Adjustment Among Area Youth After the Boston Marathon Bombing and Subsequent Manhunt

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WHAT'S KNOWN ON THIS SUBJECT: Research in the aftermath of large-scale terrorist attacks shows that exposed children experience numerous negative psychological sequelae, including increased emotional difficulties, posttraumatic stress, and significant attack-related life disruptions.

WHAT THIS STUDY ADDS: Most research on terrorism-exposed youth examines large-scale terrorism. Limited work examines reactions to terrorism of the scope of the marathon attack, and the extraordinary manhunt and shelter-in-place warning was an unprecedented experience. Understanding adjustment after these events is critical.

abstract

BACKGROUND: The majority of research on terrorism-exposed youth has examined large-scale terrorism with mass casualties. Limited research has examined children's reactions to terrorism of the scope of the Boston Marathon bombing. Furthermore, the extraordinary postattack interagency manhunt and shelter-in-place warning made for a truly unprecedented experience in its own right for families. Understanding the psychological adjustment of Boston-area youth in the aftermath of these events is critical for informing clinical efforts.

METHODS: Survey of Boston-area parents/caretakers (*N* = 460) reporting on their child's experiences during the attack week, as well as psychosocial functioning in the first 6 attack months.

RESULTS: There was heterogeneity across youth in attack- and manhunt-related experiences and clinical outcomes. The proportion of youth with likely attack/manhunt-related posttraumatic stress disorder (PTSD) was roughly 6 times higher among Boston Marathon–attending youth than nonattending youth. Attack and manhunt experiences each uniquely predicted 9% of PTSD symptom variance, with manhunt exposures more robustly associated than attack-related exposures with a range of psychosocial outcomes, including emotional symptoms, conduct problems, hyperactivity/inattention, and peer problems. One-fifth of youth watched >3 hours of televised coverage on the attack day, which was linked to PTSD symptoms, conduct problems, and total difficulties. Prosocial behavior and positive peer functioning buffered the impact of exposure.

CONCLUSIONS: Clinical efforts must maintain a broadened focus beyond simply youth present at the blasts and must also include youth highly exposed to the intense interagency pursuit and manhunt. Continued research is needed to understand the adjustment of youth after mass traumas and large-scale manhunts in residential communities. *Pediatrics* 2014;134:7—14

In recent years, there have been several high-profile terrorist attacks specifically targeting civilian child and family venues (eg, Russia's Beslan school hostage crisis, Norway's Workers' Youth League camp attack, Nairobi's Westgate Mall attack). Although research has documented the psychological toll of terrorism on youth,[1–4] the majority of such work has focused on attacks targeting office buildings of high symbolic value,[3,5–7] where the presence of families has been incidental. Much remains to be learned about the reactions of children affected by terrorism specifically aimed at "soft targets" such as family events. Moreover, the majority of research on terrorism-exposed youth has examined large-scale attacks with mass casualties (eg, 9/11).[2,3,5–7] Minimal research has examined children's reactions to high-profile terrorism with relatively few fatalities.

The 2013 Boston Marathon bombing was a high-profile attack that specifically targeted a civilian family event. Two coordinated pressure-cooker bombs were detonated near the finish line of the heavily attended marathon, killing 3 and injuring 264 others (including 16 amputees). The attack and associated casualties marked the beginning of a highly intense week for Boston-area families. Bags abandoned by fleeing spectators were treated as potential explosives, and rumors spread about additional live bombs. Transportation was shut down, and the typically bustling 15-block radius around the attack was closed for a week and treated as a crime scene. In addition to heavy police and bomb squad presence, uniformed federal and state agencies descended on the region. Three days postattack, the Federal Bureau of Investigation released pictures of 2 suspects at large, after which an officer was ambushed and killed, followed by a carjacking, and an all-points bulletin was issued. There was a violent shootout in Watertown, a residential suburb, during which ~300 rounds of ammunition were fired, bombs and grenades were thrown, a transit officer was shot, and 1 suspect was killed. The second suspect escaped, and an emergency "shelter-in-place" warning was enacted for nearly 1 million Boston-area residents. Transportation and businesses were shut down as helicopters circled overhead and officers searched door-to-door for the remaining suspect. That evening, a Watertown resident spotted the suspect. Helicopters using thermal imaging then circled overhead, followed by heavy gunfire and the use of flash bangs. The remaining suspect was taken into custody in critical condition. After 5 days, the imminent threat posed by the suspects and the extraordinary show of interagency force was over.

Understanding the adjustment of Boston-area youth after the marathon bombing and subsequent manhunt is critical for informing clinical efforts and for improving our understanding of the impact of high-profile terrorism on "soft targets." Moreover, unlike the aftermath of previous well-studied terrorist attacks, the extended immediate threat, the extraordinary post-attack interagency show of force, the violent and public manhunt, the temporary shelter-in-place warning, and the extended disruption in daily activities for large numbers of families not directly exposed to the bombing made for a truly unprecedented and potentially traumatic experience in its own right. Previous terrorism-related research has focused on attack-related exposure and cannot speak to the unique aftermath of this event on exposed youth.

We surveyed 460 Boston-area parents and caretakers in the first 6 postattack months about their child's exposure to the 2013 marathon attack week events, including media exposure, as well as their child's psychosocial functioning. Given increasing efforts to clarify pathways of resilience in disaster-affected populations,[8] as well as research identifying social support as a potential protective factor for disaster-affected youth,[4] we also examined whether prosocial behavior and peer functioning moderated associations between traumatic exposure and negative child outcomes.

METHODS

Design and Participants

Study procedures were conducted under approval of the Boston University Institutional Review Board. English-speaking parents and caretakers of at least 1 child aged between 4 and 19 years dwelling <25 miles of the attack site or Watertown were recruited between the dates of June 15, 2013 and October 15, 2013 (2–6 months postevent) to complete an online survey assessing children's experiences during the marathon attack week, as well as psychosocial functioning. Recruitment efforts included (a) school-based outreach (eg, superintendents, including the Watertown Public Schools superintendent, sent letters home with children encouraging participation); (b) pediatrician-based outreach (study flyers displayed in waiting rooms); (c) community event outreach (study staff attended local family-oriented events, as well as "Boston Strong" fundraisers/rallies to distribute recruitment flyers); and (d) media-based outreach (eg, local newspapers and blogs wrote pieces encouraging participation).

Interested caretakers were directed to contact study staff or visit a study Web site for survey information. Of 1105 caretakers initially visiting the Web site or contacting staff, 460 (41.6%) completed the survey. Interested caretakers provided consent and completed surveys through Qualtrics, a secure Web-survey program using server authentication and data encryption. Caretakers with multiple children between

4 and 19 years responded about their oldest child in the study age range. The survey took roughly 45 minutes to complete; caretakers were compensated $30. Participants were given the option of having their compensation donated directly to the Boston One Fund.

Table 1 presents demographic characteristics of participating families. Roughly half reported household incomes <$100 000; the majority of respondents were college-educated, biological mothers with non-Hispanic white children. Approximately 20% lived within 5 miles of the attack, and ~35% lived within 5 miles of Watertown.

Measures

Children's posttraumatic stress was assessed with the UCLA Reaction Index, Parent-Report Scale, a well-validated measure of youth PTSD.[9] The Reaction Index provides a continuous measure of youth posttraumatic stress; scores ≥38 indicate "likely PTSD." Items were worded to relate specifically to the bombing and manhunt. The parent report of the Strengths and Difficulties Questionnaire (SDQ)[10,11] collected reports of children's (a) emotional symptoms, (b) conduct problems, (c) hyperactivity/inattention, (d) peer problems, and (e) prosocial behavior over the previous 6 months. A total difficulties score was generated by summing SDQ subscales a through d.

The survey also collected data on children's attack exposure. Caretakers reported whether their child (a) attended the marathon, (b) was injured in the attack, (c) directly witnessed injured people, (d) directly witnessed dead bodies, (e) was evacuated during the attack, (f) knew a person injured, and/or (g) knew a person killed. Summing these items yielded a total Attack Exposures Tally, ranging from 0 to 7. In addition, caretakers reported the number of hours of television coverage of the attack their child viewed on the day of the bombing and whether they restricted their child's exposure to television coverage.

For manhunt exposures data, caretakers reported whether their child (a) was under the shelter-in-place warning, (b) saw a heavier police presence in his or her neighborhood during the manhunt, (c) saw uniformed service persons in his or her neighborhood not typically seen in civilian areas (eg, National Guard, Homeland Security), (d) saw officers with guns drawn related to the manhunt, (e) heard manhunt-related gunshots/explosions, (f) saw manhunt-related gunshots/explosions, (g) saw manhunt-related blood, (h) had an officer knock on their door related to the manhunt, (i) had an officer enter or search their home, (j) knew the slain officer, and/or (k) knew the injured transit officer. Summing these items yielded a total Manhunt Exposures Tally, ranging from 0 to 11.

RESULTS

Overall Clinical Outcomes

Table 2 presents overall clinical outcomes across the sample. Participant survey completion order was not associated with outcomes. Scores, on average, fell within normative ranges, although parents of marathon-attending children reported greater posttraumatic stress, conduct problems, peer problems, and total difficulties. The proportion of youth with likely attack/manhunt-related PTSD was 5.7 times higher among marathon-attending than nonattending youth. Children watched an average of 1.54 hours (SD = 2.6) of television coverage on the attack day; 21% watched >3 hours. Only 31.0% and 37.7% of parents attempted to restrict children's exposure to coverage of the attack and manhunt, respectively.

Attack Exposures and Clinical Outcomes

Table 3 presents the proportion of youth experiencing each attack-related experience; Table 4 presents their associations with clinical outcomes

TABLE 1 Demographic Characteristics Among Sampled Boston-Area Youth (N = 460)

Characteristic	M	SD	N	%
Child age, y	11.8	3.8		
Child race/ethnicity				
Non-Hispanic white			374	81.3
Racial/ethnic minority			86	18.7
Caregiver				
Biological mother			351	76.4
Biological father			78	16.9
Adoptive mother			18	3.9
Relative/guardian			7	1.5
Adoptive father			4	0.9
Foster mother			2	0.4
Caregiver age, y	43.8	7.8		
Caregiver education				
Completed college			374	81.3
Did not complete college			86	18.7
Household income, USD				
<$50 000			71	15.4
$50 000–74 999			45	9.8
$75 000–99 999			99	21.5
$100 000–$199 999			184	40.0
≥$200 000			61	13.3
Child attended marathon			71	15.4
Distance between child's home and bombing site	10.3	7.0		
Child home <5 miles from attack site			84	18.3
Distance between child's home and Watertown, MA	9.0	7.2		
Child home <5 miles from Watertown, MA			161	35.0
Child under shelter-in-place warning during manhunt			238	51.7

Clinical Outcome	Total Sample (N = 460)		Child Attending Marathon at Time of Attack				
			Yes (n = 71)		No (n = 389)		Significance Test
	N	%	N	%	N	%	
Likely PTSD[a]	16	3.5	8	11.3	8	2.0	χ^2(1, N = 460) = 15.2, P < .0001
	M	SD	M	SD	M	SD	
Posttraumatic stress	8.2	10.6	13.5	15.7	7.2	9.1	t(458) = 4.6, P < .001
Total difficulties	7.8	5.9	9.1	7.2	7.5	5.6	t(446) = 2.2, P = .03
Emotional symptoms	2.0	2.1	2.2	2.5	1.9	2.0	t(447) = 1.0, P = .33
Conduct problems	1.3	1.5	1.8	2.2	1.2	1.4	t(447) = 3.3, P = .001
Hyperactivity/inattention	3.1	2.4	3.3	2.4	3.1	2.4	t(446) = 0.8, P = .44
Peer problems	1.4	2.2	1.8	1.8	1.4	1.7	t(447) = 2.1, P = .04

[a] For comparison purposes, ~0.4% of the general population meet full diagnostic criteria for PTSD.[13]

after accounting for demographic covariates. Among marathon attendees, the most common attack experience was being evacuated, followed by roughly one-quarter seeing injured people. Seeing dead bodies, relative to other marathon exposures, was most strongly associated with outcomes. Linear regression analysis entering all 7 attack experiences and the 4 demographic covariates into 1 predictive model of PTSD symptoms found the following were associated with unique variance in posttraumatic stress: directly saw dead bodies (B = 21.1, SE = 3.9, β = 0.3, P < .001), knew someone killed (B = 9.0, SE = 3.0, β = 0.1, P < .01), knew someone injured (B = 1.9, SE = 0.7, β = 0.1, P < .01), and saw injured people (B = 6.0, SE = 3.0, β = 0.1, P < .05), F(11 439) = 12.18, P < .001; R^2 = 0.23. Total Attack Exposures Tally had a medium-to-large association with posttraumatic stress (partial r = 0.36, P < .001) and small-to-medium associations with total difficulties (partial r = 0.21, P < .001), emotional symptoms (partial r = 0.16, P < .001), conduct problems (partial r = 0.26, P < .001), hyperactivity/inattention (partial r = 0.10, P < .05), and peer problems (partial r = 0.16, P < .01). Regression analysis (controlling for demographic characteristics) examining the contributions of television-based bombing

exposure in predicting outcomes found TV exposure was associated with PTSD symptoms (partial r = 0.18, P < .001), conduct problems (partial r = 0.14, P < .01), and total difficulties (partial r = 0.13, P < .01).

Manhunt exposures and clinical outcomes

Table 3 also presents the proportion of youth experiencing each manhunt experience; Table 4 presents their associations with outcomes after accounting for demographic covariates. The most common manhunt experience was being under the shelter-in-place warning. For youth under the warning, the most common experience was seeing a heavier police presence in his/her neighborhood than typical, followed by seeing uniformed service persons not typically found in civilian neighborhoods. Seeing or hearing gunshots or explosions, seeing manhunt-related blood, having an officer enter and search the home, and knowing the slain officer tended to have the largest associations with outcomes. Regression analysis entering all eleven manhunt exposures and the four demographic covariates into one predictive model of PTSD symptoms found the following experiences were associated with unique variance in posttraumatic stress: knowing the

slain officer (B = 13.5, SE = 4.2, β = 0.2, P < .01), hearing manhunt-related gunshots/explosions (B = 6.8, SE = 2.4, β = 0.2, P < .01), having an officer enter/search the home (B = 8.6, SE = 3.1, β = 0.2, P < .01), and seeing manhunt-related blood (B = 7.7, SE = 3.3, β = 0.1, P < .05), F(15 431) = 13.44, P < .001; r^2 = 0.32. Children's manhunt exposures tally had a medium-to-large association with PTSD symptoms (partial r = 0.41, P < .001), and small-to-medium associations with total difficulties (partial r = 0.24, P < .001), emotional symptoms (partial r = 0.20, P < .001), conduct problems (partial r = 0.22, P < .001), hyperactivity/inattention (partial r = 0.12, P < .01), and peer problems (partial r = 0.24, P < .001).

Unique Associations Between Outcomes and Total Attack Versus Total Manhunt Exposures

To examine unique contributions of attack versus manhunt exposures in predicting outcomes, regression analyses were conducted for each outcome, with Attack Exposures Tally and Manhunt Exposures Tally (and the 4 demographic covariates) simultaneously entered as predictors. When entered simultaneously, manhunt exposures retained significant associations with all 6 outcomes, whereas attack exposures only retained significant associations with 3 outcomes (PTSD symptoms, total difficulties, conduct problems; details of regressions available on request). Attack and manhunt exposures each uniquely predicted 9% of variance in posttraumatic stress; manhunt exposures uniquely predicted 3% of variance in total difficulties, whereas attack experiences predicted only 1.5%.

Resiliency Factors

Children's prosocial behaviors (SDQ prosocial behavior scale) and peer functioning (SDQ peer problems scale, reverse scored) significantly moderated relationships between attack exposure and

TABLE 3 Proportions of Boston-Area Youth (N = 460) Exposed to Each of 7 Marathon Attack-Related Experiences and Each of 11 Manhunt Experiences

Marathon Attack Experiences	% Total Sample (N = 460)	% Children Attending Marathon (N = 71)	Manhunt/Shelter-in-Place Experiences	% Total Sample (N = 460)	% Children Under Shelter-in-Place (N = 238)
Child attended marathon	15.4	100.0	Under shelter-in-place warning	51.7	100.0
Child injured	1.5	9.9	Saw heavier police presence in neighborhood	35.0	47.9
Child saw injured people	4.1	26.8	Saw uniformed service persons not typically found in civilian neighborhoods[a]	32.2	45.4
Child saw dead bodies	2.4	15.5	Saw officers with guns drawn related to manhunt	11.5	17.6
Child evacuated	6.1	39.4	Heard gunshots/explosions related to manhunt	9.8	18.9
Child knew person injured	5.7	11.3	Saw gunshots/explosions related to manhunt	5.4	10.5
Child knew person killed	2.6	8.5	Saw blood related to manhunt	3.5	6.7
			Had officer knock on door related to manhunt	5.9	9.2
			Had officer enter/search home as part of manhunt	5.2	8.0
			Knew slain officer	2.2	2.5
			Knew injured transit officer	2.2	2.9

[a] For example, National Guard, Homeland Security.

PTSD symptoms (ie, interaction terms predicted PTS after accounting for main effects). Specifically, youth high in prosocial behavior showed no association between attack exposure and PTSD symptoms, whereas youth low in prosocial behavior showed a moderate association (B = 3.2, SE = 0.51, β = 0.39, $P <$ .0001). Similarly, youth high in peer functioning showed only a modest association between attack exposure and PTSD symptoms (B = 1.3, SE = 0.48, β = 0.16, $P <$ .01), whereas youth low in peer functioning showed a strong association (B = 4.0, SE = 0.55, β = 0.49, $P <$ .001).

Interactions Between Attack and Manhunt Exposures

Follow-up analyses revealed that Manhunt Exposures Tally moderated relationships

TABLE 4 Associations Between Child Clinical Outcomes and Attack-Related and Manhunt-Related Exposures Among Boston-Area Youth (N = 460) in the First 6 Months After Marathon Attack

Child Experiences	Associations With Clinical Outcomes[a]					
	PTSD Symptoms	Total Difficulties	Emotional Symptoms	Conduct Problems	Hyperactivity/ Inattention	Peer Problems
Marathon attack experiences						
Child attended marathon	0.20***	0.09*	0.04	0.15**	0.03	0.09
Child injured	0.22***	0.21***	0.16***	0.24***	0.07	0.21***
Child saw injured people	0.30***	0.18**	0.08	0.14**	0.03	0.14**
Child saw dead bodies	0.38***	0.30***	0.23***	0.31***	0.14**	0.27***
Child evacuated during attack	0.19***	0.09*	0.07	0.09	0.03	0.12**
Child knew person injured	0.18***	0.10*	0.10*	0.13**	0.07	0.01
Child knew person killed	0.25***	0.14**	0.10*	0.18***	0.08	0.09
Manhunt experiences						
Under shelter-in-place warning	0.01	0.02	0.07	0.02	−0.02	0.01
Saw heavier police presence in neighborhood	0.22***	0.10*	0.12*	0.09	0.07	0.04
Saw uniformed service persons not typically found in civilian neighborhoods[b]	0.21***	0.17***	0.17***	0.12*	0.11*	0.12*
Saw officers with guns drawn related to manhunt	0.25***	0.16***	0.09	0.15**	0.11*	0.13**
Heard gunshots/explosions related to manhunt	0.39***	0.19***	0.15**	0.17***	0.10*	0.21***
Saw gunshots/explosions related to manhunt	0.40***	0.18***	0.12*	0.18***	0.08	0.25***
Saw blood related to manhunt	0.38***	0.18***	0.09	0.19***	0.08	0.29***
Had officer knock on door related to manhunt	0.27***	0.17***	0.09	0.16***	0.10*	0.19***
Had officer enter/search home	0.35***	0.20***	0.14**	0.18***	0.11*	0.26***
Knew slain officer	0.39***	0.21***	0.12*	0.23***	0.10*	0.29***
Knew injured transit officer	0.27***	0.17***	0.17***	0.22***	0.03	0.22***

* $P <$ .05; ** $P <$ .01; *** $P <$ .001.
[a] Partial correlations controlling for household income, child age, race/ethnicity, and respondent education.
[b] For example, National Guard, Homeland Security.

between Attack Exposures Tally and several outcomes, such that the effect of attack exposure on emotional symptoms, conduct problems, and peer problems varied as a function of manhunt exposure (ie, interaction terms were significant predictors after accounting for main effects). Specifically, among children with greater manhunt exposure, there were moderate significant associations between attack exposure and emotional symptoms (B = 0.31, SE = 0.11, β = 0.21, $P < .01$), conduct problems (B = 0.34, SE = 0.08, β = 0.32, $P < .0001$), and peer problems (B = 0.34, SE = 0.09, β = 0.27, $P < .0001$), whereas such relationships were nonsignificant among youth with lower manhunt exposure.

DISCUSSION

The current study suggests that in the first 6 months after the 2013 Boston Marathon attack and manhunt, there was considerable heterogeneity in attack- and manhunt-related exposures and clinical outcomes. Although children, on average, showed normative functioning, marathon attendance and many specific attack-related and manhunt-related exposures were associated with greater psychopathology across youth. In the present sample, ~11% of marathon-attending youth exhibited likely PTSD (a rate comparable to that found among NYC schoolchildren 6 months after 9/11).[3] This proportion of youth with likely PTSD was roughly 6 times higher among marathon-attending youth than non-attending youth. Among attack-related experiences, seeing dead bodies was most strongly associated with negative outcomes, including emotional symptoms, conduct problems, hyperactivity/inattention, and peer problems. Children's prosocial behavior and positive peer functioning both buffered the impact of attack exposure, serving as important moderators of the relation-

ship between attack exposure and PTSD symptoms.

Children's manhunt-related exposures were also significantly related to psychosocial outcomes, and, when entered as simultaneous predictors, manhunt-related exposures showed even more robust associations with outcomes than attack-related exposures. Findings indicate that clinical efforts must maintain a broad focus beyond simply youth present at the blasts and also include youth exposed to events related to the intense interagency pursuit. Findings add to a growing literature documenting how destabilizing terrorism-related experiences extend beyond immediate attack exposure and can include the subsequently changed ecology in which youth recover.[1]

There has been speculation in popular press and by some politicians as to whether the shelter-in-place request may have been an overreaction, with its own emotional toll outside of the trauma of the attack itself.[12–14] The present findings suggest that from a children's mental health perspective, the shelter-in-place request itself, and the containment of families in their homes, was not specifically associated with any increased psychosocial difficulties. Rather, associations between children's manhunt experiences and symptoms were specifically driven by seeing/hearing gunshots/explosions, seeing manhunt-related blood, having an officer enter/search the home, and knowing the slain officer. Despite the extraordinary and unprecedented experience of 1 million residents being asked to remain indoors, findings suggest many of the specific manhunt-related correlates of outcomes were largely similar to experiences commonly found to be correlates of traumatic stress and related reactions (eg, witnessing death/injury, knowing someone who was killed).[6,15] However,

1 manhunt-related experience (having an officer enter/search the home) accounted for ~4% of unique variance in children's posttraumatic stress and represents a more unique and somewhat idiosyncratic experience specific to the marathon attack aftermath.

The present findings are important in documenting that exposure to terrorism and its aftermath can be associated with a diverse range of child psychosocial problems. Elevated rates of posttraumatic stress have been the most frequently identified outcome among terrorism-exposed populations,[2,16] but this may be in part because it is PTSD that is most often assessed.[17] Comprehensive surveys assessing a full range of emotional and behavioral problems after terrorism, such as in this investigation, are needed to optimally inform clinical efforts for affected youth.

The majority of sampled caretakers did not restrict their children's exposure to television coverage, and ~1 in 5 children viewed >3 hours of televised attack coverage on the day of the bombing, which in turn was associated with increased problems. Although these findings are correlational, they are consistent with growing evidence documenting the considerable negative impact that such indirect contact with terrorism can have.[2,18,19] Despite needs for live information during disasters, increasing evidence suggests parents should minimize children's media-based exposure to whatever extent possible.

Several limitations warrant comment. First, because population-based methods were not applied, findings do not reflect the experiences and outcomes in the general population of Boston-area youth. Although we made attempts to recruit a range of parents in affected communities, parents who chose to participate might have been those with greater exposure or more distressed

children. Furthermore, the survey was only available online and in English, which restricted eligibility to English-speaking parents with computer access/literacy. Concerns about the sample's representativeness are somewhat tempered by the fact that the demographic makeup of the present sample is comparable to those areas most directly affected by the marathon and manhunt (eg, 84.9% of Watertown residents are white; 74.5% of residents of Back Bay, where the attack occurred, are white; 55.6% and 51.3% of families in Watertown and Back Bay, respectively, earn <$100 000 annually).[20,21] Second, only 42% of caretakers initially contacting study staff consented to participation and completed the survey. This participation rate is consistent with related research on disaster-affected youth[22,23] and may reflect unique challenges of research after community traumas. Survey length might have also contributed to the participation rate. Third, the present

design entailed a single time-point assessment and cannot speak to prospective associations between pre- and postattack functioning, nor can it speak to trajectories of change in postattack functioning across time. Given the unpredictable nature of terrorism, the vast majority of terrorism-related studies are understandably initiated after the attack, but future work will benefit from researchers with incidental preexisting data in affected communities collecting postattack data on their existing samples.[2] Fourth, information on child gender was not collected in the present survey, and thus the impact of gender on study variables cannot be currently assessed. Finally, data were from parents/caretakers. Future work using multi-informant, multimethod strategies can offer a more comprehensive portrait of children's functioning.

Despite these limitations, the present findings highlight key predictors of

posttraumatic stress and other emotional and behavioral outcomes in the aftermath of the Boston Marathon attack and manhunt that can help identify youth in greatest need of clinical attention. Attack and manhunt experiences each uniquely predicted 9% of the variance in postattack posttraumatic stress, with manhunt exposures more robustly associated than attack-related exposures with a broad range of other psychosocial outcomes, including emotional symptoms, conduct problems, hyperactivity/inattention, and peer problems. In the aftermath of terrorism, particularly acts targeting children and families, these findings underscore the urgency of connecting affected youth with mental health care. Furthermore, this study demonstrates that the reach of terror and associated fear is not confined to the boundaries of an attack itself[2]; events and community responses that follow can also have considerable impacts on children's psychological well-being.

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GARBAGE ALONG THE TRAIL: *Hiking in Vermont is lovely. The trails are not crowded and the views from the summits can be breathtaking. Because the peaks are not particularly high, most hikers in Vermont are day hikers rather than backpackers spending nights along the Appalachian Trail. Despite hiking for years all across the state, I almost never see any human refuse. That is not the case for climbers tackling Mt. Everest.*

Over the years, so much garbage has accumulated along the trails to the summit that Mt. Everest is often referred to as the world's highest garbage dump. The problem is that many inexperienced climbers ascend the mountain and try to conserve energy by discarding their refuse. Unfortunately, the trash does not decompose in the sub-freezing temperatures. Four years ago, concerned climbers carted more than two tons of trash off the highest elevations on the mountain. Last year, conscientious climbers removed more than four tons of trash. Still a mountain of trash — almost 50 tons worth — remains.

As reported in The New York Times *(World: March 4, 2014), the Nepalese government hopes to clean up the mountain by requiring all climbers to not only carry all their own refuse from Mt. Everest but also remove an additional 8 kg of waste. The government hopes that strictly enforcing the new rules will lead to 8 tons of garbage being removed from the mountain this year alone. Climbers who do not return to base with the additional garbage may face large fines or be barred from future climbs. I have not climbed in the Himalayas, but I certainly hope the new rules return the mountain to the pristine and awe-inspiring beauty that inspired the climbers in the first place.*

Noted by WVR, MD

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Adjustment Among Area Youth After the Boston Marathon Bombing and Subsequent Manhunt

Jonathan S. Comer, Annie Dantowitz, Tommy Chou, Aubrey L. Edson, R. Meredith Elkins, Caroline Kerns, Bonnie Brown and Jennifer Greif Green

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