Reactions to Repeated Unpredictable Terror Attacks: Relationships Among Exposure, Posttraumatic Distress, Mood, and Intensity of Coping[1]

ELI SOMER[2]

School of Social Work University of Haifa, Maytal–Israel Institute for Treatment and Study of Stress, and R. D. Wolfe Centre for the Study of Psychological Stress

AYALLA RUVIO

School of Management, University of Haifa

ILANA SEVER

Maytal–Israel Institute of Treatment and Study of Stress, and School of Education, University of Haifa

EREZ SOREF

Israel College of the Bible

We hypothesized that exposure to Type IV trauma (involving alteration in a person's basic relation to the environment), associated with prolonged terrorist threats, would impact posttraumatic distress and that exposure to terrorism would impact the intensity of coping. The relationships revealed by the data proved to be in line with this model. Our data suggested that the relationship of exposure and coping was not direct, but seemed to be mediated by posttraumatic distress, that demoralization at the height of an unrelenting terror campaign was unrelated to trauma exposure, and that acceptance was a distinct way of coping adopted by targeted Israelis. Acceptance showed the weakest association with posttraumatic distress and was related inversely to our index of low morale.

Several telephone- and Web-based surveys conducted following the terror attacks in the United States on September 11, 2001, indicated that the prevalence of acute posttraumatic stress disorder (PTSD) and depression among highly exposed respondents 5 to 8 weeks later were twice the baseline rates of these conditions (e.g., Galea et al., 2002). Substantial symptoms of stress were experienced by Americans all across the country (e.g., Schuster et al., 2001). However, data on the psychological impact of ongoing terrorism are very sparse.

Bleich, Gelkopf, and Solomon (2003) tried to determine the level of exposure to terrorist attacks and the prevalence of traumatic stress-related

symptoms, symptoms of PTSD, and sense of safety after 19 months of terrorism in Israel. They concluded that, given the nature and length of the Israeli traumatic experience, the psychological impact may be considered moderate. Although the survey participants showed distress and lowered sense of safety, they did not develop high levels of psychiatric distress, which may be related to a habituation process and to coping mechanisms. Bleich et al.'s findings were supported by Somer, Ruvio, Soref, and Sever (2005) who showed that acceptance of uncontrollable terrorist attacks was both the most commonly used way of coping employed by Israelis during that period and the only effective one.

Terr (1991) defined Type I and Type II stressor events. *Type I stressors* are unanticipated single events beyond the range of normal daily stress and are traumatic in their effects, potentially leading to PTSD. *Type II stressors*, such as chronic spouse abuse or child abuse, are enduring or repetitive in nature and lead not only to PTSD, but also to dissociative symptoms and unremitting sadness. Berk (1992) suggested a *Type III stressor* paradigm to describe chaotic environments that include anxiety-inducing intrafamilial or interpersonal relationships with high levels of inconsistency and unpredictability. He posited that Type III environments can lead to the development of PTSD symptoms, dissociation, and personality changes. Unlike the sudden, shocking Type I stressors, the prolonged or repetitive nature of Type II and Type III environments permits some forms of learning and adaptation.

Wilson (1994) proposed a fourth category of stressor event. *Type IV stressors* constitute an alteration in a person's basic relation to the biosphere. Type IV events are anomalous, producing high levels of uncertainty and profound adaptational dilemmas because victims are uncertain about effective ways to protect themselves. For example, they do not know what the exposure effects may be (e.g., in biological or chemical attacks) or how to save themselves and their families from harm (e.g., in communities under random terrorist attacks). Individuals who live in environments affected by Type IV events are predicted to develop hypervigilance, brooding, and heightened states of sadness (Wilson, 1994). The purpose of the present study is to investigate responses of a community exposed to Type IV events: repetitive, unpredictable, and potentially mortal terrorist attacks.

Background: Type IV Stressors in Israel

Over 1,000 Israelis have been killed in the *Al-Aqsa Intifada*, a prolonged series of terrorist attacks including shooting incidents, car bombings, and suicide bomb attacks. In a country of 6.5 million inhabitants, this casualty

rate is massive. Countless others have been injured physically and psychologically. Since the start of this campaign and the start of data collection for this study, 653 attacks have been launched against Israeli civilians.

Television, radio, Internet, and print media coverage of these events is immediate, graphic, and extensive, contributing to a sense of a massive shared national crisis that engulfs survivors and other civilians alike. Terrorists strike in many towns and cities, but have concentrated mostly on the three major metropolitan areas (Jerusalem, Tel Aviv, and Haifa) and three smaller cities adjacent to the Palestinian–Israeli Green Line (the unofficial border; Hadera, Netanya, and Afula). At a peak of this violence expressed in a prolonged string of hostilities, we decided to interview citizens residing in the most highly affected areas.

Whereas Bleich et al. (2003) assessed exposure to terrorism, symptoms, and coping with terrorism in a nationally representative sample of Israelis, we investigated the impact of terrorism on Israelis residing in the most severely targeted areas. We decided to focus on indicators of post-traumatic stress because we wanted to gauge the most commonly studied psychological outcome of trauma and disasters (Galea et al., 2002; Lomranz, Hobfoll, Johnson, Eyal, & Zemach, 1994; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). Measurement of nonpathological distress was seen as a more adequate index of the psychological status of demoralized populations under threat (North & Pfefferbaum, 2002; Yagur, Grinshpoon, & Ponizovsky, 2002). Therefore, we also attempted to assess demoralization among our respondents.

Type IV Environment and Civilian Demoralization

We conducted the present study to determine the relation of exposure to terrorism, posttraumatic distress, morale, and coping in a population under Type IV stressor conditions. In this study, exposure to a Type IV trauma environment (repeated random acts of terrorism) is hypothesized to exacerbate posttraumatic distress.

During the Intifada terror campaign, Israeli citizens were observed to adopt specific coping tactics (e.g., choosing the table in a restaurant least likely to be hit during a terror attack). The intensity of their coping was positively correlated with the level of posttraumatic distress (Somer et al., 2005). In line with previous conclusions by Spurrell and McFarlane (1993) and Chung, Farmer, Werrett, Easthope, and Chung (2001), we regarded coping as representing a psychological process used to contain the distress caused by symptoms, as well as to manage unpredictable and uncontrollable environmental adversity. Consequently, exposure to a Type IV trauma envi-

ronment is hypothesized to intensify coping behaviors. We therefore propose the following:

> *Hypothesis 1.* Exposure to trauma will be related to posttraumatic distress.

> *Hypothesis 2.* Exposure to a Type IV trauma environment will intensify coping behavior.

> *Hypothesis 3.* Posttraumatic distress will be associated with increased coping activity aimed at containing that distress.

Although the term *morale* does not appear to be defined sharply in the research literature, we decided to assess the affective component of the construct in line with the methodology applied in ongoing Israeli surveys of morale (e.g., The Peace Index; Yaar & Hermann, 2005), in which respondents are asked simply to rate their moods through a single question. Longitudinal analysis of the national Israeli mood has been assessed also by simple inquiries on mood as part of the Continuing Survey conducted by the Israel Institute of Applied Social Research (e.g., Guttman Center, Israel Democracy Institute, 2005; Levy & Guttman, 1976, 1985).

A quantification study of civilian morale under the duress of Type IV stressor conditions rarely has been undertaken by psychologists. Historical evidence on civilian morale in 1940 Britain, for example, suggests considerable demoralization of the British civilian population in the wake of relentless German bombardments (Beaven & Griffiths, 1999; Dear & Foot, 2002). More recent reports in the Israeli media have indicated that as many as 80% of Israelis expressed concern that a terror attack could strike them or a member of their family ("Israelis Concerned," 2001).

Tel Aviv University's Peace Index Project (Yaar & Hermann, 2002) published the results of a telephone survey conducted during the period when data were collected for this study. These results indicated that among Israeli respondents aged 18 to 20 years, about one quarter were realistically considering emigration. In response to the question "How would you describe your mood nowadays?" 31% described their mood as *bad* or *very bad*. The sensitivity of this simple morale index was demonstrated recently through the May 2005 Index (Yaar & Hermann, 2005). Following a long lull in the hostilities, only 15% described their mood as bad or very bad.

The 2002 national mood figures (Yaar & Hermann, 2002) obviously far exceed the percentage of Israelis who were terror victims. They may have reflected a variable independent of direct exposure to terror, possibly representing perceived hopelessness of resolving the conflict and of changing the Type IV stressor environment. Some 10 years prior to the current violence

(during the Gulf War), Israeli civilians were exposed to comparable adversities when Israel's cities were bombarded intermittently by Iraqi SCUD missiles. The population's documented distress during that period notwithstanding, Levy (1994) reported increased optimism (assessment of Israel's future) and a sense of improved mood. These results suggest that measures of the public's posttraumatic distress and civilian mood are dissimilar constructs.

We propose that the present terror campaign could have resulted in an additional emotional outcome that reflects sadness (implied mood variable utilized by Yaar & Hermann, 2005) and worry (affective morale component utilized by Levy & Guttman, 1985) associated with the environment in which Israelis have been living. Measurement of nonpathological distress was seen as a more adequate index of psychological status of demoralized populations under threat (North & Pfefferbaum, 2002; Yagur et al., 2002). Therefore, we attempt to assess low morale/demoralization (i.e., sadness, tension) in our respondents. We propose the following:

Hypothesis 4. Low morale among Israeli citizens subjected to prolonged threat of repeated acts of terror will be unrelated to actual exposure.

Hypothesis 5. Demoralization will impact negatively on coping efforts.

We seek to examine the quality of fit between our data and an exploratory model of the relation of exposure to Type IV stressors, low morale, posttraumatic distress, and coping. The research hypotheses are summarized and presented in Figure 1.

Method

Procedure

Six research assistants received training to ensure standardized administration of the research instruments. They were all college educated, with three of them being graduate students. All had prior experience with research assistance.

The interviewers were handed written scripts to introduce the survey and its various components. Since the interview process involved only reading aloud from printed statements and questions, optimal standardization was achieved during a single 3-hr training session. To ensure fidelity, we conducted random checks of the interviewing process.
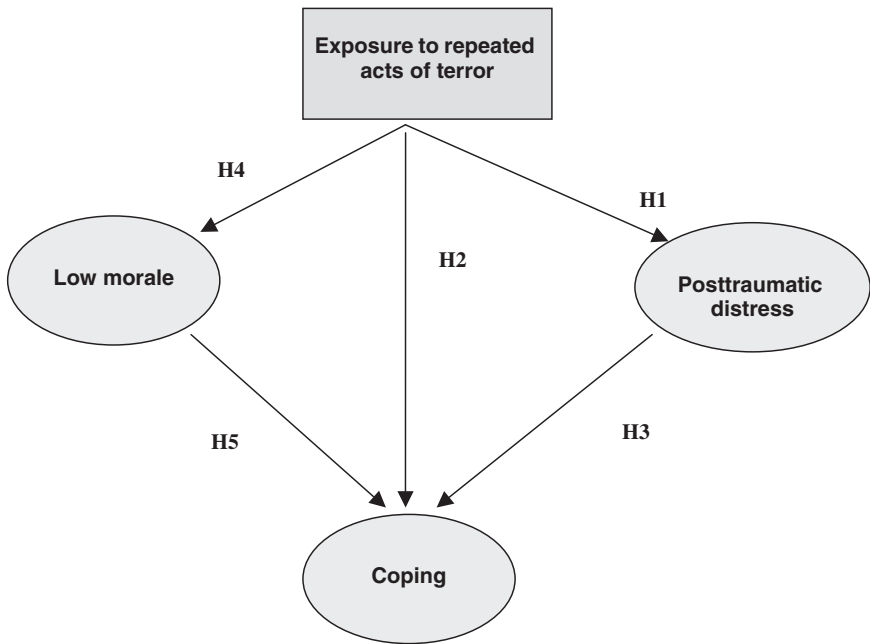
Figure 1. Hypothesized model

Quality of administration of the research protocol generally was very good. Corrective feedback was offered on the rare occasions when minor modifications in interviewing style were warranted. In addition, one researcher was permanently on call during data collection to resolve specific dilemmas that arose.

A computer-generated random telephone list for citizens in the three major cities (Jerusalem, Tel Aviv, and Haifa) and the three smaller towns (Afula, Hadera, and Netanya) most affected was used (Telepathy Software, Survey Version, courtesy of Dvash Software Systems, Israel). Research assistants were instructed to call consecutive numbers on the list until they answered. They also were instructed to interview only Hebrew-speaking individuals who were consenting adults (18 years old and over).

Recently, Israel has attracted many immigrants from the former Soviet Union and from Ethiopia. Because of budgetary constraints, we were unable to hire and train a multilingual research assistance team. Therefore, we instructed our assistants to interview only respondents as just noted. Because most immigrants attend subsidized Hebrew courses shortly after their arrival, and become competent in Hebrew fairly quickly, we assumed that this criterion would exclude only a relatively small number of very recently arrived

individuals. The volatile situation in Israel during data collection warranted rapid collection of data to ensure equivalence in terms of participant exposure to terrorism and its reportage in the media. Data for this study, therefore, were collected continuously for 2 consecutive weeks during April 2002, which was 1 month after the especially severe events of March 2002, when 81 civilians were killed in 11 separate suicide attacks.

Participants

During the 2-week period of data collection, 602 telephone calls were made, of which 545 were answered by respondents who met our inclusion criteria. The other 57 calls were not answered or disconnected, had bad connections, or were answered by non-Hebrew-speaking immigrants or by minors. We excluded 7 Hebrew-speaking minors, 10 Russian-speaking adults (7 women, 3 men), and 5 adults who answered in Hebrew that they did not speak the language (4 women, 1 man). The final sample totaled 327 participants who gave verbal consent to participate in this research project, representing a 60% response rate.

Participants were an average of 42.5 years of age, with some post-high-school education. There were 327 participants (196 female, 59.9%; 131 male, 40.1%; see Table 1). More men than women in the sample were single. No statistically significant differences between men and women were found in terms of age, educational level, or ethnicity.

Measures

The measures for the present study were compiled to form a structured interview designed to address our specific research questions. The following domains were investigated: (a) demographic information; (b) terrorism trauma exposure; (c) modes of coping; (d) mood/morale; and (e) PTSD symptom severity. Previous experience with peritraumatic research in Israel taught us that telephone interviews with citizens under the strain of military threats cannot effectively last more than 30 min if respondent dropout is to be minimized (Somer, Keinan, & Carmil, 1996). The design of our study instruments reflects efforts to obtain optimal balance between accuracy and brevity.

Demographic Information

Demographic data include age, gender, marital status, number of children, country of origin, year of immigration, city of residence, and level of education.

Table 1

Demographic Characteristics of the Sample

	Total			Men			Women					
	M	SD	%	M	SD	%	M	SD	%	df	χ^2	t
Age	42.5	15.6		41.5	15.7		43.2	15.6		324		−0.89
Education	13.6	2.9		13.1	2.5		13.7	3.1		292.7		−1.7
Marital status										2.0	12.1*	
Single			24.23			33.3						
Married			65.03			59.4						
Divorced			5.83			4.7						
Widowed			4.91			2.3						
Ethnicity										1.0	0.49	
Israeli born			57.27			58.1			56.6			
Non-Israeli born			42.83			41.9			43.4			

Note. N = 327.
* p < .01.

Repeated Exposure to Acts of Terror

Index of Exposure to Terror (IET). The IET includes several aspects of exposure to terror in Israel. We asked respondents *Yes/No* questions about the terror attacks that had taken place during the Al-Aqsa Intifada (*Yes* responses were followed up with open-ended questions). Participants' direct exposure to terror was measured by responses to the following questions: (a) "Were you present on site during a terror attack (e.g., a shooting, a bombing)?"; (b) "Have you been exposed to a terror event as a member of an early response team, or as a reservist with the Israel Defense Forces?"; and (c) "Have you been injured physically during a terror attack?"

We also inquired about participants' subjective and indirect exposure to the threat of terror, as measured by responses (*Yes* or *No*) to the following questions: (a) "Have you passed by a terror attack scene shortly after the event and witnessed signs of carnage and/or property damage?"; (b) "Have you been involved in providing physical or emotional assistance to victims of any of the recent terror acts?"; (c) "Do you personally know somebody who was on site during a terror attack?"; and (d) "Do you feel you have escaped a terror attack by luck or by coincidence (e.g., missed your bus only to find out it was destroyed minutes later by a suicide bomber)?" These exposure scores (direct, indirect, and subjective) were weighted and compiled to form the following composite index of exposure to terror (IET):

$$
\begin{aligned}
\acute{O} = \ &(\text{Times injured during terror attack} \times 5) + \\
&(\text{Times present on scene during terror attack} \times 4) + \\
&(\text{Times provided help to terror victims on scene} \times 3) + \\
&(\text{Times provided help to terror victims off scene} \times 2) + \\
&(\text{Times witnessed the aftermath of a terror attack} + \\
&\text{Luckily avoided a terror scene} + \text{Personally knows} \\
&\text{somebody who was a casualty in terror attack} \times 1)
\end{aligned}
$$

Weighing of the IET was as follows: 10 graduate students in social work were given the list of 12 terror exposure situations generated by the authors (who were also part of the threatened population). The students were asked to sort the statements into five categories of severity, ranging from 1 (least traumatizing situation) to 5 (most traumatizing situation). Interrater agreement was noted for each statement. For example, if the statement "Injured during terror attack" was categorized by 6 of the 10 raters as meeting the severity rating of 5, the interrater agreement was 60%. Interrater agreement on the severity of the 12 situations ranged between 60% and 100%. There are seven situations on which interrater agreement regarding severity of potential traumatization was at least 80%. These situations were selected and entered

with their weights into the composite Impact of Event Scale–Revised scale score (IES-R; Marmar, Weiss, Metzler, Ronfeldt, & Forman, 1996).

Posttraumatic distress: Impact of Event Scale–Revised–Brief (IES-R-B). The IES-R (Marmar et al., 1996; Weiss, Marmar, Metzler, & Ronfeldt, 1995) is a measure designed to fit the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychiatric Association, 2000) symptoms criteria for PTSD. The original instructions provided by Weiss and Marmar (1997) indicated that the IES-R is intended to measure the difficulties that people sometimes have following stressful life events.

Participants in the current study were asked to "read each item, and then indicate how distressing each difficulty has been for you DURING THE PAST SEVEN DAYS with respect to recent terrorist attacks." The questionnaire consists of 22 items measured on a 4-point Likert scale ranging from 1 (*not at all*) to 4 (*very much*).

The IES-R has three subscales—avoidance (8 items), intrusion (7 items), and hyperarousal (7 items)—and it has demonstrated high psychometric properties (Marmar et al., 1996; Weiss et al., 1995). Following adaptation, translation, and back-translation by two bilingual professionals, we took 12 of the original 22 questions of the IES-R (hence, the IES-R-B) because we chose to construct a shorter instrument that was more suitable for a telephone study. To select the best items for the abbreviated instrument, we explored a database collected for a separate study (Somer, Lawental, & Soref, 2004) and identified items with the lowest loading on their respective factors (Intrusion, Avoidance, and Hyperarousal). Upon further inspection, we concluded that these items might have been impaired by problems of conceptual or linguistic equivalence (Fouad, 1993; Geisinger, 1994).

It has been argued that cross-cultural testing needs to ensure that translated instruments are characterized by functional equivalence, conceptual equivalence, and linguistic equivalence (Jeanrie & Bertrand, 1999; Lonner & Berry, 1986). Accordingly, we removed three Avoidance items, three Intrusion items, and four Hyperarousal items. The Hebrew version of the IES-R recently has demonstrated a Cronbach's reliability coefficient of .94 (Somer et al., 2005). Using the same database, we found that the shorter IES-R-B demonstrated a reliability of .88.

To examine the validity of the shorter IES-R-B construct in this study, we performed a confirmatory factor analysis using structural equation modeling (SEM) with AMOS 4 software. This is considered a more rigorous test of construct validity than more traditional techniques (Anderson & Gerbing, 1988; Garver & Mentzer, 1999). The procedure resulted in a very good fit, $\chi^2(41, N = 327) = 80.73$, $p = .00$, and normed $\chi^2 = 1.97$. The value of the normed chi square is below the recommended threshold of 5 (Segars & Grover, 1998). All fit indexes were above .90 with comparative fit index

(CFI) = .983, Bentler–Bonnet normed fit index (NFI) = .966, Tucker–Lewis non-normed fit index (NNFI) = .972, and root mean square error of approximation (RMSEA) = .055, which is below the recommended value of .08 (Browne & Cudeck, 1993). Based on the results of the IES-R-B, we decided to adopt it as one of our research instruments. Cronbach's coefficient of the IES-R-B calculated in this study was .78.

In addition to the IES-R-B total score and subscales, we created two more outcome variables. Because the IES-R-B is an abbreviated tool—and because we wished to assess posttraumatic distress (PTD) not PTSD—we reduced the number of required item endorsements to meet DSM criteria for inclusion in the PTD variables that we generated. First, we created criteria for a binary *Moderate PTD* gauge. In this group, we included individuals who scored 3 or above on at least one Intrusion item (DSM criteria for PTSD require one Intrusion item), at least two Avoidance items (the DSM requires at least three), and at least one Hyperarousal item (the DSM requires at least two). We also created a binary *Severe PTD*, a possible "caseness" indicator, based on the more conservative cut-off of 4 (out of 5).

Demoralization/Low Morale

The Hebrew Mental Health Inventory (H-MHI) is the Hebrew version of the MHI-5 (Berwick et al., 1991). To ensure fidelity, the MHI-5 was adapted and translated into Hebrew and then back-translated by two bilingual professionals. The MHI-5 performed as well as or better than three longer psychopathology screening questionnaires: the 18-item MHI, the 30-item General Health Questionnaire (GHQ), and the 28-item Somatic Symptom Inventory (SSI). Hanley and McNeil (1982, 1983) showed that the area under the receiver operating characteristics (ROC) curve (AUC) can be taken as a measure of the degree of information the test contains over its entire scoring range. A test with no information has an AUC of 0.50, while a perfect test has an AUC of 1.00.

ROC analysis for the MHI-5 yielded an AUC ranging from 0.74 to 0.89 (Berwick et al., 1991). We regarded the H-MHI-5 as a measure of mood, rather than mental health. This tool was chosen as an index of low morale because of its good psychometric properties and conciseness.

The MHI contains five questions assessing sadness and emotional tension. The questions begin "How much of the time during the past 4 weeks . . ." and are anchored as follows: (a) ". . . have you been a nervous person?"; (b) ". . . have you felt calm and peaceful?"; (c) ". . . have you felt down-hearted and blue?"; (d) ". . . have you been a happy person?"; and (e) ". . . have you

felt so down in the dumps that nothing could cheer you up?" The MHI uses a 5-point scale ranging from 1 (*not at all*) to 5 (*all the time*).

Cronbach's alpha for the MHI's internal consistency was .63. However, when we removed the unreliable item (d), we obtained a four-item H-MHI scale with an internal consistency of .70. The final four-item H-MHI was used in the present study.

Coping

Although it is evident that the series of unrelenting terror attacks created a unique condition to which Israelis reacted with distinct ways of coping (e.g., planning escape routes when eating out), no other specific coping scales were readily available at the time. Folkman and Lazarus developed the Ways of Coping Checklist (WCC) in the 1970s (Folkman and Lazarus, 1980). It was based on the transactional model of stress, which posited two types of coping: solution-focused and emotional regulation (Lazarus, 1991).

The WCC has always had a drawback: The number of obtained factors changes from one sample to the next, or from one stressor to another (Parker & Endler, 1992). This common problem with measurement of coping underscores an unresolved issue: disposition versus situation. To attain maximum pairing between stress experiences and types of coping, we attempted to adjust carefully the measurement of coping to the specific context of the Al-Aqsa Intifada by developing an instrument that is more pertinent to the specific circumstances of the situation. Thus, we created the Coping With Terror Scale (CTS).

The items comprising the CTS are based on the outcome of focus groups facilitated by the first author with 16 Israeli citizens residing in one of the terror-afflicted cities concerning their particular ways of coping with the threat of terrorist attacks. We hoped that the focus groups would help us to identify specific coping strategies employed during this unprecedented national crisis. This cost-effective preliminary research method produced rich data in a short period of time, which would not have evolved as easily and as readily in individual interviews (Krueger, 1994; Linhorst, 2002).

Focus groups usually are composed of 6 to 12 participants (Stewart & Shamdasani, 1990). One of our groups was comprised of 7 graduate students (4 women, 3 men) who were 25 to 38 years old. The second group consisted of 9 university workers (6 women, 3 men) who were 28 to 48 years old. Of the 16 participants, 10 were single, 5 were married, and 1 was divorced.

The group discussion centered on one basic research question: "What do you do that helps you cope with the current threat of terrorist attacks?" The moderator used a topic guide including three written grand-tour, open-ended

questions (Krueger, 1994; Morgan, 1998; Spardely, 1979), which allowed outline, direction, and flexibility in interacting with participants. Although the researcher–moderator took an active role in asking questions at different points in time, participants were eager to share their experiences spontaneously. The group interviews lasted from 50 min to 90 min. The researcher–moderator took notes during the discussion to record the various coping strategies described by participants. The second focus group yielded no novel coping items. Therefore, it was concluded that saturation had been reached.

The final instrument contained the following coping tactics: (a) direct action/confrontive coping (e.g., purchasing a handgun); (b) planning (e.g., enhancing chances of survival by choosing the safest seats on a bus or in a restaurant); (c) distraction/mental disengagement (e.g., absorption in various modes of entertainment); (d) self-care (e.g., engaging in sports, yoga); (e) renouncing public places/restraint coping; (f) seeking social interaction; (g) deliberate avoidance of news coverage on terrorist events/behavioral disengagement; (h) acceptance (i.e., learning to live with the situation); (i) turning to God; and (j) ignoring the situation. Participants were asked to indicate how much each statement reflected their coping tactics during the month of March 2002 on a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*very much*). Cronbach's alpha for this heterogeneous scale was .66.

We conducted a factor analysis to detect internal structure and relationships of the coping variables. Of the 10 items, 2 were dropped from the analysis because of low reliability values (e.g., a widely endorsed item that did not differentiate between groups) and were not included in the factor analysis. A principal components analysis using varimax rotation method with Kaiser normalization was applied. Three factors were extracted: *emotion-regulating coping* (managing stress, rather than altering the problematic person–environment situation), *solution-focused coping* (aimed at altering the problematic person–environment situation), and *acceptance* (accepting the fact that the stressful event has occurred and is real), explaining about 66% of the total variance.

These factors corresponded with previously formulated concepts about ways of coping (Carver, Scheier, & Weintraub, 1989; Lazarus & Folkman, 1984), with the single-item Acceptance seemingly not only the most frequently utilized coping strategy among targeted Israelis, but also an independent factor (Somer et al., 2005). Not unlike the Ways of Coping Inventory, developed by Folkman and associates (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986), our instrument is an empirically derived inventory of specific ways in which people might cope during adversity (i.e., a terror attack). However, to avoid confusion with the original titles for the coping clusters, we chose to use the terms *emotion-regulation* and *solution-focused coping*, rather than the original terms (*emotion-focused* and *problem-*

solving coping). The coping construct in this study was validated further by means of a confirmatory factor analysis with structural equation modeling (SEM) with AMOS 4 software. This procedure also resulted in very good fits, $\chi^2(18, N = 327) = 32.53$, normed $\chi^2 = 2.03$; CFI = .995, NFI = .990, NNFI = .989, and RMSEA = .056.

Analysis

To test the hypothesized model, we employed SEM analysis, using AMOS 4 software (Byrne, 2001). The main advantage of this analysis is that it explicitly models the measurement error in the indicators. This procedure is critical when the research relies primarily on psychometric measurement instruments. Likewise, SEM simultaneously estimates direct and indirect relationships between variables in a single model. These features make it an appropriate analysis for our research model, which is mediated and relies on self-reported constructs. Following Anderson and Gerbing's (1988) two-step approach, we first tested the measurement model and then the structural model. These models are described in detail in the Results section.

The measurement and the structural model should meet the same goodness-of-fit criteria. In keeping with Bollen's (1989) recommendation to use multiple indexes of fit in evaluating the models, five measures of model fit are reported: chi square, CFI, NFI, NNFI, and RMSEA. For the index measures, values above .90 are considered indicative of a good model fit. Browne and Cudeck (1993) suggested that RMSEA values equal to or less than .08 are indicative of reasonable model fit. Chi square has been reported traditionally; and CFI, NFI, NNFI, and RMSEA are included because they are less sensitive to sampling characteristics and because they take sample size and degrees of freedom into account.

Results

Table 2 presents the means, standard deviations, and correlations of the variables under study. The findings show a fairly low mean level of exposure to repeated acts of terror ($M = 1.96, SD = 2.41$), posttraumatic distress ($M = 1.62, SD = 1.06$), and emotion-regulating coping ($M = 2.02, SD = 1.08$). The table also demonstrates moderate levels of demoralization ($M = 3.07, SD = 1.00$) and solution-focused coping ($M = 2.75, SD = 1.15$), and a moderately high level of acceptance ($M = 3.56, SD = 1.51$).

Exposure to repeated acts of terror was found to be correlated significantly only with posttraumatic distress ($r = .22, p = .00$). No other variable

Table 2

Means and Correlations of Investigated Variables

	M	SD	1	2	3	4	5
1. Exposure to repeated acts of terror	1.96	2.41	—				
2. Low morale	3.07	1.00	.06	—			
3. Posttraumatic distress	1.62	1.06	.22**	.53**	—		
4. Solution-focused coping	2.75	1.15	.10	.36**	.52**	—	
5. Emotion-regulating coping	2.02	1.08	.04	.27**	.42**	.30**	—
6. Acceptance	3.56	1.51	.05	−.19**	.04	−.02	.10

Note. $N = 327$.
** $p < .001$.

was associated with exposure to terrorism. Low morale, however, was found to be significantly related to all other variables under study; namely, posttraumatic distress ($r = .53$, $p = .00$), solution-focused coping ($r = .36$, $p = .00$), emotion-regulating coping ($r = .27$, $p = .00$), and acceptance ($r = −.19$, $p = .00$). Posttraumatic distress was found to be positively related to solution-focused coping ($r = .52$, $p = .00$) and to emotion-regulating coping ($r = .42$, $p = .00$). No significant correlation between posttraumatic distress and acceptance existed. Finally, a positive correlation was found between solution-focused and emotion-regulating coping ($r = .30$, $p = .00$), but these coping styles demonstrated no significant relationship with acceptance. Low morale was unrelated to exposure to terrorism, so Hypothesis 4 was not supported. In line with Hypothesis 5, low morale was negatively related to coping through acceptance, although positive relationships existed between low morale and other forms of coping.

Measurement Model

The measurement model assessed whether all items in a given scale represent the same latent variable. A rule of thumb is that a measurement model with three indicators per latent variable is ideal, and it can bear up to five

indicators without having difficulty estimating the model (Bagozzi & Heatherton, 1994). Where there are more than five items measuring the same construct, a parceling procedure can be utilized (Bagozzi & Heatherton, 1994). According to this procedure, items are randomly combined into composites. This reduces random error, simplifies the model, and simultaneously maintains the concept of multiple indicator measurement.

We used parceling procedures for the IES and for the H-MHI (i.e., index of low morale; Berwick et al., 1991). For the IES, items were parceled into three theoretical grounded dimensions[3]: avoidance, intrusion, and hyperarousal. For low morale, items were parceled into two dimensions: tension and sadness. These indicators were entered into the measurement model as multiple indicators to estimate their latent variable. The measurement model fit the data well: $\chi^2(65, N = 327) = 139.14$, $p = .00$; CFI = .988, NFI = .978, NNFI = .981, and RMSEA = .06. In addition to the positive fit indexes, factor loadings ranging from .45 to .77 support the model's measurement properties.

Structural Model

After a well-fitting measurement model was identified, the structural model was tested. Table 3 presents regression weights and fit measures of the structural model for all possible relationships. As shown in the table, the hypothesized model fit the data well. All fit measures were over .90, and RMSEA was .09. The significant results of the structural equation model are presented in Figure 2.

As shown in Figure 2, the higher the exposure to terror, the higher the posttraumatic distress (IES: $\beta = .31$, $p < .01$). Therefore, Hypothesis 1 was supported. Exposure to terrorist violence was not associated with low morale among our respondents, which is not in line with Hypothesis 4.

Hypothesis 2 postulated a relationship between exposure to a Type IV trauma and intensity of coping. This hypothesis was not supported by SEM, either. A significant negative regression weight value was found between level of exposure and use of the strategy of emotion-regulating coping ($\beta = -.20$, $p < .01$). No significant correlations between exposure to terrorism and solution-focused coping or acceptance were found.

High levels of posttraumatic distress (i.e., IES) were significantly associated with all of the ways of coping that were investigated in this study. That is, the higher the level of exposure to traumatizing events, the more intensely

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[3]See the Method section for a more elaborate explanation.

Table 3

Regression Weights and Fit Measures

Independent		Dependent	Regression weight
Exposure	⇨	Low morale	.07
Exposure	⇨	Posttraumatic distress	.31*
Exposure	⇨	Solution-focused coping	−.13
Exposure	⇨	Emotion-regulating coping	−.20*
Exposure	⇨	Acceptance	.01
Posttraumatic distress	⇨	Solution-focused coping	.80*
Posttraumatic distress	⇨	Emotion-regulating coping	.63*
Posttraumatic distress	⇨	Acceptance	.21*
Low morale	⇨	Solution-focused coping	.24*
Low morale	⇨	Emotion-regulating coping	.02
Low morale	⇨	Acceptance	−.35*

Fit measures	
	$\chi^2(68) = 254.74, p < .01.$
	NFI = .960
	NNFI = .954
	CFI = .970
	RMSEA = .092

Note. NFI = normed fit index; NNFI = non-normed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

respondents employed the various coping strategies. A very strong positive regression weight value was found between our posttraumatic distress index and both solution-focused coping (β = .80, $p < .01$) and emotion-regulating coping (β = .63, $p < .01$). A high level of IES proved to be related only moderately to acceptance as a coping strategy (β = .21, $p < .01$). These findings render further support to Hypothesis 3.
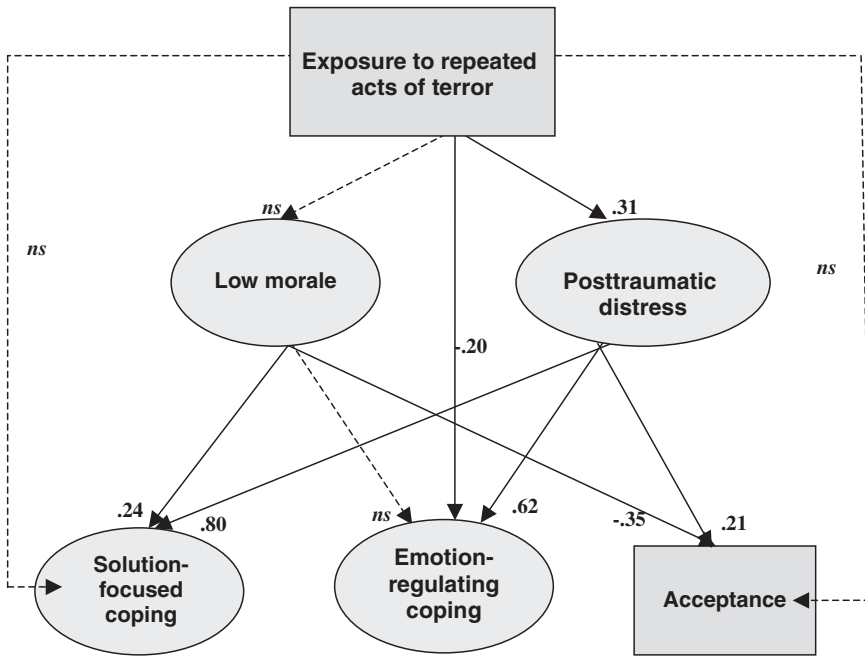
Figure 2. Structural model

In all, the relationship between exposure to repeated terrorist violence and posttraumatic distress was significant, as was the relationship between post-traumatic distress and intensity of coping. The link between exposure and coping was weaker. These findings suggest that posttraumatic distress might serve as a mediator between level of exposure to terror and intensity of coping employed.

We also anticipated that intensity of coping would be lessened by the pessimism and dejection associated with low morale (Hypothesis 5). The link between low morale and solution-focused coping ($\beta = .24$, $p < .01$) was not in line with this hypothesis. However, it was upheld by the negative relationship found between low morale and acceptance: The higher the demoralization (i.e., the lower the morale), the less inclined respondents were to cope by accepting the situation ($\beta = -.35$, $p < .01$). No significant relationship was found between low morale and emotion-regulating coping. Therefore, the evidence regarding the relationship between low morale and coping was mixed, and Hypothesis 5 was supported only to a limited extent.

An important objective of the present research was to explain the use of different coping strategies during repeated and unpredictable acts of terrorist

violence. A total variance explained (R^2) of .66 for solution-focused coping strategy and .36 for emotion-regulating coping strategy suggests that the overall model explained 66% of solution-focused coping strategy and 36% of emotion-regulating coping strategy. The total variance explained (R^2) for acceptance was .17, meaning that the overall model explained only 17% of this construct. These findings attest to the general robustness of the model.

Discussion

The present study examined exposure to repeated random terrorist threats (conceptualized as Type IV trauma) as predictors of posttraumatic distress, low morale, and intensity of coping in a full structural equation model. We hypothesized that exposure to Type IV terrorism trauma would impact posttraumatic distress. We also hypothesized that exposure to terrorism would impact intensity of coping, and that coping would be related to PTSD symptoms. The relationships that we discovered in the data were in line with this model. However, the model revealed a modestly negative link between trauma exposure and emotion-regulating coping. It also suggests that the relationship between exposure and coping is not direct, but appears to be mediated by posttraumatic distress.

We predicted further that exposure to repeated acts of terror would be unrelated to demoralization and that low morale would be associated negatively with efforts to cope. The model shows that demoralization was not related to exposure, as predicted, and that it affected coping differently from posttraumatic distress. It was modestly linked only to solution-focused coping, it was unrelated to emotion-regulating coping, and it was negatively related to acceptance as a way of coping. In fact, under Type IV conditions, posttraumatic distress and low morale appear to be independent constructs.

Our results indicate that the data fit the model well. As we hypothesized, and as others have shown, exposure to traumatic stress has a significant impact on posttraumatic distress (e.g., Schlenger et al., 2002). Our data suggest that people who have been exposed to an environment of Type IV terror might not react with acceptance as a way of coping or with solution-focused coping unless they suffer from posttraumatic distress. This condition appears to impel individuals to do something to reduce their discomfort.

Traumatized survivors of terrorism report intense coping behaviors, particularly of the solution-focused kind (aimed at increasing chances of survival). It seems that coping with the strain of Type IV traumas among targeted Israelis was practically synonymous with posttraumatic distress and possibly is a manifestation of it. Coping under the uncontrollable, random

stressors of the terror campaign was not especially effective, since it was not correlated with lowered levels of PTD. This is probably not unlike rubbing one's forehead as a means of coping with an excruciating headache. The rubbing would not have occurred were it not for the pain. It is indicative of its intensity, and it is not associated with its effective easing.

A relationship between posttraumatic distress and intensified coping was noted recently in Bosnia. Researchers found that higher mean coping strategy scores were significantly more frequent among torture survivors than among other civilians who had experienced war (Kucukalic, Bravo-Mehmedbasic, Popovic, Salcic-Dizdarevic, & Dizdarevic, 2003).

In the face of uncontrollable distressing threats, individuals appear to have adopted acceptance of the situation as a unique form of coping. Acceptance was documented recently as the most frequently endorsed coping item among targeted Israelis (Somer et al., 2005). Under the extraordinary conditions of the Al-Aqsa Intifada's uncontrollable violence, Israelis may well have found acceptance as the most effective way of coping. In line with this theorizing, our data show that acceptance was the coping strategy with the weakest association to posttraumatic distress, and that acceptance was related inversely to our index of low morale (i.e., it was associated with improved morale).

As predicted, we also found that mood under a Type IV stressor environment was unrelated to actual exposure to the stressing agents. At the peak of the terror campaign, morale probably could not sink much lower with additional attacks. This finding is in accordance with data reported by Bleich et al. (2003), who studied a national Israeli sample 19 months into the Intifada. These authors found that while only 9.4% of the sample met the criteria for PTSD, 58.6% reported feeling depressed (more likely reflecting low morale than a national psychiatric pandemic).

The statistical independence of low morale and PTD is evident not only from their different relation to the exposure variable, but also from their divergent relation to coping indexes. It appears that posttraumatically distressed citizens responded with diverse ways of coping, including acceptance of the uncontrollability of the stressful environment. Conversely, low morale probably reflected desolate despair over the situation, possibly revealing broader uncertainty about the prospects for a peaceful resolution to the conflict, revealed in the negative valence of the statistical link between the variables.

The present study addresses a common problem in research on traumatic stress that rests on retrospective reports: It is based on data collected while respondents were still facing environmental adversities. Therefore, it was not beset by potentially poor recall of events occurring in stressful environments (Burke, Heuer, & Reisberg, 1992; Christianson, 1992), nor by the impact of

the respondent's current psychological state on his or her reconstruction of events (Metts, Sprecher, & Cupach, 1991). Yet, the findings presented in this article must be interpreted carefully because of the self-report nature of the data, the home-grown nature of some of our measures, and the cross-sectional design of the investigation. A potential for social desirability in presentation, or for recognition seeking, should be considered also (King & King, 1991). Although the proposed model was informed by theory and substantive issues, an important concern remains ambiguity of the direction of relations among variables and the fact that the SEM approach does not confirm the suggested model (Breckler, 1990). It merely affirms that there are no existing statistics to disconfirm the model.

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