

The Effects of Perceived Community Cohesion on Stress Symptoms Following a Terrorist Attack

Eli Somer
Shira Maguen
Victor Moin
Amnon Boehm
Thomas J. Metzler
Brett. T. Litz

ABSTRACT. The effects of community cohesion were explored following a terrorist attack in Israel, during which an explosion on a public bus in a metropolitan city killed and wounded multiple individuals. Participants were 115 Israelis who resided in three specified perimeters around the area

Eli Somer, PhD, is affiliated with the University of Haifa, School of Social Work and the Maytal-Israel Institute for Treatment and Study of Stress.

Shira Maguen, PhD, is affiliated with the Massachusetts Veterans Epidemiology Research and Information Center and Boston Department of Veterans Affairs Health Care Systems and the Boston University School of Medicine.

Victor Moin, PhD and Amnon Boehm, PhD, are affiliated with the University of Haifa, School of Social Work.

Thomas J. Metzler, MA, is affiliated with the San Francisco VA Medical Center.

Brett. T. Litz, PhD, is affiliated with the Massachusetts Veterans Epidemiology Research and Information Center and Boston Department of Veterans Affairs Health Care Systems and the Boston University School of Medicine.

Shira Maguen is currently at the San Francisco VA Medical Center and the University of California at San Francisco Medical School.

Address correspondence to: Eli Somer, PhD, University of Haifa, Haifa, Israel, 31905 (E-mail: somer@research.haifa.ac.il).

of impact. Data collected immediately following the attack and 1 month later included demographics, proximity and exposure to the terrorist event, community cohesion, and posttraumatic stress disorder (PTSD) symptoms. For individuals reporting low and moderate degrees of exposure to the terror event, PTSD symptoms increased as community cohesion increased. However, for those with high exposure, PTSD symptoms and community cohesion were inversely related. Furthermore, for those who lived closest to the terror event, as community cohesion increased, PTSD symptoms decreased. However, for individuals who lived farther away from the terror event, community cohesion was positively associated with PTSD symptoms. One month following the attack, community cohesion did not significantly predict PTSD symptoms.

KEYWORDS. Anxiety, terrorism, community, cohesion, Israel

Terrorism erodes a sense of security and safety at both the individual and the community level and has been associated with adverse psychosocial effects for those directly exposed. At the individual level, several studies have demonstrated an increase in symptoms of depression, anxiety, and posttraumatic stress disorder (PTSD) in individuals exposed to acts of terrorism (e.g., Bleich, Gelkopf, & Solomon, 2003; North et al., 1999; Schlenger et al., 2002; Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002). For example, following the Oklahoma City bombing, almost half of directly-exposed survivors reported developing problems with anxiety and depression, and more than one third reported symptoms of PTSD (North et al., 1999). Generally, the impact of terror appears to dissipate over time. For example, 1 month after 9/11, 8% of a population of New Yorkers reported highly impairing PTSD symptoms; after 6 months, this rate dropped to about 1% (Galea et al., 2002). However, the reduced impact of terror over time in such contexts as Oklahoma City and 9/11 may be due to a lack of subsequent episodes of mass terror.

In recent years, there have been a multitude of terror attacks in Israel. Beginning in September 2000, terrorist attacks targeting Israeli civilians have been ongoing, with few periods of respite. During this period, 1,047 Israelis have perished (732 civilians and 315 members of the security forces), 7,142 have been physically injured (5,002 civilians), and many more have been devastated psychologically (Israel Defense Forces, 2005). In a national survey, approximately 16% of individuals reported having been directly exposed to a terror event and 37% had a family member

or friend who was directly exposed (Bleich et al., 2003). In addition, 77% of individuals reported at least one PTSD symptom, with 10% meeting full criteria for PTSD.

Most people exposed to terrorism are resilient or recover functioning after a period of distress and impairment (Bonanno, 2004). The course of posttraumatic adaptation is multiply determined by a synergistic combination of pre-existing personal and social risk and resilience factors, the extent of exposure to terror-related events, and the quality of the recovery context (e.g., Blanchard et al., 2004; Blanchard, Rowell, Kuhn, Rogers, & Wittrock, 2005; Grieger, Fullerton, & Ursano, 2004; Sprang, 1999). Degree of exposure (e.g., proximity) is typically the best predictor of mental health outcomes in the context of terrorism; however, the majority of this research on this area has been cross-sectional (e.g., King, Vogt, & King, 2004). On the other hand, indirect exposure (e.g., providing physical or emotional aid, witnessing carnage and property destruction, and knowing someone directly impacted by the attack) can have a considerable effect on people (e.g., Somer, Ruvio, Soref, & Sever, 2005). Terrorism-related loss of intimates can be especially impactful (e.g., Malkinson, Rubin, & Witztum, 2005; Neria et al., 2007; Pivar & Prigerson, 2004).

Social support is a robust predictor of chronic PTSD (e.g., Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). Typically, social support is treated as a characteristic of an individual's immediate and available network of friends and family who may be available to provide material and emotional assistance. However, in the context of terrorism (and disasters), the community and the culture, which can promote (or erode) a sense of belonging and shared collective experience, is equally important (e.g., McMillan & Chavis, 1986). Cohesive and connected communities and cultures can help victims recover from terror because they honor and respect its psychological impact, reduce the motivation for withdrawal and isolation, universalize and normalize suffering, and promote healing disclosures. Following 9/11, community cohesion in the United States (especially in New York and Washington, DC) was palpable and extensive, although there has been no research confirming its lasting value (Maguen, Papa, & Litz, 2007). Fullilove and Saul (2006) posited that community support and feelings of connectedness and shared experience greatly reduce fear and anxiety in the face of terror.

Kaniasty and Norris (2004) suggested that immediately following disasters, communities mobilize to rescue, protect, and support each other. However, the need for assistance soon exceeds the availability of resources and, as a result, community support that was initially available

begins to deteriorate. A disaster creates a ripple effect of stress and strain that can be a psychological liability. On the other hand, the sense of connection to others and the community can serve a protective role against emotional distress, despite the possible deterioration of support in this context (Kaniasty & Norris, 2004).

Several studies have found associations between community cohesion and mental health difficulties (Aneshensel & Sucoff, 1996; O'Brien, Hassinger, & Dershem, 1994). However, the mechanism through which these community variables may buffer individuals against negative psychological outcomes has rarely been explored. In one study, Cutrona, Russell, Hessling, Brown, and Murry (2000) found that community cohesion served as a moderator, whereby high community cohesion intensified the benefits of positive outlook on psychological well-being.

We examined the effects of community cohesion on stress symptoms in response to a terror event in Israel, immediately following the terror attack and 1 month later. We hypothesized that community cohesion would serve as a protective factor against stress symptoms and that degree of exposure and proximity from the terror event would moderate the relationship between community cohesion and PTSD symptoms. In other words, the higher the direct exposure, the greater the salutogenic impact of community cohesion would be.

METHOD

Participants

On March 11th, 2003, a suicide bomber set off a powerful explosion that destroyed a suburban bus in the northern Israeli port city of Haifa killing 17 Israelis, among them 9 school children, and badly wounding 50, which was the context for the study presented here.

Participants were 115 adults, ranging in age from 20 to 70 years ($M = 40$ years, $SD = 15$). Participants were mostly women (65%) and well educated, with 58% having acquired at least a bachelor's degree. Although the majority was employed (51%), 25% were students and 24% were retired. The time of residence in the city where the terrorism event had occurred varied: 33% had lived in Haifa for less than 4 years, 22% from 5 to 20 years, and 45% for more than 20 years ($M = 20$ years, $SD = 18$). Because of budgetary limitations, 1-month follow-up data were systematically collected from every other household of the original sample (i.e.,

56 participants), and 99% of these participants completed the follow-up survey. There were no significant differences between the original sample and individuals who completed the follow-up survey in age, years of residence, socioeconomic status, terror event exposure, community cohesion, and PTSD symptoms immediately postterror (see Table 1).

Procedure

Data collection began 2 days after the terror attack and lasted for 4 days. Research assistants visited every household on specific blocks corresponding to three specified perimeters around the area of impact (same block, adjacent block, and adjacent neighborhood). Research assistants were five undergraduates who were trained to ensure their understanding of the research instruments, the purpose of the study, standardized methods of solicitation, and standardized administration of the research instruments.

One Hebrew-speaking representative from each residence was invited to participate, provided he or she was of consenting age (i.e., older than 18). Sixty-three percent of the people who answered their door agreed to participate (reasons-for-refusal data were not collected). Once participants indicated interest in participating, research assistants explained the purpose of the research, allowed potential participants to read the forms, and answered any questions posed to them. Research assistants left the questionnaires with participants to be completed at a time that would be comfortable for them; assistants told participants that they would return in a few days to collect the surveys. The research assistants also left their

TABLE 1. Means, standard deviations, and analysis of variance for original versus follow-up samples

Demographic and Dependent Measures	Followed-Up		Analysis of Variance (<i>F</i>)
	No	Yes	
Age	42.91 (17.83)	40.85 (18.79)	.35
Years of residence	18.39 (19.14)	17.93 (16.58)	1.73
Socioeconomic status	2.96 (.71)	3.11 (.81)	1.01
Terror event exposure	5.22 (6.64)	5.16 (6.65)	< .01
Perceived community cohesion	31.97 (8.20)	31.98 (9.55)	< .01
PTSD symptoms immediately postterror	45.68 (14.84)	46.46 (15.13)	.08

Note. Standard deviations are in parentheses. PTSD = posttraumatic stress disorder.

contact information with the respondents in case further assistance was needed. They returned to collect the completed questionnaires on an agreed day, 2 to 3 days later. The second phase of data collection commenced 30 days after this and lasted for 5 days.

Measures

Participants were asked to report a number of demographic variables (e.g., gender, immigrant status). In addition, four main instruments were employed: (a) the Impact of Event Scale–Revised (IES–R; Weiss & Marmar, 1997; immediately following the terror event), (b) the Posttraumatic Stress Diagnostic Scale (PDS; Foa, Cashman, Jaycox, & Perry, 1997; 1 month following the terror event), (c) Perceived Community Cohesion Scale (PCC; Lev-Wiesel, 2003), and (d) Terror Event Exposure (rationally derived for this study).

Proximity. The distance between participants' residence and the terrorism event was rated by the interviewers on a 3-point scale: 37% of participants lived in "in the same area," 24% lived "at a short distance," and 39% lived "a great distance" from the terror event.

Posttraumatic stress symptoms. Posttraumatic symptoms were measured by the IES–R, indexed to experiences *immediately following the terrorist explosion* (Weiss & Marmar, 1997). The IES–R is a 22-item self-report instrument used to assess current subjective distress following traumatic events with three subscales: Avoidance, Intrusion, and Hyperarousal. The IES–R scores range from 0 to 88, and the measure is scored on a 5-point Likert scale ranging from 1 (total disagreement) to 4 (total agreement). The authors reported high test–retest reliability and high criterion, content, and construct validity for the IES–R (Weiss & Marmar, 1997). The Hebrew version of the IES–R has been widely utilized in Israeli studies focusing on veterans (e.g., Solomon & Klienhauz, 1996), civilians war victims (e.g., Toren, Wolmer, Weizman, Magal-Vardi, & Laor, 2002), medical patients (e.g., Davis, De-Nour, Shouval, & Melmed, 1998), psychiatric patients (e.g., Brom & Witztum, 1992), and Holocaust survivors (e.g., Schreiber, Soskolne, Kozohovitch, & Deviri, 2004). The Israeli version of the IES has been successfully subjected to a confirmatory factor analysis (Amdur & Liberzon, 2001). In this study, participants were asked to rate PTSD symptoms specifically linked to the terror attack under investigation. The sum of the IES–R was used as the dependent variable immediately following the terror event.

The PDS (Foa et al., 1997) was used to measure PTSD symptoms 1 month following the terror attack. For the purposes of this study, 17 items of the PTSD section were used, corresponding to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994) diagnostic criteria for PTSD. The PDS scores range from 0 to 51, and the measure is scored on a 4-point Likert scale ranging from 1 (*not at all or only one time*) to 3 (*5 or more times a week/almost always*). Foa, Riggs, Dancu, and Rothbaum (1993) reported good internal consistency (.91) and reliability (.74) for the PDS. The PDS was translated into Hebrew and used in subsequent research in Israel (e.g., Gilboa Schechtman & Foa, 2001). In this study, the internal consistency of the Hebrew version of the PDS was .79. The sum of the PDS was used as the dependent variable to compute PTSD scores 1 month following the terror event. Participants were asked to rate PTSD symptoms indexed to the target terror event.

PCC. We measured perceived community cohesion by using a modified version of Lev-Wiesel's (2003) PCC, which originally had 67 items. Originally developed in Israel, the PCC has very good internal consistency (Cronbach's $\alpha = .87$). The measure was negatively correlated with alienation, thus demonstrating good divergent validity, and a confirmatory factor analysis of the PCC verified its construct validity (Lev-Wiesel, 2003). The final instrument contained only items with minimal loading factor that had been set by the authors at .40. In the PCC, participants rate the extent to which they agree with each item on a 4-point scale ranging from 1 (*total disagreement*) to 4 (*total agreement*).

To reduce subject burden, we shortened the item set of the PCC to 13 (the sum of the 13 items was calculated as a total score). We rationally chose items that were representative of the factors derived from the validation study. This 13-item scale demonstrated high internal consistency reliability ($\alpha = .90$; comparable to Lev-Wiesel's alpha of .87). A principal component factor analysis revealed three subscales, similar to those proposed by Lev-Wiesel: (a) Sense of Belonging (six items; $\alpha = .81$; e.g., "I am part of the community" and "I will help in any community crisis"), (b) Social Ties (four items; $\alpha = .81$; e.g., "I have fulfilling relationships with other members" and "I would like to have more friends from this community"), and (c) Social Support (three items, $\alpha = .79$; "I can always count on members' help" and "I have very close friends here"). Respondents were asked to judge community cohesion at the time of data collection (immediately following the traumatic event).

TABLE 2. Exposure items with weights and percentage of individuals exposed

Survey Item	Weight	% Exposed
1. I was on the spot of the terrorist attack shortly after the time of explosion.	1	21%
2. I was on the spot of the terrorist attack at the time of explosion.	2	17%
3. I saw people killed, wounded, and parts of bodies.	3	18%
4. I helped the wounded.	4	17%
5. My property was hurt.	5	12%
6. My friend(s) were hurt physically and/or mentally.	6	9%
7. My friend was killed.	7	5%
8. The members of my family were hurt physically and/or mentally.	8	4%
9. A member of my family was killed.	9	0%
10. I was hurt physically and/or mentally.	10	16%

Terror event exposure. There were 10 questions that indexed the degree and severity of exposure to the terror event, which were rationally derived for this study (see Table 2). Similar to Bleich et al. (2003), exposure was assessed by asking participants about direct exposure to the terrorist attack, whether they had a family member or friend who had been exposed to the attack, and whether they were injured or their family members or friends were injured or killed during the attack. We also added questions about the aftermath of the terror event (e.g., seeing remains, helping the wounded, property damage). Several items were rated dichotomously, and other items were rated on a 3-point ordinal scale. Expert judges Q-sorted the various items, and consequently weights were computed for each item and response. A total exposure score was calculated as the sum of weights of all items and ranged from 0 to 55. Terror event exposure data were collected immediately following the traumatic event.

RESULTS

Postterror Stress Symptoms

Based on recent data from Turkish rescue workers ($n = 434$) and soldiers who were not directly involved in rescue efforts ($n = 154$) following the Marmara earthquake (IES-R $M = 28$ for rescue workers, $M = 10$ for other soldiers; Cetin et al., 2005), our sample appeared significantly

impacted by the terror event (mean IES-R scores for nonexposed, and exposed individuals was 19 and 32, respectively). One month later, PTSD symptoms were quite low, with a mean of 3 and 7 for the nonexposed and the exposed respectively (i.e., cutoff for the PDS mild symptoms severity rating is less than 10; Foa, 1995).

Exposure Groups

We compared those who were not present during the terrorist attack and reported their friends and relations did not suffer from the terror event ($n = 50$) to those who were either present or knew someone close who was affected by the event ($n = 65$) on the demographic and outcome variables (see Table 3). There were no significant differences between these groups in age, years of residence, socioeconomic status, and community cohesion, but there were significant differences in PTSD symptoms immediately postterror, $F(1, 113) = 21.00, p < .01$, and 1 month later, $F(1, 54) = 8.06, p < .01$.

TABLE 3. Means, standard deviation, and analysis of variance for exposure and gender differences

Demographic and Dependent Measures	Exposure		Gender		ANOVA (F)	
	No ^a	Yes	Men	Women	Exposure	Gender
Age	39.40 (18.07)	43.78 (18.30)	41.74 (17.88)	41.55 (18.50)	1.59	< .01
Years of residence	18.25 (17.32)	21.82 (18.51)	19.82 (17.03)	20.51 (18.80)	1.09	.04
Socioeconomic status	3.08 (.78)	3.00 (.75)	3.28 (.85)	2.94 (.69)	.31	4.75*
Community cohesion	31.71 (9.07)	32.19 (8.73)	31.84 (8.04)	32.57 (9.18)	.08	.17
PTSD symptoms immediately postterror	39.47 (12.07)	51.31 (14.97)	41.24 (13.89)	48.54 (14.84)	21.01**	6.29**
PTSD symptoms 1 month later	3.28 (4.75)	7.32 (5.70)	5.35 (5.96)	5.54 (5.59)	8.06**	.01

Note. Standard deviations are in parentheses. ANOVA = analysis of variance; PTSD = posttraumatic stress disorder.

^aParticipants who were not present on the spot of terrorist attacks, and they, their friends, and relations did not suffer from the terrorist event.

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

Predictors of PTSD Symptoms Immediately Following the Terror Event

First, we examined correlations between PTSD symptoms (IES-R) and the following demographic variables: age, gender, educational level, employment status, immigrant status, and years as a resident. This analysis determined that PTSD symptoms were significantly correlated with gender ($r = .27, p < .01$), age ($r = .24, p < .05$), and immigrant status ($r = .27, p < .01$). Next, using hierarchical regression, we tested a model predicting PTSD symptoms. In Block 1, we entered the significant demographic variables: gender, age, and immigrant status. In Block 2, we entered exposure, proximity to terror event, and community cohesion. This model explained 37% of the variance in PTSD symptoms, $F(6, 105) = 9.57, p < .01$ (see Table 4). In the final model, gender ($B = .34, p < .01$), level of exposure ($B = .37, p < .01$), and community cohesion ($B = .21, p < .05$) were significant predictors of PTSD symptoms.

Community Cohesion

We next explored the degree to which varying levels of exposure to the terror event and proximity to the terror event moderated the effects of community cohesion on PTSD symptoms shortly following the terror event, employing two separate hierarchical multiple regression models.

TABLE 4. predictors of posttraumatic stress disorder symptoms immediately following terror event

Variable	β	T	R^2
Step 1			.16**
Gender	.30**	3.25	
Age	.12	1.16	
Immigrant	.20	1.87	
Step 2			.37**
Gender	.34**	4.17	
Age	.10	1.00	
Immigrant	.09	.93	
Exposure	.37**	3.56	
Proximity	-.10	-.96	
Cohesion	.21*	2.46	

Note. $F(6, 105) = 9.57, p < .01$.

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

In each of these regression equations, we centered all appropriate variables and entered the two main effect variables in the first block, followed by the interaction term in the second block.

Exposure by community cohesion. The first model accounted for 30% of the variance in PTSD symptoms immediately following the terror event, $F(3, 110) = 15.43, p < .01$. The interaction between exposure and community cohesion was significant ($B = -.25, p < .01$). For those individuals who reported low and moderate degrees of exposure to the terror event, as perceived community cohesion increased, PTSD symptoms increased. However, for those with high exposure, as perceived community cohesion increased, PTSD symptoms decreased (see Figure 1).

Proximity by community cohesion. We also examined whether proximity moderated the effects of cohesion on PTSD symptom severity immediately following the terror event. The overall model accounted for 28% of the variance in PTSD symptoms, $F(3, 112) = 14.23, p < .01$. In the final model, the interaction between proximity and community cohesion was significant ($B = .48, p < .01$). For those who lived very close to the explosion site, as community cohesion increased PTSD symptoms decreased. For individuals who lived farther away from the terror event, as perceived cohesion increased, PTSD symptoms increased (see Figure 2).

Predictors of PTSD 1 Month After the Terror Event

To determine predictors of PTSD symptoms 1 month following the terror event, we computed a regression equation, using PTSD symptoms as the

FIGURE 1. Interaction Between Exposure and Community Cohesion.

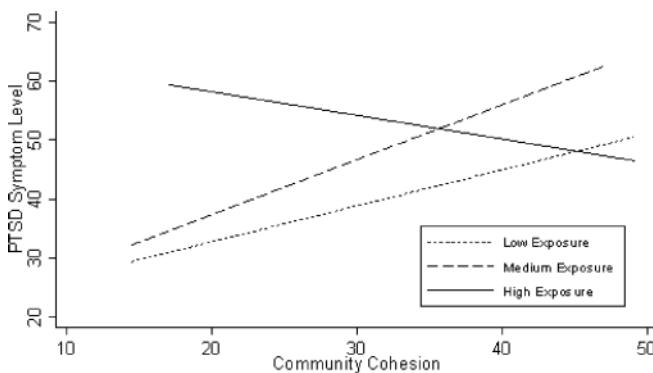


FIGURE 2. Interaction Between Proximity and Community Cohesion.

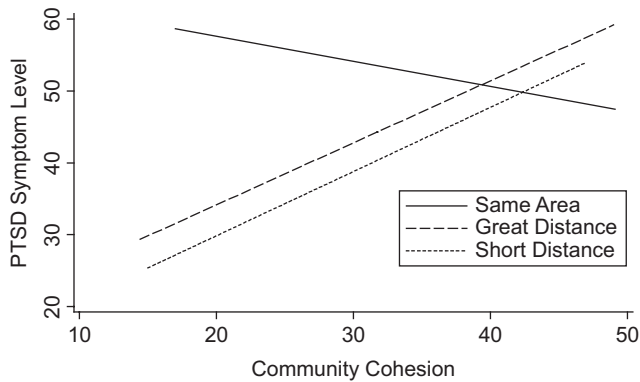


TABLE 5. Predictors of PTSD symptoms
1 month following terror attack

Variable	β	T	R^2
Step 1			.05
PTSD immediately postterror	.22	1.64	
Step 2			.10
PTSD immediately postterror	-.02	-.10	
Exposure	.30	1.81	
Proximity	-.18	-1.08	
Cohesion	.23	1.67	

Note. $F(4, 49) = 3.35, p < .05$. PTSD = posttraumatic stress disorder.
* $p < .05$. ** $p < .01$.

dependent variable. First, we conducted bivariate correlations between all of the demographic variables and PTSD score 1 month later and found that none of the demographic variables were significantly correlated with PTSD. In Block 1 we controlled for PTSD symptoms immediately following the terror attack. Next, we entered exposure, proximity, and community cohesion. In the final model, none of the variables significantly predicted PTSD symptoms, although level of exposure approached significance ($B = .30, p = .08$). The final model accounted for 22% of the variance in PTSD symptoms, $F(4, 49) = 3.35, p < .05$ (see Table 5).

DISCUSSION

We examined the effects of community cohesion on stress symptoms in Israeli civilians following a terror attack, discovering complex relationships between the two variables. When including the entire sample, ratings of community support were *positively* associated with negative mental health outcome immediately after the terrorist attack. However, when parsing the sample by degree of exposure and degree of proximity to the terror event, more intricate moderated relationships emerged.

For individuals who reported low and moderate degrees of exposure to the terror event, as perceived community cohesion increased, PTSD symptoms increased. However, for those with high exposure, degree of perceived cohesion was negatively associated with PTSD symptoms, suggesting a protective role. One possibility that should be examined in the future is that following a terror event, those who are more active in the community and feel a greater sense of belonging may also be indirectly exposed to trauma through fellow community members. For those at low and moderate levels of exposure, cohesion may have been disruptive because of the possible burden of repeated and additive secondary exposure. However, for those who already report high levels of exposure, close bonds and a strong sense of community may serve a more protective role.

We found that the relationship between proximity to the terror event and community cohesion was also complex. For those who lived near the terror event, community cohesion served a protective role. For individuals who lived farther away from the terror event, as perceived cohesion increased, PTSD symptoms increased. During the impact phase of the disaster, citizens living in outer circles of vulnerability may have been less distracted by rescue and survival tasks. These individuals might have experienced intense solidarity with the casualties in their community. We see solidarity as a sense of identification with others consisting of measures of similarity, affection, and association. Solidarity, a notion that is conceptually associated with the construct of cohesion, may become an adversity during the impact phase of a disaster. One possibility is that cohesion is associated with greater solidarity and identification with casualties among fellow residents. Heightened solidarity with trauma casualties may amplify posttraumatic distress.

Unfortunately, no study to date has evaluated community cohesion in victims of terror, so there is no basis for comparison. Nonetheless, we expected ratings of community cohesion to be analogous to social support, which is robustly negatively associated with mental health outcome from

non-terror-related trauma (e.g., Brewin et al., 2000). These results were confirmed for those reporting the greatest exposure and for those closest to the terror event; however, an inverse relationship was found for all others.

It could be that in the immediate aftermath of terror, community cohesion is trumped by a variety of more pressing needs. In the immediate postterror event context, community members share a sense of danger, loss, and lingering threat, and they may be equally consumed in the rescue and relief effort. For those who are most impacted for being closest to the terror event, the closeness of the community may help to reduce stress symptoms because of a communal sense of loss, whereas for those who are farther away, cohesion may indirectly cause secondary traumatization and worries that another attack may be imminent.

PTSD symptoms 1 month after the bombing were not significantly predicted by demographics, PTSD symptoms immediately following the attack, exposure, proximity of residence to the bombing site, or community cohesion. One possible explanation for these findings is a floor effect; participants recovered extremely well and rather quickly, such that 1 month after the attack, PTSD symptoms were uniformly very low.

Although cohesion may be an important factor in various social systems, these systems may not be generalizable to the community. For example, family cohesion was positively associated with effective coping in children with the threat of missile attacks (Laor, Wolmer, & Cohen, 2001) and negatively associated with PTSD following community violence (Nejman Muhlmeister, 2000). In the military, unit cohesion is associated with decreased combat stress reactions among Israeli combatants (Noy, Levy, & Solomon, 1984), Yugoslav elite units (Cabarkapa, Micovic, & Spasojevic, 1994), and Norwegian submarine crews (Eid & Johnsen, 2002). However, most of the literature on cohesion and stress is related to anticipatory or later stages in the life cycle of a crisis (Boehm, 2002).

Several study limitations should be noted. First, this study was conducted with an Israeli sample and may not generalize to different cultures. Israel faces unequaled national security threats, and people in Israel have unique exposure to terrorist actions and war. The level of compounded anxiety and/or habituation experienced by some Israelis may be a factor to consider and, as a result, our findings may not be generalizable to other individuals facing national emergencies. Second, future studies should employ larger samples. Third, future studies should employ similar stress symptom measurements before and after terror events so that improvements can be tracked over time. Fourth, it would be helpful to

assess individuals longitudinally to examine the trajectory of cohesion and stress over time. Fifth, future studies should incorporate a greater number of third variable measures that might explain additional variance. For example, there could be an interaction among variables such as community cohesion, coping style, personality factors, and prior exposure to terrorism. Finally, more comprehensive and multifaceted measures of community cohesion should be employed in future research.

In summary, we examined the role of community cohesion in the psychological reaction to a terrorist attack during the initial shock phase and 1 month later. In the immediate aftermath of a terror attack, community cohesion appears to play a complex role, depending on the proximity to the event and the degree of exposure; after many weeks pass without a subsequent terror event, there is no appreciable impact.

REFERENCES

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Amdur, R. L., & Liberzon, I. (2001). The structure of posttraumatic stress disorder symptoms in combat veterans: A confirmatory factor analysis of the Impact of Event Scale. *Journal of Anxiety Disorders, 15*, 345–357.
- Aneshensel, C. S., & Sucoff, C. A. (1996). The neighborhood context of adolescent mental health. *Journal of Health and Social Behavior, 37*, 293–310.
- Blanchard, E. B., Kuhn, E., Rowell, D. L., Hickling, E. J., Wittrock, D., Rogers, R. L., et al. (2004). Studies of the vicarious traumatization of college students by the September 11th attacks: Effects of proximity, exposure and connectedness. *Behaviour Research and Therapy, 42*, 191–205.
- Blanchard, E. B., Rowell, D. L., Kuhn, E., Rogers, R. L., & Wittrock, D. (2005). Posttraumatic stress and depressive symptoms in a college population one year after the September 11 attacks: The effect of proximity. *Behaviour Research and Therapy, 43*, 143–150.
- Bleich, A., Gelkopf, M., & Solomon, Z. (2003). Exposure to terrorism, stress-related mental health symptoms, and coping behaviors among a nationally representative sample in Israel. *Journal of the American Medical Association, 290*, 612–620.
- Boehm, A. (2002). Participation strategies of activist-volunteers in the life cycle of community crisis. *British Journal of Social Work, 32*, 51–70.
- Bonanno, G. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist, 59*(1), 20–28.
- Brewin, C., Andrews, B., & Valentine, J. (2000). Meta-analysis of risk factors for post-traumatic stress disorder in trauma-exposed adults. *Journal of Consulting & Clinical Psychology, 68*(5), 748–766.
- Brom, D., & Witztum, E. (1992). Recent trauma in psychiatric outpatients. *American Journal of Orthopsychiatry, 62*, 545–551.

- Cabarkapa, M., Micovic, M., & Spasojevic, V. (1994). Psychotraumatic reactions in participants and non-participants in warfare—members of a special unit. *Vojnosanit Pregl*, 51, 395–401.
- Cetin, M., Kose, S., Ebrinc, S., Yigit, S., Elhai, J. D., & Basoglu, C. (2005). Identification and posttraumatic stress disorder symptoms in rescue workers in the Marmara, Turkey, earthquake. *Journal of Traumatic Stress*, 18, 485–489.
- Cutrona, C. E., Russell, D. W., Hessling, R. M., Brown, P. A., & Murry, V. (2000). Direct and moderating effects of community context on the psychological well-being of African American women. *Journal of Personality and Social Psychology*, 79, 1088–1101.
- Davis, H., De-Nour, A., Shouval, D., & Melmed, R. N. (1998). Psychological distress in patients with chronic, nonalcoholic, uncomplicated liver disease. *Journal of Psychosomatic Research*, 44, 547–554.
- Eid, J., & Johnsen, B. H. (2002). Acute stress reactions after submarine accidents. *Military Medicine*, 167, 427–431.
- Foa, E. B. (1995). *Posttraumatic Stress Diagnostic Scale Manual*. Minneapolis, MN: National Computer Systems, Inc.
- Foa, E. B., Cashman, L., Jaycox, L., & Perry, K. (1997). The validation of a self-report measure of posttraumatic stress disorder: The Posttraumatic Diagnostic Scale. *Psychological Assessment*, 9(4), 445–451.
- Foa, E. B., Riggs, D. S., Dancu, C. V., & Rothbaum, B. O. (1993). Reliability and validity of a brief instrument for assessing post-traumatic stress disorder. *Journal of Traumatic Stress*, 6, 459–473.
- Fullilove, M., & Saul, J. (2006) Rebuilding communities post disaster in NY. In Y. Neria, R. Gross, R. Marshall, & E. Susser (Eds.), *9/11: Mental health in the wake of terrorist attacks* (pp. 164–177). New York: Cambridge University Press.
- 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 City. *New England Journal of Medicine*, 346, 982–987.
- Gilboa Schechtman, E., & Foa, E. B. (2001). Patterns of recovery from trauma: The use of intraindividual analysis. *Journal of Abnormal Psychology*, 110, 392–400.
- Grieger, T. A., Fullerton, C. S., & Ursano, R. J. (2004). Posttraumatic stress disorder, depression, and perceived safety 13 months after September 11. *Psychiatric Services*, 55, 1061–1063.
- Israel Defense Forces. (2005, October 4). *Israel civilian and security forces casualties since September 2000*. Retrieved April 13, 2005, from http://www1.idf.il/SIP_STORAGE/DOVER/files/7/21827.doc
- Kaniasty, K., & Norris, F. H. (2004). Social support in the aftermath of disasters, catastrophes, and acts of terrorism: Altruistic, overwhelmed, uncertain, antagonistic, and patriotic communities. In R. Ursano, A. Norwood, & C. Fullerton (Eds.), *Bioterrorism: Psychological and public health interventions* (pp. 200–229). Cambridge, UK: Cambridge University Press.
- King, D. W., Vogt, D. S., & King, L. A. (2004). Risk and resilience factors in the etiology of chronic PTSD. In B. Litz (Ed.), *Early intervention for trauma and traumatic Loss* (pp. 34–64). New York: Guilford.

- Laor, N., Wolmer, L., & Cohen, D. J. (2001). Mothers' functioning and children's symptoms 5 years after a SCUD missile attack. *American Journal of Psychiatry*, 158, 1020–1026.
- Lev-Wiesel, R. (2003). Indicators constituting the construct of 'perceived community cohesion.' *Community Development Journal*, 38, 332–343.
- Maguen, S., Papa, A., & Litz, B.T. (2007). Coping with terror. *Anxiety, Stress, & Coping: An International Journal*, 21, 15–35.
- Malkinson, R., Rubin, S. S., & Witztum, E. (2005). Terror, trauma, and bereavement: implications for theory and therapy. *Journal of Aggression, Maltreatment and Trauma*, 10, 467–477.
- McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, 14, 6–23.
- Nejman Muhlmeister, J. F. (2000). *Family environment, exposure to community violence and the development of Posttraumatic Stress Disorder*. Unpublished doctoral dissertation, Pepperdine University, Malibu, CA.
- Neria, Y., Gross, R., Litz, B. T., Maguen, S., Insel, B., Seirmarco, G., et al. (2007). Prevalence and psychological correlates of complicated grief among bereaved adults 2.5–3.5 years after 9/11 attacks. *Journal of Traumatic Stress*, 20, 251–262.
- North, C., Nixon S., Shariat, S., Mallonee, S., McMillen, J., Spitzanagel, E., et al. (1999). Psychiatric disorders among survivors of the Oklahoma City bombing. *Journal of the American Medical Association*, 282, 755–762.
- Noy, S., Levy, R., & Solomon, Z. (1984). Mental health care in the Lebanon War, 1982. *Israel Journal of Medical Science*, 20, 360–363.
- O'Brien, D. J., Hassinger, E. W., & Dershem, L. (1994). Community attachment and depression among residents in two rural Midwestern communities. *Rural Sociology*, 59, 255–265.
- Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: a meta-analysis. *Psychological Bulletin*, 129, 52–73.
- Pivar, I. L., & Prigerson, H. G. (2004). Traumatic loss, complicated grief, and terrorism. *Journal of Aggression, Maltreatment and Trauma*, 9, 277–288.
- Schlenger, W. E., Caddell, J. M., Ebert, L., Jordan, B. K., Rourke, K. M., Wilson, D., et al. (2002). Psychological reactions to terrorist attacks: Findings from the National Study of Americans' Reactions to September 11. *Journal of the American Medical Association*, 288, 581–588.
- Schreiber, S., Soskolne, V., Kozohovitch, H., & Deviri, E. (2004). Holocaust survivors coping with open heart surgery decades later: Posttraumatic symptoms and quality of life. *General Hospital Psychiatry*, 26, 443–452.
- Silver, R. C., Holman, E. A., McIntosh, D. N., Poulin, M., & Gil-Rivas, V. (2002). Nationwide longitudinal study of psychological responses to September 11. *Journal of the American Medical Association*, 288, 1235–1244.
- Solomon, Z., & Kleinhaus, M. (1996). War-induced psychic trauma: An 18-year follow-up of Israeli veterans. *American Journal of Orthopsychiatry*, 66, 152–160.
- Somer, E., Ruvio, A., Soref, E., & Sever, I. (2005). Terrorism, distress and coping: High versus low impact regions and direct versus indirect civilian exposure. *Anxiety, Stress, and Coping*, 18, 165–182.

- Sprang, G. (1999). Post-disaster stress following the Oklahoma City bombing: An examination of three community groups. *Journal of Interpersonal Violence, 14*, 169–183.
- Toren, P., Wolmer, L., Weizman, R., Magal-Vardi, O., & Laor, N. (2002). Retraumatization of Israeli civilians during a reactivation of the Gulf War threat. *Journal of Nervous and Mental Disease, 190*, 43–45.
- Weiss, D., & Marmar, C. (1997). The Impact of Event Scale -Revised. In J. Wilson & T. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 399–411). New York: Guilford.