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School- and Classroom-Based Supports for Children Following the 2013 Boston Marathon Attack and Manhunt

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Abstract

School staff provide key mental health services following mass crisis events and teachers, in particular, can provide important supports within their classrooms. This study examines Boston-area teachers' perception of classroom-wide psychiatric distress and the types of supports that schools and teachers provided following the 2013 Boston Marathon bombing and subsequent manhunt. Boston-area K-12 teachers ($N = 147$) in communities with varying levels of exposure to the bombing and manhunt completed an anonymous web-based survey 2–5 months after the attack. Teachers reported on students' exposure to the bombings and manhunt, classroom-wide psychiatric distress, and the types of supports they and their schools provided students. Teacher reports of student exposure to the bombings and manhunt were significantly associated with their perceptions of greater classroom-wide psychiatric distress. Almost half indicated that their school had no formal policy for responding to the crisis, half reported no training to address events, and even the most common classroom-based support strategy—reassuring students of their safety—was provided by only 76 % of teachers. Teacher perceptions of student exposure to the manhunt, but not the bombing, were significantly associated with greater provision of these supports. In the aftermath of the Boston Marathon bombings and manhunt, teachers and schools provided

supports; however, the extent and types of supports varied considerably. Working with teachers to most effectively and consistently serve in this complex role has the potential to improve school-based crisis response plans, as well as student outcomes.

Keywords

Disasters; Child mental health; Trauma; Schools; Teachers

Introduction

The bombing of the Boston Marathon on April 15, 2013, was one of the largest terrorist attacks on US soil in recent history. Two pressure cooker bombs exploded near the finish line of the race, killing 3 people and injuring an estimated 264. In the days that followed, the pursuit for two suspects led to a gunfire exchange (during which one suspect was killed) and an unprecedented manhunt. Residents in Watertown, Boston, and several surrounding Boston-area communities were requested to “shelter-in-place.” Public transportation, schools, universities, and businesses were closed, while officers searched door-to-door for the remaining suspect, who was eventually apprehended in a backyard in the town of Watertown.

Studies consistently find that mass crisis events, such as terrorist attacks, have a significant impact on the mental health of children in affected communities, even after imminent threats have dissipated (Comer et al., 2014; Furr, Comer, Edmunds, & Kendall, 2010; Hoven et al., 2005; McLaughlin et al., 2010; Pfefferbaum et al., 1999). However, youth mental health needs are often left unaddressed (Fairbrother, Stuber, Galea, Pfefferbaum, & Fleischman, 2004; Pfefferbaum et al., 2003); for example, a study of New York City residents following the September 11th attacks found that only a quarter of children with severe posttraumatic stress reactions received counseling services (Fairbrother et al., 2004). Importantly, a majority of those who *did* receive services received them in the context of their schools (Fairbrother et al., 2004; Stuber et al., 2002). This finding is in line with the broader literature on children’s mental health service provision, which consistently finds that schools are among the largest providers of mental health services to youth (Merikangas et al., 2011).

In the context of community crises, schools may provide the first, and sometimes only, mental health supports for their students. Schools, however, vary considerably in the type and quality of their crisis response plans (Graham, Shirm, Liggin, Aitken, & Dick, 2006; Nickerson & Zhe, 2004), and while a number of resources have been developed to inform school response to crisis (Brock, Lazarus, & Jimerson, 2002; Brock et al., 2009; La Greca, Vernberg, Silverman, Vogel, & Prinstein, 1994), there are little data available on their uptake, particularly following actual crisis events. In order to leverage school resources to address child and adolescent mental health needs following crisis events, more information is needed about existing school practices. For school staff working with children and families to respond to crises, understanding the landscape of school responses is critical for coordinating responses to individual children and informing collaboration with teachers to more effectively address student needs.

Response to crisis will necessarily vary by factors including the physical and emotional proximity of students to events, student age, and relationships among students and teachers. However, guidelines provided by the National Association of School Psychologists (NASP; Brock et al., 2002, 2009) and the Substance Abuse and Mental Health Services Agency (SAMHSA; US Department of Health and Human Services, 2012) offer a number of suggested interventions for schools, including the following. First, schools should provide a continuum of services for children following a crisis, including intensive and individualized interventions for children experiencing greater psychological distress. Second, schools should offer students opportunities to talk and ask questions about the trauma, and dispel inaccuracies that arise regarding events. Third, schools should provide students with opportunities to productively help others following a crisis (e.g., writing letter, sending packages). Fourth, schools should encourage positive coping by teachers and other adults who are on the “front-lines” of providing support to children. Fifth, schools should develop robust communication strategies, so that all adults supporting children are clear about policies and expectations. Sixth, teachers and other adults should limit student media exposure, which has the potential to include re-traumatizing stories and images.

The current study presents data from Boston-area K-12 teachers who were surveyed in spring of 2013, following the Boston Marathon attack. This attack was unique in both its target of a family event attended by children, and in the unprecedented manhunt and shelter-in-place request that impacted roughly one million Boston-area residents in the week following the bombing. Most Boston-area public schools were on spring break the week the attack and manhunt occurred; when they reopened, school staff needed to decide whether and how to respond to the events. In this study we investigate (a) the extent to which teachers observed classroom-wide psychiatric distress following the attack and manhunt, and (b) the types of supports that schools and teachers provided to students. In particular, we address the extent to which school practices were consistent with best practices in crisis response. Results have implications for understanding perceptions of teachers and their potential role as first-responders who might be optimally positioned to detect mental health concerns among their students and provide support within the context of their classrooms.

Materials and Methods

Sample

Massachusetts teachers in K-12 schools were recruited between the dates of June 15, 2013 and September 15, 2013 (2–5 months post-event), to participate in an online survey assessing their perceptions of student’ experiences during the week of the Marathon attack, student psychological functioning, and how they addressed and responded to events. Several methods were used to recruit teachers. First, we engaged in outreach to school districts (i.e., contacted local superintendents, principals, and teachers’ union leaders who sent e-mail invitations to participate); and second, we reached out to teachers using other media outlets (i.e., study advertisements in community publications and teachers’ union newsletters, and several local newspapers and blogs wrote stories on the study encouraging participation). Teachers were purposefully recruited to represent a range of communities with varying levels of exposure to the events, including communities known to have high levels of

exposure (e.g., Cambridge where the suspects lived, Watertown where the manhunt led to a door-to-door search) as well as communities expected to have lower levels of exposure because of their distance from Boston. Interested teachers were directed to contact study staff or visit a study website providing more information. Participants were compensated \$10 and given the option to have their compensation directly donated to the Boston One Fund, a nonprofit organization supporting victims and families affected by the attack. Teachers who requested compensation be sent to them directly were required to provide a Boston-area school e-mail address, to confirm their status as Boston-area school employees. Of 393 respondents who initially visited the website or contacted staff, 147 (37.4 %) were eligible for participation and completed the survey. Excluded participants were those with substantial missing data, including responses to questions about student exposure to the attack ($n = 135$), those who did not indicate the district or school in which they worked ($n = 41$) and those who donated their compensation to the One Fund (and therefore were not asked to provide school district e-mail addresses) who had computer IP addresses outside the state of Massachusetts ($n = 70$). Teachers provided informed consent and completed surveys using Qualtrics web-survey software (median completion time = 25.5 min). University human subject's approval was obtained prior to data collection.

Table 1 presents the demographic characteristics of participating teachers. The majority of respondents were female (86.4 %) and non-Latino White (86.2 %). Teachers had been teaching for an average of 11.8 years ($SD = 9.4$) and taught an average of 59.9 students ($SD = 64.8$). Participating teachers worked in 18 school districts and 72 schools, located in and around the city of Boston (the maximum number teachers participating from a single school was 11). School districts were located 0–52 miles from the site of the Marathon attack in Boston and 0–47 miles from the site of the manhunt in Watertown. Districts ranged in size from 4 to 119 schools ($M = 17$ schools), ranged from 5 to 92 % ethnic/racial minority students ($M = 39.3$ %), had an average of 34.8 % of students receiving free or reduced-price lunch, an average of 17.2 % receiving special education services, and 8.5 % of students designated as English language learners (based on information available from the Massachusetts Department of Education).

Measures

Teacher Perceptions of Student Exposure to Marathon Attack and Manhunt—

Teachers estimated whether any of their students were exposed to each of 10 Marathon attack experiences and 10 manhunt and shelter-in-place experiences (Table 1). Development of exposure questions was informed by surveys used by other study teams following disasters and violence (Galea et al., 2002; Hughes et al., 2011) and was administered in other studies of youth exposure to the Boston Marathon attack and manhunt (Comer et al., 2014; McLaughlin et al., 2014). Dichotomized item responses were used to compute a sum of *Marathon attack exposure* (range = 0–10) and *Manhunt exposure* (range = 0–10) indicating the extent to which students were exposed to these events. Further, we used these sum scores to create indicators of whether teachers reported that *any* versus *none* of their students were exposed to the Marathon attack and manhunt. Indicators were used to compare support strategies provided by teachers with and without some degree of event exposure among their students.

Teacher Perceptions of Classroom-Wide Psychiatric Distress—The teacher-report version of the *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 2001) was modified to assess five areas of classroom-wide psychiatric distress: (a) emotional symptoms, (b) conduct problems, (c) hyper-activity/inattention, (d) peer problems, and (e) prosocial behavior. Items were adapted so that rather than responding for an individual student, teachers were asked to indicate whether each symptom was: *true for all students*, *true for many students*, *true for some students*, *true for a few students*, or *true for no students*. As in the standard teacher-report SDQ, a total difficulty score was generated by adding all 20 items from the emotional symptoms, conduct problems, hyperactivity/inattention, and peer problems scales ($\alpha = .83$). Internal consistency was also strong for two subscales (emotional symptoms $\alpha = .87$; prosocial behavior $\alpha = .86$). Eliminating one item from the conduct problems scale yielded adequate internal consistency for that scale, as well (conduct problems $\alpha = .77$). Due to low internal consistency ($\alpha < .60$), we did not analyze data from the hyperactivity/inattention and the peer problems scales (Table 2).

As a second indicator of classroom-wide psychosocial functioning, the study team generated a list of eight reactions to trauma that teachers might have observed among students in response to the attacks (e.g., appeared fearful or sad, talked excessively about details of their experience, were aggressive toward another student). Teachers rated on a five-point Likert scale whether *all students*, *many students*, *some students*, *a few students*, or *no students* exhibited each of these behaviors (Table 3).

Confidence in Responding to Student Behavior—For each of the eight reactions to trauma listed above, teachers indicated on a three-point Likert scale whether they felt *very confident*, *somewhat confident*, or *not very confident* in their ability to respond (Table 3).

Student Support—Teachers answered a number of questions about school-based supports. First, they indicated supports provided to teachers by their school (e.g., in-person training addressing events with students, list of mental health resources for students, families, and teachers). Second, they indicated whether their school provided a series of school-wide supports and activities for students (e.g., assembly, school-wide moment of silence, additional counseling services). Third, teachers indicated specific classroom-wide responses and supports they provided to students. This list of supports was adapted from Huston and DiPietro (2007) and fell into three broad categories: activities/discussion (e.g., discussed facts of event), adjustment of academic activities or standards (e.g., delayed tests or quizzes), and social-emotional supports (e.g., discussed ways students might cope) (Tables 4, 5).

Data Analysis

We first estimated associations of teacher perceptions of student Marathon attack exposure and manhunt exposure with classroom-wide psychiatric distress. Because half of participating teachers reported that they taught more than one grade level (particularly those teaching in middle and high schools), we replicated teacher data to all grades that each teacher reported, creating a data structure where we used teacher-grade as the unit of analysis, thereby accounting for clustering of grades within teachers. Multivariate

associations of Marathon attack exposure and manhunt exposure with classroom-wide psychiatric distress were then estimated using a normal link function, with nesting effects at both the teacher and school district levels. We employed Generalized Estimating Equations (GEE) method to estimate robust standard error accounting for the clustering. We also conducted a series of sensitivity analyses that accounted for nesting of teachers within individual schools, and schools within their districts. Alternatively, we used a fixed effects approach for grades by creating a series of dummy variables (13 dummy variables for Grade K, 1–12, and others) and used teacher as the unit of analysis instead of teacher-grade.

Next, we examined the proportion of schools and teachers using each of the support strategies assessed. Using the same methods described above, we estimated the association of teachers reporting that they had any versus no students with exposure to the Marathon attack and any versus no students with exposure to the manhunt, on their implementation of each support strategy.

In addition, we tested whether the date of survey completion (measured by number of days from the attack) was associated with teacher reports of exposure to the Marathon attack or manhunt, or to classroom-wide psychiatric distress. We found that correlations were weak ($r_s = -.08$ to $-.11$) and nonsignificant. All analyses were conducted using SAS version 9.3.

Results

Teacher Perceptions of Student Marathon Attack and Manhunt Exposure

Teachers reported that their students had considerable exposure to the Boston Marathon attack and manhunt. For example, almost two-thirds of participating teachers reported that at least one of their students attended the Marathon at the time of the attack and almost half reported having a student who saw people running in panic. Over half reported that at least one student was requested to shelter-in-place during the manhunt and over one-third reported having at least one student who heard gunshots or explosions related to the manhunt or had an officer enter their home related to the search for the suspect-at-large (Table 1).

Association of Marathon Attack and Manhunt Exposure with Classroom-Wide Psychiatric Distress

Teacher reports of student exposure to the Marathon attack, $\beta = 1.9$, $p < .001$, and manhunt, $\beta = 0.4$, $p = .04$, were both significantly and independently associated with increased classroom-wide psychiatric distress (based on SDQ total scores), in a model controlling for teacher sex, race/ethnicity, number of years teaching, total number of students taught per week, and teacher-grade (Table 2). Student exposures to the Marathon attack and manhunt were also significantly and independently associated with increased problems on subscales measuring teacher perception of classroom-wide emotional symptoms and conduct problems. Increased prosocial problems were significantly associated with manhunt exposure, but not exposure to the Marathon attack.

Teachers rated the extent to which students exhibited each of eight behaviors in reaction to the attack and manhunt. Teachers most often reported that students shared inaccurate facts

($M = 2.1$, $SD = 0.87$), appeared fearful ($M = 2.0$, $SD = 0.91$), or talked excessively about the details of the events ($M = 1.9$, $SD = 0.89$; Table 3). Teachers who reported that at least one of their students was exposed to the manhunt indicated more frequently observing each trauma-response assessed, with the exception of students expressing thoughts of hurting themselves. Among those reporting that their students exhibited each trauma-response, teachers indicated that they felt most confident in responding to student crying and least confident in responding to students expressing thoughts of hurting themselves.

School-Based Supports and Their Association with Marathon Attack and Manhunt Exposure

Teachers reported that their schools and they personally provided a range of responsive and supportive activities following the attack and manhunt. The majority of teachers reported that their school provided information by e-mail about how to address the events with students and approximately half of teachers reported that schools provided a list of resources to support students, families, or teachers themselves (Table 4). However, only half of teachers reported that their school had a policy in place for how teachers should respond to the crisis events. Comparing teachers who did and did not report that any of their students was exposed to the Marathon attack or manhunt, we found that teachers with students exposed to the manhunt were significantly more likely to report that their school provided several of these supportive resources, including a policy for responding (58.0 vs. 36.9 % of other teachers, $\chi^2 = 6.2$, $p = .01$). Teacher perceptions of student exposure to the Marathon attack were not associated with increased provision of school support resources and activities. Teachers of students exposed to the manhunt were significantly more likely to report that their school provided an assembly or increased counseling services for students, when compared to teachers whose students were not exposed.

Teacher Classroom-Based Supports for Students and Their Association with Marathon Attack and Manhunt Exposure

Teachers indicated whether they provided 25 specific classroom-based support resources and activities for their students (Table 5). These supports fell into three categories: activities/discussion, adjustment of academic activities or standards, and social-emotional supports. The most frequently implemented classroom-based activities, reported by over half of teachers, were answering student questions about the events, dispelling myths and rumors, and discussing facts of events. The majority of teachers did not adjust their academic activities or standards, although 9 % excused students from class and 9 % offered additional opportunities to review course material.

The majority of teachers provided some classroom-based supports for their students' social-emotional well-being. Three-quarters reassured students of their safety, two-thirds let students know it was okay to be upset, and almost half discussed common reactions to crisis events and coping strategies. Teachers in schools where students were exposed to the manhunt were significantly more likely to report providing four of the eight social-emotional supports assessed when compared to schools where students were not exposed.

Discussion

This study is one of the first to provide information about teacher perceptions and observations of student behavior and responsive supports directly following a specific mass crisis. The few prior studies examining teacher response to crises have tended to focus generally on trauma, rather than on a specific crisis event (Alisic, 2012), have collected data after considerable time has passed (Felix et al., 2010), or focused on the psychological reactions of teachers, rather than on their perceptions of and response to students (Pfefferbaum et al., 2004). Several key findings emerge from the current study. First, teachers who perceived greater student exposure to the Boston Marathon attack and manhunt were significantly more likely to report observing classroom-wide psychiatric distress. This finding is consistent with results of a study of parents following the Boston Marathon attack (Comer et al., 2014), as well as prior studies of children's reactions to trauma (Hoven et al., 2005; McLaughlin et al., 2010; Pfefferbaum et al., 1999), although the incorporation of teachers' perspectives in the current study is novel. Further, consistent with literature finding that teachers are key informants in identifying student mental health needs (Brown et al., 2006; Goodman, Ford, Simmons, Gatward, & Meltzer, 2000), this study contributes data suggesting that teachers are attuned to student psychological distress following crisis, underscoring the importance of involving teachers as active collaborators in crisis intervention and encouraging them to serve in the role of identifying youth who might require mental health services.

The finding that exposure to the manhunt was equal, or more robust, in its association with teacher observations of psychiatric distress, as compared to exposure to the Marathon attack itself, provides new information about the types of terrorism-related experiences that most strongly trigger emotional and behavioral reactions among youth. In particular, it highlights the importance of attending to the entire course of attacks and their aftermath, recognizing that ongoing changes in perceptions of safety and risk might have a striking impact on children's mental health. Importantly, this is consistent with the results of a study of parents (Comer et al., 2014), which also found that exposure to the manhunt was significantly and independently associated with symptoms of posttraumatic stress and emotional and behavioral problems.

Although teachers appear to identify psychiatric distress associated with crisis exposure, prior studies have found that teachers feel ill-prepared to address events in their classrooms (Alisic, 2012; Felix et al., 2010). In the current study, we find a considerable range in the types of student supports provided by schools and teachers. For example, only half of teachers said that their school had a formal policy or plan for responding to the attacks and their aftermath. These supports varied even in schools directly affected by the events; among teachers reporting that their students were exposed to the manhunt, just over half received lists of resources for students and families. Within their own classrooms, teachers engaged in a variety of supportive activities, including addressing the events in discussion, providing students with information about common reactions and coping strategies, and, less frequently, adjusting academic activities and requirements. The range of ways in which teachers responded to the events suggests that there are few activities that families or students could expect to certainly occur (or not occur) in schools following this type of

crisis. Even the most common intervention—reassuring students of their safety—was implemented by only three-quarters of teachers.

In comparing school and teacher supports to guidelines outlined by NASP and SAMHSA (Brock et al., 2002, 2009; U.S. Department of Health and Human Services, 2012), we find considerable variation in the extent to which school services were consistent with these best practices. First, although it is recommended that schools provide a continuum of services for children following a crisis (including intensive and individualized interventions for children experiencing greater psychological distress), findings indicate that only half of teachers were aware of their school increasing individual counseling services for students and less than one-fifth reported that their school increased provision of group counseling. Second, it is recommended that schools offer students opportunities to talk and ask questions about the trauma and, though those conversations, dispel any inaccuracies. The majority of participating teachers reported that they answered questions about the events, and over half reported that they discussed facts of the events or dispelled myths and rumors. Third, it is recommended that schools provide students with opportunities to help others following a crisis (e.g., write letter, send gift packages). Only one-quarter of teachers in the current study reported that they mentioned ways that their students could help, and 11 % of teachers indicated that they engaged in such a project as a class. In addition, only one-third of teachers said that their school facilitated opportunities to volunteer or give money related to the event. Fourth, it is recommended that schools encourage positive coping by teachers and other adults who are in primary support roles for children. The present findings indicate that just over half of teachers were provided with an opportunity to talk about their own feelings and less than half of schools provided a list of mental health resources for teachers or families. Fifth, schools are encouraged to develop clear policies and communication strategies, so that all adults supporting children can collaborate effectively. In this study, only half of teachers indicated that their school had a clear policy for responding to the events; however, most teachers received some information from their school (e.g., e-mail or professional development) to guide their response. Sixth, it is recommended that teachers and other adults limit student exposure to potentially distressing media. Consistent with this recommendation, very few teachers in the current study reported sharing video or television coverage related to the events.

The finding that teachers of students exposed to the manhunt were more likely to engage in supportive strategies is consistent with the expectation that schools with students experiencing greater exposure would increase their provision of support services. However, two findings in this regard are particularly striking. First, even among schools in which students were exposed to the manhunt, there was a high degree of variability in support services provided (e.g., only 63 % of teachers reported that their school increased provision of individual counseling). This suggests that responsive strategies are inconsistent, even in schools where students were known to have exposure to events. Second, though supports increased with manhunt exposure, provision of supports appeared unrelated to student exposure to the Marathon attack itself. There are several possible reasons for this distinction. One is that the manhunt including the shelter-in-place request affected entire communities of students who likely attended neighborhood schools, whereas exposure to the attack was more likely idiosyncratic as the Marathon draws attendants from a wide geographic region.

A second explanation is related to the timing of the events, as the bombing occurred on a Monday and the manhunt took place on Friday. For schools on break during the week of these events, the Marathon attack occurred a full week before school resumed. However, given that teacher perceptions of both exposure to the attack and to the manhunt were significantly and independently associated with student psychiatric symptoms, the finding that support services were only associated with one of these events raises questions about whether students who were exposed to the attack, but not the manhunt, received needed supports.

Study Limitations

Several study limitations are important to note. First, we recruited broadly for this study, in order to identify a range of teacher and school responses to the events. Our final sample, which included teachers from 72 unique schools, reflected this effort; however, our sample was not representative of Boston-area teachers. Teachers who participated might have been those whose students had greater exposure or were more distressed by events, or those who felt more confident in how they responded. Further, the timing of the study presented a challenge. The attack occurred in April, and because of the time required to obtain IRB approval, the study launched in mid-June—a difficult time to contact schools and teachers at the end of the school year. As a result, most study recruitment and participation occurred over the summer. We closed the study on September 15, which was 5 months post-attack and the beginning of the new school year. Although a study with a representative sample of Boston-area teachers would have been ideal, we are aware of no such studies following crisis events. In the future, this type of systematic study of school responses will be critical, if schools are to be seriously engaged as active collaborators in responding to children following crises.

A second potential limitation was the novel modification of SDQ items for use by teachers to estimate classroom-wide psychiatric distress. Adequate reliability was observed for most subscales; however, low internal reliability in the hyperactivity/inattention and peer problems scales suggests that these constructs might have been particularly difficult for teachers to assess. Although the purpose of this study was to identify teachers' perceptions of classroom-wide psychiatric distress post-attack, and not to identify specific students in distress, future research would benefit from using multiple informants to determine whether teacher perceptions accurately reflected student experiences. Third, reports of exposure to the Marathon attack and manhunt were reliant on teacher perceptions of their students' experiences. We have no information available to validate the accuracy of teacher responses to these questions. In addition, these exposures were likely not equal in the risk they posed to students (e.g., witnessing a death was a more significant exposure than seeing people run in panic). Collapsing the exposures and creating a sum score, as we did here to measure teachers' overall perceptions of student exposure to multiple interrelated events, might have masked those differences among individual items. Fourth, this study involved an assessment at a single time point and no pre-attack data were available to afford prospective examinations.

Conclusion

Studies consistently find that teachers have difficulty identifying students with mental health needs and providing supports, in part because most receive little or no training in student psychological adjustment (Reinke, Stormont, Herman, Puri, & Goel, 2011; State, Kern, Starosta, & Mukherjee, 2011). When crises occur, it can be particularly challenging for teachers to define their role and to balance conflicting demands, such as the needs of individual students versus the group, and the need to be responsive to a trauma versus establishing a sense of normalcy (Alisic, 2012). This study suggests that teachers can, and do, serve in important supportive roles following mass crises. As such, working with teachers to most effectively serve in this complex supportive role might have the potential to improve crisis response plans implemented by schools, as well as interventions for individual students.

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Table 1

Teacher demographics and percent reporting that one or more students were exposed to each Marathon attack and manhunt experience

	Mean (SD)	% (n)
<i>Demographics</i>		
Sex (female)		86.4 (127)
Race/ethnicity (non-Latino White)		86.2 (125)
Number of years teaching	11.8 (9.4)	
Number of students currently teaching	59.9 (64.8)	
<i>Exposure to Marathon attack</i>		
Attended/participated in Marathon at time of attack		64.6 (95)
Personally injured		1.4 (2)
Family member injured		13.7 (20)
Friend injured		24.0 (35)
Family member killed		0.0 (0)
Friend killed		3.4 (5)
Saw someone injured (not on TV or Internet)		30.8 (45)
Saw someone killed (not on TV or Internet)		6.2 (9)
Saw people running in panic (not on TV or Internet)		44.8 (65)
Evacuated		37.5 (54)
Sum of Marathon attack exposure	2.2 (1.9)	
<i>Exposure to manhunt</i>		
Lived in neighborhood under shelter-in- place request		61.2 (90)
Saw heavier police presence than typical		70.1 (103)
Saw uniformed servicemen/women or federal authorities not typically seen in civilian neighborhood		62.6 (92)
Heard heavy siren activity related to manhunt		58.9 (86)
Saw officers with guns drawn related to manhunt		44.9 (66)
Heard gunshots or explosions related to manhunt		40.1 (59)
Saw gunfire or explosions related to manhunt		21.8 (32)
Saw blood related to manhunt		17.1 (25)
Had officer knock on door related to manhunt		32.9 (48)
Had officer enter home related to search for suspect		25.3 (37)
Sum of manhunt exposure	4.3 (3.7)	

Table 2

Multivariate associations between Marathon/manhunt exposure and classroom-wide psychiatric distress

	Emotional symptoms β (SE)	Conduct problems β (SE)	Prosocial problems β (SE)	Total problems β (SE)
Sex (female)	0.58 (0.58)	0.55 (0.40)	0.19 (0.89)	1.08 (1.54)
Race/ethnicity (non-White)	0.26 (0.71)	-0.10 (0.52)	-1.13 (1.47)	3.98 (2.18)
Years as a teacher	-0.02 (0.02)	-0.02 (0.02)	-0.01 (0.04)	-0.08 (0.06)
Number of students	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.01)
Grade level	-0.02 (0.06)	0.01 (0.04)	-0.07 (0.08)	-0.06 (0.17)
Marathon attack exposure	0.68 (0.15)*	0.49 (0.13)*	-0.11 (0.17)	1.87 (0.46)*
Manhunt exposure	0.24 (0.07)*	0.11 (0.05)*	0.27 (0.09)*	0.42 (0.20)*

*
 $p < .05$

Table 3
Student behavioral reactions to attack and teacher confidence in responding to those behaviors

	Mean	Mean by Marathon exposure		Mean by manhunt exposure	
		Marathon exposure	No Marathon exposure	Manhunt exposure	No manhunt exposure
Students with each behavioral reaction to attack [range = 1 (no students) to 5 (all students)]					
Appeared fearful	2.0	2.1	1.9	2.2	1.7*
Cried	1.2	1.3	1.2	1.4	1.1*
Had an outburst	1.1	1.1	1.1	1.2	1.0*
Talked excessively about details of the events	1.9	1.9	1.9	2.1	1.5*
Shared inaccurate facts	2.1	2.1	2.1	2.2	1.9*
Expressed thoughts of hurting themselves	1.0	1.0	1.0	1.0	1.1
Expressed concerns about others	1.5	1.5	1.5	1.6	1.3*
Aggressive toward others	1.1	1.1	1.1	1.2	1.0*
Teacher confidence in responding to behavior [range = 1 (not very confident) to 3 (very confident)] ^a					
Appeared fearful	2.4	2.4	2.2	2.4	2.4
Cried	2.6	2.7	2.6	2.6	3.0*
Had an outburst	2.4	2.3	2.5	2.4	-
Talked excessively about details of the events	2.2	2.3	2.1	2.2	2.3
Shared inaccurate facts	2.4	2.4	2.4	2.4	2.5
Expressed thoughts of hurting themselves	1.7	1.5	2.0	1.7	-
Expressed concerns about others	2.7	2.7	2.5	2.6	2.9
Aggressive toward others	2.1	2.1	2.0	2.2	1.5

^a Responses are among those reporting that at least one student engaged in the behavior assessed

* $p < .05$, based on t tests

Table 4
Associations of supports provided in schools and classrooms by exposure to Marathon attack and manhunt

	Total %	% By Marathon exposure		% By manhunt exposure	
		Marathon exposure	No Marathon exposure	Manhunt exposure	No manhunt exposure
<i>Supports to teachers provided by schools</i>					
Training teachers how to talk about events	49.7	47.25	54.0	60.7	30.8 ^a
Training teachers how to identify mental health needs	34.0	28.6	44.0	44.9	15.4 ^a
Email to teachers on how to talk about events with students	86.5	83.5	92.0	88.8	82.7
Email to teachers on how to identify mental health needs	36.2	35.2	38.0	40.5	28.9 ^a
Lists of resources for students	55.3	55.0	56.0	59.6	48.1 ^a
Lists of resources for families	46.1	44.0	50.0	53.9	32.7 ^a
Lists of resources for teachers	44.0	40.7	50.0 ^b	50.6	32.7 ^a
Opportunity for teachers to talk about their own feelings	52.5	49.5	58.0	53.9	50.0 ^a
<i>School-wide student supports</i>					
Assembly	10.7	9.5	12.8	15.9	2.0 ^a
Memorial service	2.3	1.2	4.3	3.7	0.0
School-wide announcement	22.9	20.2	27.7	18.3	30.6
School-wide moment of silence	56.5	59.5	51.1	46.3	73.5 ^b
Opportunity to volunteer/give to survivors and victim families	31.3	29.8	34.0	30.5	32.7
Increased provision of group counseling	18.3	16.7	21.3 ^a	22.0	12.2 ^a
Increased provision of individual counseling	50.4	52.4	46.8	63.4	28.6 ^a
Policy for responding	49.7	51.1	47.1	58.0	36.9 ^a

Significance tests based on multivariate models including controls for teacher sex, race/ethnicity, years teaching, total students taught per week, student grade-level, exposure to Marathon/manhunt, and with a nesting effect for teacher and school district

^a $p < .05$, exposure > no exposure

^b $p < .05$, exposure < no exposure

Table 5

Classroom-based supports by exposure to Marathon attack and manhunt

	Total %	% By Marathon exposure		% By manhunt exposure	
		Marathon exposure	No Marathon exposure	Manhunt exposure	No manhunt exposure
<i>Activities or discussion</i>					
Answered questions about events	67.1	71.3	59.2	66.7	67.9
Asked students if families or friends were affected	32.9	36.2	26.5	33.3	32.1
Decided to do a project as a class (e.g., gift baskets)	11.2	10.6	12.2	10.0	13.2
Discussed facts of events	55.2	56.4	53.1	56.7	52.8
Dispelled myths or rumors	59.4	61.7	55.1	65.6	49.1
Incorporated event into lesson plan/curriculum	9.8	10.6	8.2	13.3	3.8
Mentioned ways that people can help (e.g., charities)	25.2	27.7	20.4	23.3	28.3
Provided moment of silence	22.4	18.1	30.6	21.1	24.5 ^b
Read an inspirational passage	3.5	3.2	4.1	3.3	3.8
Shared news stories or articles related to attacks	9.1	11.7	4.1 ^a	11.1	5.7
Shared TV/video clips related to attacks	2.8	4.3	0.0 ^c	3.3	1.9 ^c
Acknowledged that class needed to go on with material	43.4	45.7	38.8	43.3	43.4
<i>Adjustment of academic activities or standards</i>					
Altered lessons to remove potentially distressing material	8.4	8.5	8.2	10.0	5.7
Delayed tests or quizzes	8.4	8.5	8.2 ^c	13.3	0.0 ^c
Excused students from class	9.1	9.6	8.2	12.2	3.8 ^a
Offered additional opportunities to review course material	9.1	6.4	14.3	10.0	7.6
Offered extensions on assignments due	6.3	7.5	4.1 ^c	7.8	3.8 ^c
<i>Social-emotional supports</i>					
Discussed ways students might cope	43.4	46.8	36.7	50.0	32.1 ^a
Talked about common reactions to crisis events	43.4	47.9	34.7	48.9	34.0
Asked students to share responses to the events	35.0	37.2	30.6	31.1	41.5
Let students know it is okay to feel upset	64.3	70.2	53.1	66.7	60.4
Mentioned counseling services	29.4	30.9	26.5	35.6	18.9 ^a

	Total %	% By Marathon exposure		% By manhunt exposure	
		Marathon exposure	No Marathon exposure	Manhunt exposure	No manhunt exposure
Offered to talk privately with students	42.0	43.6	38.8	48.9	30.2
Reassured students they are safe	75.5	72.3	81.6	85.6	58.5 ^a
Removed a distressed student from class	10.5	11.7	8.2	14.4	3.8 ^a

Significance tests based on multivariate models, see Table 4 for list of controls

^a $p < .05$, exposure > no exposure
^b $p < .05$, exposure < no exposure
^c Model would not converge because of small cell sample