Exposure to Terrorism and Israeli Youths' Cigarette, Alcohol, and Cannabis Use

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Objectives. We investigated the consequences of exposure to acts of terrorism among Israeli adolescents. We examined whether exposure to terrorism predicted adolescents' use of cigarettes, alcohol (including binge drinking), and cannabis after we controlled for posttraumatic stress and depressive symptoms and background variables.

Methods. Anonymous self-administered questionnaires were given to a random sample of 960 10th and 11th grade students (51.6% boys, 48.4% girls) in a large city in northern Israel.

Results. Close physical exposure to acts of terrorism predicted higher levels of alcohol consumption (including binge drinking among drinkers) and cannabis use. These relationships remained even after we controlled for posttraumatic stress and depressive symptoms.

Conclusions. In addition to posttraumatic stress symptoms, negative consequences of terrorism exposure among adolescents included substance abuse. The similarity between our findings among Israeli adolescents and previous findings among US adults suggests cross-cultural generalizability. Given the risks for later problems from early-onset substance abuse, the consequences of terrorism exposure among adolescents merit greater research and clinical attention. (*Am J Public Health.* 2007;97:1852–1858. doi:10.2105/AJPH.2006.090514)

Israeli children and adolescents have been exposed to political violence, including wars and terrorist attacks, since Israel's inception in 1948.[1] However, after September 2000 (the beginning of what is known as the Al Aksa Uprising), the frequency and severity of terrorist attacks increased substantially. From September 2000 until mid-February 2005, a total of 1042 Israelis were killed in terrorist attacks and an additional 7065 were injured,[2] including children and adolescents.[3]

Exposure to terrorism can be physical or psychological.[4,5] Physical exposure can be considered as being physically close (present at the scene of a terror attack or seeing people injured in an attack—for example, in a hospital) or physically distant (being in the general area of an attack—for example, the neighborhood—but not actually witnessing the attack). Psychological exposure also can be considered close (when a family member is injured or killed) or distant (when one has acquaintances other than family members who are injured or killed).[6,7] There is also evidence that the cumulative effect of exposure to multiple traumatic events,[8] including terrorism,[9] is more harmful than distinct, single events.

Reactions to exposure to terrorism can include posttraumatic stress symptoms (PTSS), depression, anxiety, and disturbance in behavior.[10–14] For example, New York City public schoolchildren (grades 4–12) had higher than expected rates of posttraumatic stress disorder (11%) and major depression (8%) 6 months after the September 11, 2001, terrorist attack in New York City.[15]

Less attention has been given to the relationship between exposure to terrorism and substance use,[11–16] with most of the research focused on adult reactions to the September 11 attacks on New York and Washington, DC.[17–19] For example, immediately after the September 11 attack, New York adults had high rates of PTSS and increased their use of cigarettes, alcohol, or marijuana.[20] A 6-month follow-up showed that PTSS had declined substantially, although substance use persisted, suggesting differential relationships between exposure to terrorism and stress or substance use.[21]

Many types of traumatic events (e.g., car crashes) are related to risk-taking traits that also predispose one to substance abuse.[22,23] Therefore, personality traits may confound studies of such traumas and subsequent substance abuse. By contrast, exposure to terrorism is by its nature a randomly occurring, fateful trauma. Thus, studies of terrorism exposure and substance abuse may provide important, unconfounded information about the relationship of trauma to substance abuse. Adolescence is the peak period for onset of substance use,[24] and use during adolescence increases the risk of later substance abuse and dependence,[25,26] other problems such as suicidal behavior,[27] and other risk behaviors.[28–30] Therefore, understanding the impact of terrorism exposure on adolescent substance abuse has implications potentially reaching beyond the adolescent years.

In an earlier study of the relationship between adolescent exposure to terrorism and substance use, Schiff et al. examined PTSS, depressive symptoms, and alcohol use among 1150 junior high and high school students in an Israeli metropolitan area.[6] In this sample, physical proximity (being in the area of a terrorist attack) and psychological proximity (knowing someone who was killed or injured in an attack) predicted alcohol consumption after the authors controlled for posttraumatic stress and depressive symptoms. However, the study response rate was only 67.4%, and the measure of terrorism exposure included only 2 "yes" or "no" questions.

We improved on these factors and examined cigarette use, binge drinking, and cannabis use as well as simple alcohol consumption. Moreover, we used a representative sample of 10th and 11th grade students residing in an area exposed to more suicide bombings than the area in the earlier report.[6,31] We sought to answer 2 questions: (1) Does exposure to terrorism predict adolescent PTSS and depressive symptoms, cigarette use, alcohol use, binge drinking, and marijuana use? (2) Does physical exposure to terrorism predict these mental health outcomes and substance use

TABLE 1—Exposure to Terrorism, Psychological Distress, and Cigarette, Alcohol, and Cannabis Use Among Israeli 10th and 11th Graders (n = 960): Haifa, Israel, 2004

Exposure, Symptoms, and Substance Use	Students, No. (%)
Terrorism exposure	
Distant physical exposure	
Terror attack took place in your neighborhood	661 (69.7)
Heard the bomb explosion or shooting	188 (19.8)
Felt blast	67 (7.1)
Mean (SD) summed score[a]	1.26 (1.12)
Close physical exposure	
Witnessed people injured/killed in terror attack	98 (10.4)
Present at a terror scene	42 (4.4)
Personally injured in terror attack	13 (1.4)
Mean (SD) summed score[a]	0.21 (0.64)
Distant psychological exposure	
Friend/acquaintance present at a terror scene	509 (53.4)
Friend/acquaintance injured in terror attack	365 (39.0)
Friend/acquaintance killed in terror attack	325 (34.7)
Mean (SD) summed score[a]	1.61 (1.68)
Close psychological proximity	
Family member injured in terror attack	44 (4.7)
Family member killed in terror attack	27 (2.9)
Mean (SD) summed score[a]	0.09 (0.42)
Psychological distress	
Posttraumatic stress symptoms[b]	
At least 1 symptom of re-experience	665 (80.8)
At least 3 symptoms of avoidance	139 (16.7)
At least 2 symptoms of arousal	232 (28.1)
Mean (SD) summed score[c]	10.75 (08.72)
Depressive symptoms (CES-D score > 16)	360 (37.5)
Mean (SD) summed score[d]	15.54 (10.07)
Substance use	
Cigarette smoking in past 12 months[e]	
None	551 (57.6)
Once or twice	131 (13.7)
3 to 29 times	113 (11.8)
30 times or more	161 (16.8)
Alcohol consumption in past 12 months[f]	
None	205 (21.4)
Once or twice	199 (20.8)
3 to 19 times	377 (39.3)
20 times or more	177 (18.5)
Binge drinking in past 30 days[g]	453 (60.6)
Cannabis use[e]	96 (10.1)

Note. CES-D = Center for Epidemiologic Studies Depression scale.
[a]Average of the composite scale of all items (responses range from 0 = "no" to 2 = "happened more than once").
[b]Among students exposed (n = 829). Symptoms were defined according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.*
[c]Mean of summed responses (0 = "none," 1 = "little," 2 = "much").
[d]Mean of summed responses (0 = "rarely or none of the time," 1 = "some or a little of the time," 2 = "occasionally or a moderate amount of time," 3 = "most or all of the time").
[e]Scale ranged from 1 = "never" to 7 = "30 times or more."
[f]Maximum consumption of wine, beer, or liquor. Scale ranged from 1 = "never" to 7 = "30 or more times."
[g]Among drinkers (n = 747).

patterns differently than does psychological exposure?

METHODS

Research Population

A representative sample of adolescents was drawn in Haifa, a city in northern Israel with almost 270 000 residents and a population density of 980.2 people per square kilometer.[32] Since 2000, several terror attacks have occurred there, including 9 suicide bombings in buses, coffee shops, and restaurants.[31]

In Haifa, 91.1% of the population are Jewish, 3.8% are Muslim Arabs, and about 5% are Christian Arabs.[32] For this study, we focused on Jewish adolescents. The sampling frame consisted of all Haifa Jewish high school students (n = 7513) in grades 10 and 11 during the 2004 academic year.

Sample

We randomly sampled 42 classes from the 15 high schools in Haifa to include 20% of the student population in our sample. The sampling of the classes was in proportion to school size. The number of students in grades 10 and 11 ranged from 89 in the smallest school to 690 in the largest school. The number of classes sampled ranged from 1 class in the smallest school to 7 classes in the largest school. One small religious school refused participation, so we sampled 2 classes from a similar small religious school that did participate. All students in the sampled classes were asked to participate in the study.

Data were collected between March and June 2004. Out of a total of 1353 students, 1034 attended school on the days of data collection; of these, 27 refused to participate, yielding a response rate of 74.4%. Missing data led to the removal of 47 additional students, resulting in a final sample of 960 adolescents (51.6% boys, 48.4% girls; average age = 16.36 years, [±0.69]). To preserve the anonymity of respondents, information on nonrespondents was not made available to us.

Measures

Exposure to terrorist attacks. We constructed a scale of 11 items indicating close or distant physical or psychological exposure (Table 1). The scale included items from the Political

Life Event Scale,[7] such as injury or death of a family member in a terror attack. Response categories included the following: did not occur (scored 0), occurred once (scored 1), or occurred more than once (scored 2) since 2000. An exploratory factor analysis (using promax rotation in Stata) identified a 4-factor solution that explained 64.14% of the variance. The first factor, labeled "distant psychological exposure" (eigenvalue=3.05), included 3 items (e.g., "Someone you know [not a relative] was injured in a terror attack"). The second factor, labeled "close psychological exposure" (eigenvalue=1.64), included 2 items (e.g., "A relative was injured in a terror attack"). The third factor, labeled "close physical exposure" (eigenvalue=1.32), included 3 items (e.g., "You witnessed people injured or killed in a terror attack"). The fourth factor, labeled "distant physical exposure" (eigenvalue=1.05), included 3 items (e.g., "A terror attack took place in your neighborhood"). The 4 factors identified by the factor analysis were conceptually consistent with previous work on exposure to terrorist attacks as a specific type of stressful life event.[33–39] Therefore, 4 composite scales of summed scores were constructed to match the 4 factors.

Substance use, posttraumatic stress symptoms, and depression. To measure cigarette use, we asked respondents the number of times they had smoked cigarettes within the last 12 months and used a 7-point scale (1=never to 7=30 or more times).[40] This measure is similar to one used in a US nationwide survey[41] that demonstrated excellent test–retest reliability in a general population sample.[42]

For measure of alcohol consumption and use of cannabis, items were modeled on questions from the US Monitoring the Future yearly national youth survey.[43,44] These questions have good reliability in Israel[45] and are widely used there.[40,46,47]

For alcohol use, we asked separate questions about the consumption of wine (excluding use in religious observances), beer, and hard liquor within the last 12 months, using a 7-point scale (1=never to 7=30 or more times). We created a composite scale, in which the maximum consumption of the 3 types of alcoholic beverages was combined. To measure binge drinking, we asked participants how often they had drunk 5 or more drinks within a couple of hours in the last 30 days (0=never to 4=at least 6 times). This measure is a widely used indicator of binge drinking or drinking associated with personal problems.[44,48] Two questions (one for hashish and one for marijuana) covered cannabis use within the last 12 months. Respondents were asked to indicate on a 7-point scale (1=never to 7=30 or more times) the number of times they used cannabis. A composite scale, which combined maximum use of the 2 types of cannabis, was computed. Similar measures of frequency of cannabis use have been shown to have excellent test–retest reliability in community samples.[49]

All substance use variables were significantly ($P<.01$) correlated with each other (range of $r=0.18–0.48$, mean $r=0.28$), but the correlations indicated that these different variables were not redundant expressions of the same domain. Therefore, to provide maximum information, we analyzed them separately.

PTSS were measured by a Hebrew version of the Child Post-Traumatic Stress Reaction Index,[50] formatted as a questionnaire.[51] Participants were presented with 17 symptoms (e.g., "I want to distance myself from things reminding me of terror attacks"; defined according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*) and asked how they had experienced each in the past month with regard to terror attacks (0=not at all to 2=a lot). A composite scale summing responses to the 17 relevant items was created,[52] with excellent reliability (Cronbach $\alpha=0.86$). Because PTSS scores were not normally distributed, they were transformed with a square-root transformation.

Symptoms of depression were assessed with the Hebrew version[53,54] of the 20-item Center for Epidemiologic Studies Depression (CES-D) scale.[55] Participants were presented with each symptom (e.g., "I had trouble keeping my mind on what I was doing") and asked if they had experienced it in the past 7 days (0=never or seldom to 3=most of the time). Although the CES-D had excellent internal consistency reliability (Cronbach $\alpha=0.89$), we dichotomized it to compare those with scores up to and including 16 (the standard cutpoint) with those with higher scores.[56,57] We obtained very similar results using the continuous version of the scale.

Data Collection

Several weeks before data collection, school principals sent letters to parents informing them of the study and giving them the option of refusing their child's participation. Before entering classrooms, research staff determined through the secretary's office of each school that no letter from parents objecting to their child's participation in the study had arrived. Three parents in 2 schools called the school to ask for clarification, but none of the parents refused. In addition, we asked for active consent (parents' signatures) in 2 randomly chosen schools to ensure that parental approval was not a result of lack of attention to the mailed consent letter; none of the parents in these 2 schools refused. The self-report questionnaires were distributed in classes by the research staff, all of whom were social workers or counselors (including H.Z.). The confidentiality, anonymity, and completely voluntary participation of the students were explained, including the fact that the teachers would never see the completed questionnaires. These procedures were strictly observed to improve the validity of the responses. After questionnaires were completed, a research staff member collected them and put them directly into a sealed envelope.

Data Analysis

To determine the effects of terrorism exposure on PTSS, a linear regression model was run with PTSS as the dependent variable, the scores on the 4 terrorism exposure variables as the 4 main independent variables, and 3 control variables: gender,[58] age,[13] and religiosity.[59,60] Religiosity was measured by using 1 self-report question: "Would you consider yourself (1) ultra orthodox Jew, (2) orthodox Jew, (3) conservative, or (4) secular?" To determine the effects of terrorism exposure on depression, a logistic regression model was run, with the dichotomized CES-D variable as the dependent variable; the same predictor and control variables were used to analyze PTSS. Next, we ran linear regression models for each of the 4 substance use scores (cigarette smoking, drinking alcohol, binge drinking among drinkers, and cannabis use) as dependent variables. In these models, we used the same 4 predictors and 3 control variables as were used to determine the effects of

terrorism exposure on PTSS. Finally, because depression and PTSS were related to substance use in some studies,[61,62] we added PTSS and depressive symptoms to each of the linear regression models for the 4 substance use outcomes to determine whether adding them altered the relationships between terrorism exposure and the substance use outcomes.

RESULTS

Exposure to Terrorism

The adolescents reported high levels of physical exposure to terrorism, especially distant physical exposure, with nearly 70% reporting that an attack had occurred in their neighborhood (Table 1). The adolescents also reported psychological exposure, with 39% reporting that they knew someone who was injured during a terror attack, and about one third (34.7%) reporting to have known someone who was killed during a terror attack (Table 1).

Posttraumatic Stress Symptoms, Depression, and Substance Use

PTSS symptoms were common among exposed students (Table 1), with most (80.8%) reporting repeated re-experience symptoms and smaller but still substantial numbers reporting other symptoms (PTSS scale mean=10.75, SD=8.72). Girls had higher PTSS scores than did boys (t[938])=−9.33, $P<.001$). CES-D scores higher than 16 were found for 37.5% of the adolescents, with girls more likely than boys to score above 16 ($\chi^2[1]=29.37$, $P<.001$). In the 12 months prior to the survey, 28.6% of the adolescents had smoked cigarettes at least 3 times (smoking scale mean=2.53, SD=2.29), with girls reporting higher levels of smoking than boys (t[954])=−2.35, $P<.05$). Regarding alcohol, 57.8% drank alcohol 3 or more times in the past 12 months (drinking scale mean=3.37, SD=2.01); girls had lower drinking levels (t[956])= 3.56, $P<.001$). Among drinkers (n=747), 60.6% binge drank once or more in the past 30 days (binge drinking scale mean=1.44, SD=1.48). Cannabis use was reported by 10.1% (cannabis scale mean=1.26, SD=0.98). No gender differences were found for binge drinking or cannabis use.

Except for close psychological exposure, all types of exposure to terrorism significantly predicted higher PTSS scores (Table 2); however, only close physical exposure significantly predicted CES-D scores greater than 16 (Table 3). Results using continuous CES-D scores were very similar (not shown).

Close physical exposure, close psychological exposure, and distant psychological exposure to terror attacks were all positively associated with significantly higher levels of cigarette smoking (Table 4, model A); however, after we added PTSS and depressive symptoms to the model (model B), close physical exposure no longer significantly predicted level of cigarette use.

Close physical exposure was positively associated with significantly higher levels of alcohol consumption in the full sample and binge drinking among drinkers, regardless of whether PTSS and depression symptoms were included in the model (Table 4, models A and B).

Distant and close physical exposure and close psychological exposure to terrorism significantly predicted level of cannabis use, regardless of whether PTSS and depression symptoms were included in the model (Table 4, models A and B).

TABLE 2—Linear Regression Models of Posttraumatic Stress Symptom Scores Among Israeli 10th and 11th Graders as Predicted by Physical and Psychological Exposure to Terrorism: Haifa, Israel, 2004

Independent Variable	B (SE)	*P*
Distant physical exposure	.06 (.33)	.078
Close physical exposure	.12 (.57)	<.001
Distant psychological exposure	.12 (.23)	<.001
Close psychological exposure	.07 (.87)	.027

Note. We controlled models for gender, age, and religiosity, which was measured with the self-report question: "Would you consider yourself (1) ultra-orthodox Jew, (2) orthodox Jew, (3) conservative Jew, or (4) secular?" R^2 was .16 $F_{7,891}=23.51$, $P<.001$. See "Methods" section for details on how variables were measured.

TABLE 3—Logistic Regression for Depressive Symptoms (CES-D Above and Below Threshold) Among Israeli 10th and 11th Graders (n=899), by Physical and Psychological Exposure to Terrorism: Haifa, Israel, 2004

Independent Variable	OR (95% CI)	*P*
Distant physical exposure	1.07 (0.94,1.22)	.286
Close physical exposure	1.56 (1.22, 1.98)	<.001
Distant psychological exposure	1.05 (0.96, 1.15)	.253
Close psychological exposure	1.14 (0.79, 1.65)	.479

Note. CES-D = Center for Epidemiologic Studies Depression Scale; OR = odds ratio; CI = confidence interval. Nagelkerke R^2 = .08. Hosmer–Lemeshow goodness-of-fit test = 7.48 ($P>.49$). See "Methods" section for details on how variables were measured. Scores up to and including 16 compared with scores over 16. We controlled models for gender, age, and religiosity, which was measured with the self-report question: "Would you consider yourself (1) ultra-orthodox Jew, (2) orthodox Jew, (3) conservative Jew, or (4) secular?".

DISCUSSION

We examined the relationship between terrorism exposure and PTSS, depression, and, importantly, substance abuse among Israeli adolescents. According to our findings, which were similar to earlier findings among adults,[20,21] exposure to terrorism, especially close physical exposure, was positively associated with higher levels of alcohol consumption and cannabis use among adolescents.

Close physical exposure to acts of terrorism was positively associated with higher levels of alcohol consumption, binge drinking, and cannabis that were significant before and after we controlled for PTSS and depression. However, the effect of close exposure on cigarette smoking became largely nonsignificant after we controlled for PTSS and depression. Thus, the relationship between close physical exposure and cigarette smoking (but not alcohol or cannabis use) may be explained, at least in part, as self-medication. Our results were consistent with findings of other studies that alcohol and drug use among adolescents is not well explained by self-medication.[63,64]

Similar to Hoven et al.,[15] we found that almost all types of exposure to terrorism were positively associated with higher levels of PTSS. By contrast, close physical exposure was the only significant predictor for depressive symptoms. These results support the specificity of PTSS as a response to terrorist attacks, in contrast to a more general depressive reaction.

TABLE 4—Linear Regression Models of Substance Use Among Israeli 10th and 11th Graders as Predicted by Physical and Psychological Exposure to Terrorism: Haifa, Israel, 2004

	Cigarette Smoking				Alcohol Consumption				Binge Drinking[a]				Cannabis Use			
	Model A		Model B		Model A		Model B		Model A		Model B		Model A		Model B	
Independent Variable	B (SE)	*P*	B (SE)	*P*	B (SE)	*P*	B (SE)	*P*	B (SE)	*P*	B (SE)	*P*	B (SE)	*P*	B (SE)	*P*
Distant physical proximity	-.06 (.07)	.074	-.07 (.07)	.054	.01 (.06)	.688	.01 (.06)	.719	.02 (.05)	.628	.01 (.05)	.765	.08 (.03)	.022	.07 (.03)	.032
Close physical proximity	.08 (.12)	.032	.06 (.13)	.092	.12 (.11)	.001	.11 (.11)	.002	.10 (.09)	.018	.08 (.09)	.049	.18 (.05)	<.001	.16 (.05)	<.001
Distant psychological proximity	.08 (.05)	.030	.07 (.05)	.050	.01 (.04)	.750	.01 (.04)	.724	.01 (.04)	.889	.00 (.04)	.971	.04 (.02)	.318	.03 (.02)	.429
Close psychological proximity	.08 (.19)	.026	.07 (.19)	.035	.03 (.16)	.467	.03 (.16)	.438	-.05 (.13)	.203	-.06 (.13)	.166	.10 (.08)	.003	.10 (.08)	.004
R^2	.06 $F_{7,887}$ = 7.32, *P* < .0001		.07 $F_{9,885}$ = 6.81, *P* < .0001		.08 $F_{7,889}$ = 10.44, *P* < .0001		.09 $F_{9,887}$ = 9.67, *P* < .0001		.02 $F_{7,687}$ = 2.23, *P* < .05		.04 $F_{9,685}$ = 3.24, *P* < .0001		.09 $F_{7,885}$ = 12.10, *P* < .0001		.10 $F_{9,883}$ = 10.32, *P* < .0001	

Note. Model A was controlled for gender, age, and religiosity, which was measured with the self-report question: "Would you consider yourself (1) ultra-orthodox Jew, (2) orthodox Jew, (3) conservative Jew, or (4) secular?", and Model B was controlled for gender, age, religiosity, posttraumatic stress symptoms, and score on Center for Epidemiologic Studies Depression (CES-D) Scale.
[a]Among drinkers (n = 747).

Cigarette and cannabis use was predicted by close and distant psychological exposure to attacks, whereas alcohol consumption (and binge drinking among drinkers) was not. It is possible that being in the presence of injured or bereaved relatives elicited cigarette smoking as a stress-reducing activity that could be done without inappropriate intoxication and loss of awareness.[65] In addition, private use of cannabis might be a coping mechanism for family-related loss. By contrast, drinking alcohol in Israel is often done on festive occasions or in a social context such as in pubs, parties, and other social gatherings.[66] Drinking alcohol to cope with family loss may thus seem very inappropriate in Israel, whereas drinking in response to being at a terrorist attack might seem a more acceptable response in a pub or other social setting.

This study relied on self-report measures. Extensive work documents the excellent validity of the alcohol, drug, and nicotine measures.[67] Clinician reevaluation supports the validity of self-reported traumatic events and stress among adolescents.[68] In the absence of a standard weighting system for different terrorism exposures, we did not attempt to weight each aspect by severity. The method we used is empirically consistent with the psychometric properties of our data and with other studies of responses to terrorism that gave equal weights to more- and less-severe events (e.g., friend or relative killed, possession lost or damaged, lost job, involved in rescue effort[69]). Although Paykel[70] suggested that weighting by contextual judgment of threat was more valid than counting events, no consensus exists on methods of weighting aspects of terrorism exposure. Further, earlier research[71] found that some low-threat as well as high-threat events increased the risk for psychopathology and that counts of events without regard to threat had a sizable relationship to psychopathology. A methodological study of different weighting schemes for terrorism exposure would contribute useful information, but it was beyond the scope of our study.

Limitations

Our study has several limitations. First, our sample was not nationally representative, although it did represent one city. Second, the cross-sectional design did not allow direct tests of causality,[18] thus leaving open the possibility that preexposure substance use exacerbated reactions to terrorism exposure, or that PTSS or depression somehow caused greater reports of exposure. Longitudinal studies of terrorism-exposed participants in which substance use and psychopathology were assessed prior to the attacks would be needed to address this issue. Third, we did not ask the length of time since youths were exposed to terrorism, precluding analyses of reduction in symptoms and substance use over time. Fourth, we did not include indicators of anxiety other than PTSS, as has been done in other studies.[18] It would be of interest in future studies to include such variables and explore their relationships to substance use as a response to terrorist attacks.

Conclusions

We found that substance use may be a more common consequence of exposure to terrorism among youths than was previously considered.[6] Given the high health risks of smoking[72,73] and the risk from early onset of alcohol and substance use for the development of later substance problems and dependence,[24,74–76] the implications of substance use in response to terrorism and other fateful traumatic exposures on later health and substance dependence problems merit greater research and clinical attention, in Israel as well as in other countries. ■

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Contributors

M. Schiff was the principal investigator of the study and lead author of the article. H.H. Zweig, a doctoral candidate, supervised data collection and contributed to the writing of the article. R. Benbenishty, the coprincipal investigator, supervised the study sample, collaborated with M. Schiff on measurements and the conceptual framework of the study, and served as liaison with

the Haifa municipality and the Ministry of Education, which permitted the study. D.S. Hasin, the senior and corresponding author, assisted with the writing and review of the article, supervised data analyses, and contributed to the interpretation of some of the findings.

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Human Participant Protection

The study was approved by the Hebrew University School of Social Work and Social Welfare ethics committee.

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