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Terrorism-Related Perceived Stress, Adolescent Depression, and Social Support From Friends

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KEY WORDS

terrorism, adolescent depression, stress buffering, social support

ABBREVIATION

PSS—Perceived Social Support Scale

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WHAT'S KNOWN ON THIS SUBJECT: Exposure to terrorism is a major stress leading to adolescent depression. Social support might protect against the adverse effects of stress. In a previous article, we demonstrated the protective role of social support in relation to terrorism in adolescence.



WHAT THIS STUDY ADDS: This study is the first to demonstrate that social support from adolescents' friends serves as a buffer against the depressogenic effects of terrorism-related perceived stress.

abstract

BACKGROUND: Terrorism leads to adolescent depression, but little is known about protective factors. We investigated 90 adolescents (in grades 7–9) residing in Dimona, Israel, before and after their exposure to a suicide bombing.

OBJECTIVE: To examine the prospective effect of social support from friends, parents, and school personnel on the link between bombing-related perceived stress and adolescent depression.

METHODS: Seven months prior to the suicide bombing, adolescents completed questionnaires as part of an ongoing investigation of youth risk/resilience under stress. The focus of the present study was on the Perceived Social Support Scale. One month subsequent to the suicide bombing, participants were interviewed by telephone about their bombing-related perceived stress (a 1-item measure) and depression (the Center for Epidemiologic Studies Child Depression Scale).

RESULTS: Bombing-related perceived stress was associated with an increase in continuous levels of depression from before to after the bombing ($\beta = .29$; $P = .006$). Prebombing social support from friends buffered against this effect ($\beta = -.29$; $P = .010$). Adolescents reporting high bombing-related perceived stress evinced an increase in depression if they reported low levels of friends' support ($\beta = .61$; $P < .001$) but not high levels of friends' support ($\beta = .00$; $P = .98$). In addition, social support from friends predicted an increase in adolescent depression over time when bombing-related perceived stress was low ($\beta = .34$; $P = .026$).

CONCLUSION: In adolescence, social support from friends might protect against the depressogenic effect of terrorism-related perceived stress. *Pediatrics* 2009;124:e235–e240

Exposure to terrorism is a traumatic stressor, and stress had been shown to be a major cause of depression.^{1,2} Accordingly, such an exposure is likely to bring about physical and mental health problems in children, adolescents, and adults.³⁻⁷ However, many people exposed to terrorism do not exhibit health problems, and this suggests the operation of bio-psycho-social protective factors. Unfortunately, research identifying such protective factors, particularly those existing before the occurrence of a terrorist attack, is scarce.

According to the stress-buffering model, social support operates to protect individuals from the potentially adverse health effects of stress.⁸⁻¹⁰ As described by Cohen,^{8(p678)} "Support may alleviate the impact of stress by providing a solution to the problem, by reducing the perceived importance of the problem, or by providing a distraction from the problem. It might also facilitate healthful behaviors such as exercise, personal hygiene, proper nutrition, and rest. . . ." Recently, we demonstrated that social support from adolescents' friends, family, and school personnel (a combined index) protected adolescents residing in Sderot, Israel, from the depressogenic effect of escalated missile attacks launched on this chronically bombarded town.¹¹ Specifically, adolescents reacted with elevated depression to the escalation if their preescalation social support was low but not when social support was high. In addition, we found that among adolescents who had minimal exposure to the rocket attacks, preescalation social support predicted an increase in depression over time, thereby constituting risk rather than resilience.

Concurrently while collecting data in Sdeort, we also assessed 141 middle school students in Dimona, a town in the Israeli Southern Negev. This town is characterized by a demographic

profile similar to Sderot but had not been exposed to missile attacks; hence, it was considered by us as a control condition. However, on February 4, 2008, a suicide bombing took place in Dimona, just 7 months after our initial data collection, killing an adult resident and injuring 38 people. Subsequent to the attack, we were able to locate 90 adolescents who had participated in the initial data collection wave and assessed their bombing-related perceived stress and depression. Prebombing depression and social support from friends, family, and school personnel, which were measured at the initial data collection wave, as well as bombing-related stress and its interaction with the 3 support sources, were used to predict postbombing depression. This study design enabled us to prospectively predict pre/post bombing changes in depression from an interaction between prebombing social support and bombing-related perceived stress.

METHOD

Participants, Design, and Procedure

Permission for conducting the study was secured from the Israeli Ministry of Education, participating schools, and the university's departmental review committee. Parents provided consent for their children's participation. One hundred forty-one middle school adolescents participated in the prebombing assessment. Of these, 90 adolescents participated in the postbombing assessment. Of the 51 adolescents not assessed postbombing, 11 declined to participate, and the remaining could not be reached either because of changed or disconnected telephone numbers ($n = 24$) or because they were never available despite multiple calls ($n = 16$).

Of the 90 participants, 60% were girls. Forty (44.4%) students were in the sev-

enth grade, 24 (26.7%) in the eighth grade, and 26 (28.9%) in the ninth grade. Most parents of participants were married ($n = 81$); the remaining were divorced.

The time 1 assessment, conducted 7 months before the suicide bombing, included measures of participants' depression and anxiety, violence exposure and commission, life stress, social support, and personality. Approximately 1 month subsequent to this bombing, participants were contacted by telephone and were interviewed about their exposure to the bombing, bombing-related perceived stress, and depression.

Measures

All measures were translated and back-translated and administered in Hebrew.

Prebombing social support was measured by an abbreviated form of the Perceived Social Support Scale (PSS^{12,13}). The original PSS measures social support from friends and family members,¹² and a third scale assessing social support from school personnel was constructed by an independent research group¹³ through a direct adaptation of the family subscale. We abbreviated the scale to shorten the administration time. Items selected were deemed by our research group from Ben-Gurion University of the Negev as most representative of the putative constructs. Our abbreviated form, presented in the Appendix, included 16 items: 6 each for the friend and family subscales and 4 for the school subscale (Cronbach's $\alpha = .75, .69, \text{ and } .70$, respectively). For each item, respondents endorsed either a "yes," "no," or "don't know" response. A score of 1 was given to "yes" responses, which were then summed.

Bombing-related perceived stress was assessed using a single item: "How stressful was the bombing for you?"

Participants responded to this item using a 7-point Likert-like scale. Depression was measured by using the children's version of the Center for Epidemiologic Studies Child Depression Scale,¹⁴ an adaptation of the adult Center for Epidemiologic Studies Depression Scale.¹⁵ Twenty items assess symptoms of depression, with a focus on depressed mood (eg, "I felt sad"), on a 0 to 3 scale. Items are summed to form a total depression score. This measure had good internal consistency for both prebombing and postbombing assessments ($\alpha = .79$). Using the Center for Epidemiologic Studies Child Depression Scale's commonly used cutoff score of 16 or higher to categorize adolescents as "at least mildly depressed," we found that 31 participants at time 1 (34.4%) and 23 participants at time 2 (25.5%) met this cutoff.

The postbombing assessment also included levels of exposure to the suicide bombing, which was assessed by 7 items. These items represented the participants' level of physical exposure (how close and how loud the bombing was from their location; 2 items), relational exposure (how many people they knew who had been physically hurt, emotionally hurt, or suffered property damage as a result of the bombing; 3 items), and media exposure (the amount of terror-related television they watched after the bombing and their emotional reactions to the programming; 2 items). Ninety-seven percent of the participants were in town at the time of the bombing, 23% heard the bombing, 61% reported knowing someone who was physically hurt, emotionally hurt, or suffered property damage, and 86% reported watching at least some terror-related television and having been emotionally upset by it. Although most participants were exposed to some form of terror exposure, their levels of

TABLE 1 Correlations Among the Study Variables

	DEP1	DEP2	FRSUP	FAMSUP	SCHSUP
DEP2	0.16	—			
FRSUP	-0.22 ^a	—	—		
FAMSUP	-0.34 ^b	-0.02	0.31 ^b	—	
SCHSUP	-0.22 ^a	-0.06	0.22 ^a	0.19	—
BOMBSTR	0.09	0.27 ^b	0.01	-0.20	0.06

DEP1 indicates prebombing depression; DEP2, postbombing depression; FRSUP, friends' support; FAMSUP, family support; SCHSUP, school personnel support; BOMBSTR, bombing-related perceived stress.

^a $P < .05$.

^b $P < .01$.

exposure were found to be weakly related to perceived bombing stress (r [bombing-related perceived stress — physical proximity exposure] = 0.20; $P = .04$; r [bombing-related perceived stress; relational exposure] = 0.03, not significant; r [bombing-related perceived stress-media exposure] = 0.11, not significant).

Data Analysis

A multiple linear regression analysis was conducted in which postbombing depression was regressed on prebombing depression, prebombing social support from friends, family, and school personnel (assessed separately), bombing-related perceived stress, and 3 multiplicative terms representing interactions between bombing-related perceived stress and each of the 3 support sources. All variables were entered simultaneously in the regression equation. The focus of this analysis was on the 3 aforementioned interactions. Statistically significant interactions were probed on the basis of recommendations stipulated by Aiken and West.¹⁶

RESULTS

Intercorrelations among the study variables are listed in Table 1, and results of the multiple regression analysis are presented in Table 2. Statistically significant predictors were bombing-related perceived stress ($\beta = .29$; $P = .006$) and the interaction between bombing-related perceived stress and friends' social support ($\beta = -.29$; $P = .010$).

TABLE 2 Results of the Regression Analysis

	<i>b</i>	β	<i>t</i> (<i>df</i> = 81)	<i>P</i>
DEP 1	0.11	.12	1.15	.253
FRSUP	0.15	.03	0.29	.769
FAMSUP	0.93	.13	0.92	.355
SCHSUP	-0.24	-.04	-0.43	.664
BOMBSTR	1.29	.29	2.78	.006
FRSUP × BOMBSTR	-0.88	-.29	-2.62	.010
FAMSUP × BOMBSTR	0.13	.02	0.22	.826
SCHSUP × BOMBSTR	-0.01	.00	-0.04	.964

df indicates degrees of freedom; DEP1, prebombing depression; FRSUP, friends' support; FAMSUP, family support; SCHSUP, school personnel support; BOMBSTR, bombing-related perceived stress.

When probing the interaction between bombing stress and friends' support on the basis of recommendations by Aiken and West,¹⁶ we found the pattern presented in Fig 1. As shown in the figure, bombing-related perceived stress was strongly associated with increased postbombing depression (controlling for prebombing depression) when prebombing friends' social support was low (1 SD below average, $\beta = .61$; $P < .001$) but not when friends' social support was high (1 SD above average, $\beta = .00$; $P = .98$). As well, consistent with our previous finding from the Sderot study,⁹ under low bombing-related perceived stress, social support from friends predicted an increase in adolescent depression

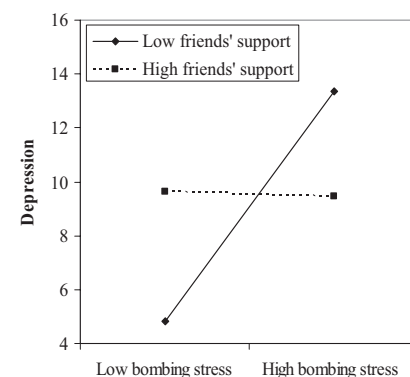


FIGURE 1

Postbombing depression (corrected for prebombing depression) as a function of bombing-related perceived stress and prebombing friends' social support.

over time ($\beta = .34$; $P = .026$). The entire regression model accounted for 18% of the variance of postbombing depression ($R^2 = 0.18$; $F_{8,81} = 2.31$; $P < .05$).

We conducted additional analyses in which we controlled for the 3 exposure variables. The same statistically significant interaction between bombing-related perceived stress and friends support was found ($P = .018$). Moreover, none of the 3 exposure variables was found to interact with the social support variable in predicting pre/post bombing changes in depression.

Finally, we compared the study participants ($N = 90$) with those dropping out (ie, not participating in the postbombing assessment; $n = 51$) in terms of gender, time 1 levels of depression, and social support from friends, family, and school personnel. With 1 exception, no statistically significant differences were found. The exception was a marginally significant difference between study participants and dropouts in terms of friends' support (mean: 4.60 vs 4.01; SD: 1.51 vs 1.91, respectively; $t_{139} = 1.98$; $P = .049$), suggesting that participants remaining in the study had slightly more elevated levels of friends' support than dropouts.

DISCUSSION

To the best of our knowledge, this is the first study to compare the protective role of social support from friends, parents, and school personnel vis-à-vis terrorism-related perceived stress in which social support was measured before the terror attack (a suicide bombing) and depression was assessed before and after the attack. Our findings indicate that social support from friends, but not from family or school personnel, protected or buffered against the depressogenic effect of bombing-related perceived stress. Specifically, the association between

bombing-related perceived stress and postbombing depression, examined while controlling for prebombing depression, was strong when social support from friends was low, but it virtually disappeared when its level was high. These findings suggest that social support from friends may serve as a naturalistic protective resource among adolescents in the face of terrorism-related perceived stress.

However, it is important to note that under low levels of bombing-related perceived stress, prebombing social support from friends predicted a pre/post bombing increase in depression. Thus, social support from friends seems to be a double-edged sword, potentially imbuing both risk and resilience. This finding is consistent with previous studies suggesting that social support from peers is associated with elevated, rather than reduced, levels of adolescents' substance use¹⁷ (see also the study by Gleason et al¹⁸ for findings pertaining to the mixed blessing of social support in adults). Possibly, under low stress, social support from peers might activate negative social comparison, in turn leading to elevated depression. More research into this speculation is needed.

Limitations and Directions for Future Research

Limitations of the present study should be noted. First, whereas a substantial number of adolescents in this study met the commonly used Center for Epidemiologic Studies Child Depression Scale cutoff for having being classified as "at least mildly depressed," the majority of participants did not meet this cutoff; hence, generalization of our findings to clinical populations is not straightforward. Second, the single-item measure of bombing-related perceived stress is less than ideal, although it did predict pre/post bombing changes in depression, and interacted

with prebombing support from friends. Another limitation is our sole reliance on self-report questionnaires, which might have contributed to shared method variance and an undetected response bias. Also of note is the absence of reports from parents, peers, and teachers on social support. As well, our analyses were based on a modest sample size. Arguably, a larger sample size might have provided sufficient statistical power required for the examination of higher-order interactions between social support from friends, family, and school personnel (eg, see the study by DeBois et al¹³), thereby highlighting the importance of the 2 latter support sources. In light of this limitation, caution should be exercised in concluding that support from family and school personnel is not important for successful adaptation to terrorism-related perceived stress. In fact, previous research on adolescent mental health^{13,19–21} clearly demonstrates that parent and school support are important protective factors, and it is incumbent on future research to elucidate this issue. Other challenges awaiting future research are broadening the assessment of terrorism-related outcomes (eg, so as to include symptoms of posttraumatic stress disorder, and somatic symptoms) and following up on afflicted adolescents and families for an extended period of time.

Practice and Policy Implications

Pediatricians, child psychiatrists, public health professionals, and other mental health experts are advised to build on social support from peers in devising preventive interventions and preparedness measures in the face of terrorism. In addition, although school-based interventions to build protective climates typically focus efforts on school personnel and parents,^{22,23} our findings indicate that promoting mature friendships in school

may add an important protective effect. For example, clinical work and research on “pair therapy,” in which pairs of students are assisted together in building friendship skills, has shown promise in promoting adolescents’ interpersonal competence and friendship maturity.²⁴ At the same time, pursuant to our finding whereby under low bombing-related perceived stress, friends’ support predicts an increase in pre/post bombing depression, interventions that focus on the peer group must be considered for potentially iatrogenic effects.

APPENDIX: The PSS—Abbreviated Version

Friends Version

Directions: The statements that follow refer to feelings and experiences that occur to most adolescent girls and boys in their relationships with *friends*. For each statement, please circle 1 of the following 3 possible answers: Yes, No, Don’t Know.

1. My friends give me the moral support I need (Item 1 in the original PSS friends version).
2. There is a friend I could go to if I were just feeling down, without feeling funny about it later (Item 8 in the original PSS friends version).

3. My friends are sensitive to my personal needs (Item 10 in the original PSS friends version).
4. I have deep sharing relationships with a number of friends (Item 13 in the original PSS friends version).
5. My friends get good ideas about how to do things or make things for me (Item 14 in the original PSS friends version).
6. My friends seek me out for companionship (Item 16 in the original PSS friends version).

Family Version

Directions: The statements that follow refer to feelings and experiences that occur to most adolescent girls and boys in their relationships with *their families*. For each statement, please circle 1 of the following 3 possible answers: Yes, No, Don’t Know.

1. My family gives me the moral support I need (Item 1 in the original PSS family version).
2. I rely on my family for emotional support (Item 8 in the original PSS family version).
3. There is someone in my family I could go to if I were just feeling down, without feeling funny about it later (Item 9 in the original PSS family version).

4. My family is sensitive to my personal needs (Item 11 in the original PSS family version).
5. Members of my family are good at helping me solve problems (Item 13 in the original PSS family version).
6. Members of family get good ideas about how to do things or make things for me (Item 15 in the original PSS family version).

School Personnel Version

Directions: The statements that follow refer to feelings and experiences that occur to most adolescent girls and boys in their relationships with *school personnel*. For each statement, please circle 1 of the following 3 possible answers: Yes, No, Don’t Know.

1. School personnel give me the moral support I need.
2. I rely on the emotional support given by school personnel.
3. School personnel members are sensitive to my personal needs.
4. School personnel members are good at helping me solve problems.

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