-being and development. The issue of the developmental stage has not been examined in the current study. However, studies with a larger age range may examine this issue. There is reason to believe that children in different developmental stages will react differently to the threat of terror.

To summarize, despite the high incidence of terror that Israeli youths have been facing, they report moderate levels of posttraumatic symptoms, along with posttraumatic growth. Indeed, their growth increased with both their exposure and their symptoms, yet it is the subjective, not objective, exposure that was the main correlate of posttraumatic symptoms and growth. This finding points to the psychological distress suffered by Israeli adolescents in the wake of the terror even when they were not directly exposed. It highlights the need for parents, teachers, and caregivers to be aware of this phenomenon and offer appropriate responses to symptoms of distress in adolescents.

Finally, there should be further consideration regarding the growth questionnaire. Our preliminary investigation has indicated that among youths exposed to terror incidents, indicators of responsibility (which may linked to their age) and sense of belonging to the community and state (which terror often tries to undermine) are to be added. This may suggest that the growth questionnaire scales should take into consideration the population that is being examined, as well as the stressor that is being tested. Future studies should consider this issue.

Finally, findings (e.g., Linley & Joseph, 2004) have suggested that mental health professionals should consider not only the reduction of distress as a therapeutic goal, but also the enhancement of posttraumatic growth. In a similar vein, our results indicate that this is true regarding not only the adult population but also regarding youth. Posttraumatic stress symptoms and posttraumatic growth are two different dimensions; hence reduction in distress level does not necessarily imply that the person will enhance his or her ability to regard the stressful event as a learning experience or to change his or her life's philosophy for the better. Therefore we suggest that both researchers and clinicians pay the necessary attention to both the salutogenic (e.g., posttraumatic growth) as well as the pathogenic effects of traumatic stress.

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