

Media Exposure Predicts Children's Reactions to Crime and Terrorism

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ABSTRACT. In this study we examined reactions to 3 news events (September 11 terrorist attacks, Summer 2002 kidnappings, and Fall 2002 sniper shootings) in a national, representative sample of children aged 2 to 17. Media exposure was related to increased worry and changes in activities, with September 11 creating the most concern and shootings the least. More signs of stress were apparent among 10- to 13-year-olds, minority children and those of low socioeconomic status,

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children with prior adversities, and children who lived in close geographical proximity. Girls aged 10 to 17 had more reaction to the kidnappings, suggesting that other features of target similarity may heighten a sense of risk. The results support moderating exposure for both younger and older youth.

KEYWORDS. Victimization, mass media, terrorist attacks, fear of crime, developmental differences

There is now a growing body of research on how children react when exposed to media coverage of frightening events, including news coverage of President Kennedy's assassination, the *Challenger* explosion, the Oklahoma City bombing, the Gulf Wars, and the September 11 terrorist attacks (Fremont, 2004; Fremont, Pataki, & Beresin, 2005; Hoffner & Haefner, 1994; Pfefferbaum, 1999; Pfefferbaum et al., 2001; Sigel, 1965; Terr et al., 1999). The present study adds to this body of literature by considering children's reactions to exposure to media coverage of three highly publicized events, with an emphasis on the effects of exposure by developmental stage.

This study investigated children's reactions to three widely televised crime and terrorism events: the September 11, 2001, terrorist attacks on the United States, the Summer 2002 child kidnappings, and the Fall 2002 sniper shootings in the Washington, DC, area. We were specifically interested in children's reactions not only to traumatic events but to events that depicted interpersonal crimes that terrorized many people living in the United States. On September 11, 2001, terrorists hijacked four planes, flying two into New York City buildings. A third crashed in Washington, DC, and a fourth plane crashed in Pennsylvania. Images of the planes impacting the New York buildings replayed on television repeatedly. In the summer of 2002, child kidnappings garnered a lot of press, despite the fact that there was no statistical increase in the number of kidnappings that summer compared to previous years. Four of the kidnapped children who received the most national coverage lived in California (Samantha Runnion, Danielle van Dam, Tamara Brooks, and Jacqueline Marris). Two of these children were murdered. In October of 2002, a series of apparently random sniper shootings in the Washington, DC, area captured the news nationwide. There were 14 shooting incidents, with 10 fatalities and 3 injured victims. By the end of October, two people—one man and one

juvenile male—were arrested for the shootings, and no other incidents were reported.

MEDIA EXPOSURE TO TRAUMATIC EVENTS AND POSTTRAUMATIC STRESS

Most of the research to date on children's exposure to real-life violence in the media has focused on psychological, specifically posttraumatic stress, symptoms. Posttraumatic symptoms (hyperarousal, intrusion, and avoidance) have been associated with children's seeing images related to the 1986 *Challenger* explosion (Terr et al., 1999), the 1995 Oklahoma City bombing (Pfefferbaum et al., 2001), military attacks in Israel (Bat-Zion & Levy-Shiff, 1993; Klingman, Sagi, & Raviv, 1993), and the 2001 terrorist attacks on the United States (Dugal, Berezkin, & Vineeth, 2002; Phillips, Prince, & Schiebelhut, 2004). A report for the New York City Board of Education (Applied Research and Consulting, Columbia University Mailman School of Public Health, & New York State Psychiatric Institute, 2002) found that the prevalence of posttraumatic stress symptoms was related to time spent learning about the attacks from television. Media-exposed children manifested both trauma-specific fears, such as being bombed at school, and generalized fears, such as of the dark or being alone (Specht & Davies, 2003; Terr et al., 1999). Children's fears manifest in a variety of ways, including play that reenacts traumatic events and attempts to keep themselves safe, such as sleeping with baseball bat (Specht & Davies, 2003; Terr et al., 1999).

Effects of exposure to frightening images in the media also go beyond mental health symptomatology. Reactions to the September 11 attacks included a growing fascination with the military, strained relationships with friends and family, and avoidance of television viewing (Specht & Davies, 2003). Some children who watched the *Challenger* explosion turned away from plans for a space career, whereas others developed a new interest in space careers (Terr et al., 1999). Whalen, Henker, King, Jamner, and Levine (2004) examined adolescents' reactions to the September 11 attacks in a broader context, including changes in activities and moods. The 14- through 18-year-olds lived thousands of miles from the attacks but reported changes in several areas including activities and events (30%), travel plans (26%), and family rules (19%). When directly asked about their moods upon first hearing about the September 11 attacks, adolescents reported elevated levels of anger, anxiety, and sadness.

FACTORS AFFECTING REACTIONS

Other Victimization and Adversity

Prior trauma and adversity might plausibly affect children's exposure and reaction to crime and terrorism reports in media. But two contrasting predictions could be made (Pine, Costello, & Masten, 2005). On the one hand, children who have experienced previous victimization or adversity may already be predisposed to hypervigilance or internalizing symptoms, leading to even greater distress following new crime and terrorism events (Boney-McCoy & Finkelhor, 1995; Trautman et al., 2002). On the other hand, children living with adversity may have developed coping strategies that reduce the negative effects of subsequent trauma (e.g., Marhoefer-Dvorak, Resnick, Hutter, & Girelli, 1988). Alternatively, children already coping with significant victimization and adversity in their personal lives may be devoting all of their emotional and cognitive resources to coping with these more proximal events and may have less exposure or experience less reaction because they are less engaged.

Perceived Likelihood of Being a Target

Traumatic events can harm children in several ways. Children can be direct victims, as was the case for those attending preschool in the Alfred P. Murrah Federal Building on the day it was bombed. Or they can be indirect victims, as were the students of Christa McAuliffe who experienced a loss when their teacher was killed in the *Challenger* disaster. Other children witness victimization, including the many children who watched the planes crash into the World Trade Center on television. Because of their developmental immaturity, children may be confused about the cause of such events, their own relationship to them, and their own vulnerability to similar situations. Brazelton (2003) noted that following the *Challenger* explosion, young children wondered if the tragedy had happened because Christa McAuliffe was a bad mother or because her children were bad. Brener, Simon, Anderson, Barrios, and Small (2002) examined nationally representative Youth Risk Behavior Survey data to show that high school students overall were 2.6 times more likely to miss school because they were too afraid to go after the widely publicized Columbine school shooting than before. However, students living in rural areas were 12 times more likely to miss school due to fear; a possible reason is the repeated comments in news reports about the rural and suburban locations of schools where shootings had occurred. Some

children imagine they are at high risk for similar events that are very unlikely to affect them, such as a space shuttle explosion. Other times, children truly are members of a targeted group. This is the case for the child kidnappings that often receive considerable news coverage. The snipers in the Washington, DC, area also shot a 13-year-old as he was being dropped off at school.

Geographic proximity is a feature very likely to increase children's sense of vulnerability. Children living in the Washington, DC, area were more vulnerable than children who lived elsewhere because snipers were only shooting people in that area. Children familiar with the places affected, such as Lower Manhattan, may more easily imagine that they could have been there. Living close to affected areas also increases the likelihood of knowing someone who was hurt or killed in the event, which is related to increased distress. Following the Oklahoma City bombing, children who had lost a loved one in the bombing were more likely to report difficulty "calming down after bomb-related television exposure" (Pfefferbaum et al., 1999, p. 1374).

Thus, it is likely that proximity interacts with exposure in important ways. Geographical proximity to a traumatic event could increase exposure through relatively high levels of local media coverage or a need for information (e.g., regarding road and school closures). Children living near Concord, NH, were watching the *Challenger* shuttle launch with interest as Concord schoolteacher Christa McAuliffe was aboard. In contrast, children in some areas on the West Coast would have been on their way to school and less likely to have been watching the launch (Terr et al., 1999). Proximity can also accentuate the impact of media exposure by increasing or decreasing the salience of the event for individuals living in various regions.

Child and Adolescent Development

Developmental differences in children's processing of victimization-related media are also likely to be important. Several studies have shown that younger children react more to frightening visual images, including fantasy images, whereas older youth are more concerned with more abstract, realistic threats (Cantor, Mares, & Oliver, 1993; Cantor & Nathanson, 1996; Cantor, Wilson, & Hoffner, 1986; Smith & Wilson, 2002). These findings are predicted by theories positing growth in children's ability to understand verbal material, the difference between fantasy and reality, and abstract concepts throughout childhood, and in

particular between preschool/early school-age and older children (Smith & Wilson, 2002). Smith and Wilson found that fourth through sixth graders understood more television news, and were more likely to be frightened by it, than were kindergarten through third graders. Cantor and Nathanson reported that kindergartners were less likely than second, fourth, and sixth graders to be upset by the news. At the same time, fear related to fantasy (monsters) in the media was greatest for kindergartners and decreased with age. Cantor and Nathanson also found that reports of fear related to media stories about stranger violence increased with age. During the first Gulf War, Cantor et al. (1993) found that older youth were more concerned about terrorism. Among children who were upset by war coverage, 6% of first graders compared to 50% of eleventh graders were concerned about terrorism in the United States.

Additional developmental factors could be important. Older youth are more likely to be in the community alone (driving, working an after-school job, etc.), putting them at risk for victimization in more domains than young children, who are more frequently at home with parents. Cantor and Nathanson (1996) found that girls who expressed fear from news were more likely than boys to react to stories that included a child victim. Older girls may become aware of the risk of stranger abduction and sexual assault as they mature sexually (Goodey, 1994; Stickler, 1996).

HYPOTHESES

We hypothesized that older children would have seen more coverage of these events than younger children, and that media exposure would be positively related to reactions (worry and change in activities) following each type of victimization. We also hypothesized that children living nearer to the event(s) would react more following the event(s). We did not have a directional prediction with regard to the effect of previous victimization and adversity in children's lives, as there are theoretical predictions to be made in either direction. Similarly, we investigated the effects of various demographic backgrounds without specific predictions. With regard to the kidnapping coverage, we hypothesized that older girls would have seen more coverage and reacted more to the kidnapping coverage as compared to boys and younger girls, because this was the demographic of the main victims reported in the media.

METHODS

Data Collection and Sample

This research was based on data from the Developmental Victimization Survey, designed to obtain 1-year incidence estimates of a comprehensive range of childhood victimizations across gender, race, and developmental stage. The survey, conducted between December 2002 and February 2003, assessed the experiences of a nationally representative sample of 2,030 children aged 2 to 17 years living in the contiguous United States. The interviews with parents and youth were conducted over the telephone by the employees of an experienced survey research firm specially trained in talking with children and parents.

A short interview was conducted with an adult caregiver (usually a parent) to obtain family demographic information. One child was randomly selected from all eligible children living in a household by selecting the child with the most recent birthday. If the selected child was aged 10 to 17 years, the main telephone interview was conducted with the child. If the selected child was aged 2 to 9 years, the interview was conducted with the caregiver who was most familiar with the child's daily routine and experiences. Caregivers were interviewed as proxies for this age group because the ability of children younger than age 10 to be recruited and participate in phone interviews of this nature has not been well established (Hausman et al., 1992; Waksberg, 1978), yet such children are still at an age when parents tend to be well informed about their experiences at and away from home. In 68% of these caretaker interviews, the caretaker was the biological mother, in 24% the biological father, and in 8% some other relative or caretaker. Up to 13 callbacks were made to select and contact a respondent, and up to 25 callbacks were made to complete the interview. Verbal consent was obtained prior to the interview. In the case of a child interview, consent was obtained from the parent and assent from the child. Respondents were promised complete confidentiality and were paid \$10 for their participation. Children or parents who disclosed a situation of serious threat or ongoing victimization were recontacted by a clinical member of the research team trained in telephone crisis counseling, whose responsibility it was to stay in contact with the respondent until the situation was resolved or brought to the attention of appropriate authorities. All procedures were authorized by the institutional review board of the University of New Hampshire. The final sample consisted of 2,030 respondents: 1,000 children (aged 10–17 years) and 1,030 caregivers of

children aged 2 to 9 years. Interviews were completed with 79.5% of the eligible persons contacted. See Finkelhor, Ormrod, Turner, and Hamby (2005) for additional details.

The data presented here were based on a sample of 1,915 families, including 177 families who lived in California, 151 in New York state, 70 in New Jersey, 30 in Maryland, 49 in Virginia, and 2 in Washington, DC. Questions about media exposure were added to the survey shortly after data collection began, resulting in 115 fewer participants for this analysis than are in the full sample. Most were White, non-Hispanic ($n = 1,446$, 75.5%); followed by Black, non-Hispanic ($n = 205$, 10.7%); any race, Hispanic (176, 9.2%); and other race, non-Hispanic ($n = 67$, 3.5%). Families were headed by two biological or adoptive parents ($n = 1,330$, 69.5%), were stepparent families ($n = 181$, 9.5%), or were single-parent or other family arrangements ($n = 404$, 21.5%). Girls made up 50% of the sample ($n = 953$). Highest parental education was some college or 4-year degree for most families (54%, $n = 1,028$), followed by high school or less (26%, $n = 493$) and graduate school (21%, $n = 393$). We applied poststratification weights to adjust for the modest underrepresentation of certain racial groups and selection bias introduced by variation in the number of eligible children per household, as only one child per household (the one with the most recent birthday) was interviewed.

Measures

Parents of 2- through 9-year-olds were asked about the child's exposure to media coverage in the wake of the September 11 attacks, the Summer 2002 child kidnappings, and the Fall 2002 Washington, DC, sniper shootings using the following questions: (a) "About how many times did your X-year-old see news stories or pictures on television about the [event]?" (b) "Around the time that it happened or even later on, how much did the [event] change the things your X-year-old usually did or the places you/s/he went?" (c) "After the [event], how much did your X-year-old worry about that kind of thing happening to you/him/her or someone in you/his/her family?" Youth aged 10 through 17 years answered the same questions about their own experiences. The response scale for the first question was not at all, 1 to 2 times, 3 to 5 times, 6 to 10 times, 11 to 20 times, and more than 20 times. These were collapsed into three categories for data analysis: not at all (1), 1 to 10 times (2), and more than 10 times (3). The response scale was based on estimates of frequency of exposure and not a previously published scale. The response scale for the

second (change in activities) and third (worry) questions was not at all (1), a little (2), and a lot (3).

Victimizations were assessed in this study using two forms of the Juvenile Victimization Questionnaire: the youth version for youth 10 to 17 years old, and the caregiver version for children 2 to 17 years old (Finkelhor, Hamby, Ormrod, & Turner, 2004). The Juvenile Victimization Questionnaire screens for 34 forms of victimization that cover five general areas of concern: Conventional Crime (assault and property crimes), Child Maltreatment, Peer and Sibling Victimization, Sexual Assault, and Witnessing and Indirect Victimization. Respondents were asked if the child had experienced any of these victimizations in the past year and, if not in the past year, in any previous years. Responses were summed to form a measure of the total number of victimizations per person ($M = 0.8$, $SD = 1.4$, range = 0–12).

Childhood adversities were assessed using a comprehensive measure that includes 15 nonvictimization traumatic events and chronic stressors, such as accidents, parental imprisonment, natural disasters, substance abuse by family members, and having to repeat a year in school. As with victimizations, responses were summed to form a per-person measure of total victimization ($M = 2.5$, $SD = 2.2$, range = 0–13).

Background information on child and household characteristics, including child age, gender, ethnicity and race, family structure, measures of socioeconomic status, and the character of residential locale, was obtained in an initial parental interview.

RESULTS

Exposure to Media Coverage

Most parents reported that their child had seen at least some media coverage about all three events (see Tables 1 and 2). A repeated measures analysis of variance with type of media coverage (September 11, kidnapping, sniper) predicting exposure (4-point scale, where 1=not at all, 2 = 1–10 times, 3 = 11–10 times, and 4 = 21+ times) with Bonferroni-corrected contrasts indicated that children saw the most coverage about September 11, followed by the sniper shootings and the kidnappings (see Tables 3 and 4). Viewing September 11 media was related to viewing kidnapping ($r = .34$, $p < .001$) and sniper media ($r = .51$, $p < .001$). Sniper and kidnapping exposure was also positively correlated ($r = .39$, $p < .001$).

TABLE 1. Media exposure by age and event.

Media Exposure	9/11, Fall 2001	Kidnappings, Summer 2002	Sniper, Fall 2002
	%	%	%
Overall			
Not at All	13	43	35
1–10 Times	48	47	50
11–20 Times	11	5	8
21+ Times	28	5	8
2- to 5-Year-Olds			
Not at All	36	66	69
1–10 Times	48	31	28
11–20 Times	6	1	.6
21+ Times	11	.6	2
6- to 9-Year-Olds			
Not at All	7	43	47
1–10 Times	59	50	46
11–20 Times	10	3	4
21+ Times	23	5	3
10- to 13-Year-Olds			
Not at All	8	32	18
1–10 Times	55	55	66
11–20 Times	11	7	8
21+ Times	27	6	7
14- to 17-Year-Olds			
Not at All	2	32	7
1–10 Times	31	52	60
11–20 Times	17	8	17
21+ Times	49	8	17

Notes: Weighted $N = 2,024$. Participants who refused to answer or answered “don’t know” were removed from the analysis (weighted $n_s = 21$ for September 11, 31 for kidnappings, 21 for sniper).

September 11: Age \times Exposure, $\chi^2(9) = 485.8, p < .001$. Kidnappings: Age \times Exposure, $\chi^2(9) = 179.5, p < .001$. Sniper: Age \times Exposure, $\chi^2(9) = 609.8, p < .001$.

Boys saw more September 11 and sniper coverage than did girls, whereas girls saw more coverage of the kidnappings than did boys (see Table 4). There was a linear relation between age and media exposure, with older children seeing more than younger children (see Table 4). There was a significant Age \times Gender interaction, with 2- to 9-year-old boys and girls viewing similar levels of kidnapping coverage, but 10- to 17-year-old girls viewing more coverage than 10- to 17-year-old boys.

TABLE 2. Means and standard deviations for exposure to victimization media coverage by gender and age.

Variable	<i>M</i>			<i>SD</i>		
	9/11	Kidnappings	Sniper	9/11	Kidnappings	Sniper
Gender						
Boys	2.6	1.6	1.9	1.1	0.8	0.9
Girls	2.5	1.8	1.8	1.0	0.8	0.8
Age						
2–5	1.9	1.4	1.4	0.9	0.5	0.6
6–9	2.5	1.7	2.5	0.9	0.7	0.7
10–13	2.6	1.9	2.6	1.0	0.8	0.7
14–17	3.1	1.9	3.1	0.9	0.8	0.8
Overall	2.5	1.7	1.9	1.0	0.8	0.8

Notes: Post hoc Bonferroni-corrected tests indicated that, within each victimization type, each age group differed from each of the other age groups, $p < .01$.

TABLE 3. Percentage endorsing worry and change in activities by age and event.

Degree	Worry			Change in Activities		
	9/11	Kidnappings	Sniper	9/11	Kidnappings	Sniper
2- to 5-Year-Olds						
A Little	12	13	5	11	13	6
A Lot	3	2	2	4	6	4
6- to 9-Year-Olds						
A Little	41	33	17	17	20	9
A Lot	12	6	5	7	4	5
10- to 13-Year-Olds						
A Little	42	31	31	45	26	24
A Lot	23	24	23	20	21	14
14- to 17-Year-Olds						
A Little	49	32	38	43	20	24
A Lot	16	10	10	14	4	6
Overall						
A Little	37	20	24	30	20	16
A Lot	14	9	10	12	9	7

Notes: Possible responses included "not at all," "a little," and "a lot."

TABLE 4. Estimated marginal means for change in activities and worry by age and gender.

Group	Worry				Change in Activities					
	M		SE		M		SE			
	9/11	Kidnappings	Sniper	9/11	Kidnappings	Sniper	9/11	Kidnappings	Sniper	
2-5 Years										
Male	1.2	1.2	1.1	.05	.05	.05	1.9	1.3	1.1	.04
Female	1.1	1.1	1.1	.05	.05	.04	1.3	1.3	1.1	.04
6-9 Years										
Male	1.7	1.4	1.3	.04	.04	.04	1.3	1.3	1.2	.04
Female	1.6	1.5	1.3	.04	.04	.04	1.3	1.3	1.2	.04
10-13 Years										
Male	1.9	1.7	1.8	.05	.04	.04	1.8	1.6	1.5	.04
Female	1.9	1.9	1.7	.04	.04	.04	1.8	1.8	1.5	.04
14-17 Years										
Male	1.8	1.4	1.4	.05	.04	.04	1.7	1.1	1.2	.04
Female	1.9	1.6	1.7	.04	.04	.04	1.7	1.4	1.5	.04

How Much Did Children React to These Events?

Most parents reported no change in their children's activities during and following the September 11 attacks, kidnappings, and sniper shootings (see Table 3). A repeated measures analysis of variance with Bonferroni-corrected comparisons indicated that children changed their activities most in response to September 11, followed by the kidnappings, and lastly the sniper shootings (see Table 4). Results for worry followed the same pattern.

Reactions to Media Coverage of Crime and Terrorism

We ran three linear regressions, each with several covariates predicting worry and change in activities (see Tables 5 and 6) following September 11, the kidnappings, and the sniper shootings. Predictors included a range of family background, victimization, and adversity variables. Child gender was coded male = 1, female = 2. Race was entered as three separate variables (Black non-Hispanic, Hispanic, and other non-Hispanic). The comparison group for all three was White, non-Hispanic. Similarly, single-parent and step-family status were entered as two separate variables,

TABLE 5. Means and standard deviations for predictors of worry and change in activities following media coverage of victimization.

<i>Variable</i>	<i>M</i>	<i>SD</i>
Gender (Male = 1, Female = 2)	1.50	0.50
Age	9.51	4.78
Black (vs. White, Non-Hispanic)	0.11	0.31
Hispanic (vs. White, Non-Hispanic)	0.09	0.29
Other Race (vs. White, Non-Hispanic)	0.04	0.18
Socioeconomic Status (z score)	0.01	1.00
Single Parent (vs. Two Parents)	0.21	0.41
Step-Family (vs. Two Parents)	0.09	0.29
Victimization	0.76	1.44
Adversity	2.45	2.15
Lives in 9/11 Area	0.11	0.32
Lives in Sniper Area	0.04	0.20
Lives in Kidnapping Area	0.09	0.29
9/11 Media Exposure	2.27	0.68
Sniper Media Exposure	1.83	0.68
Kidnapping Media Exposure	1.66	0.64

TABLE 6. Standardized coefficients for predictors of worry and change in activities following media coverage of victimization.

Variable	Worry			Change in Activities		
	9/11	Kidnappings	Sniper	9/11	Kidnappings	Sniper
Gender (Male=1, Female=2)	.01	.07**	.05*	.01	.05*	.07**
Age	.23***	.09**	.18***	.28***	-.05	.08**
Black (vs. White, Non-Hispanic)	.04	.05*	.10***	.05*	.09***	.08***
Hispanic (vs. White, Non-Hispanic)	.10***	.09***	.12***	.02	.06**	.09***
Other Race (vs. White, Non-Hispanic)	.02	-.01	.05*	-.03	.01	.02
Socioeconomic Status	-.04	-.06**	-.03	-.05	-.06*	-.04
Single Parent (vs. Two Parents)	.06*	.08***	.05*	.01	.11****	.01
Step-Family (vs. Two Parents)	.01	.02	.03	.02	.09***	-.02
Victimization	-.06*	.02	-.04	-.02	.002	-.06*
Adversity	.16***	.05	.16***	.13***	.03	.15***
Lives in Area	.03	.05**	.05*	.05*	.04	.24***
Exposure	.15***	.38***	.18***	.02	.34***	.15***
Adjusted R ²	.18***	.25***	.19***	.14***	.18***	.15***

Notes: September 11 area is New York State, New Jersey, and Washington, DC; sniper area is Washington, DC, Virginia, and Maryland; kidnapping area is California.

* $p < .05$

** $p < .01$

*** $p < .001$

each compared to two-parent, non-stepparent families. Sexual assault, child maltreatment, witnessed family violence, and other major violence were continuous measures of the number of times children had been exposed to each type of victimization over their lifetimes. Adversity was a continuous lifetime measure of the number of different adversities children had experienced. Age was a continuous measure, as was socioeconomic status, a composite of parents' income and education. We also included a variable indicating whether the child lived in an area affected by the event. For September 11, the affected area was defined as New York State, New Jersey, and Washington, DC. Although children in Pennsylvania were near one plane crash and children in many states lost family members, we chose to designate New York and Washington, DC, as the affected areas because people in those states were direct targets of

the terrorist attacks. People living in New Jersey were also included because of the high number of people who work in New York City. For the kidnappings, California was chosen as the affected area. Four of the children whose kidnappings received national news coverage were from California, including two kidnapped children who were also murdered (Fleming, 2002). For the sniper shootings, the affected area included Washington, DC, Virginia, and Maryland, all states in which the snipers targeted victims. Finally, we included a measure of exposure to media coverage of the relevant event (measured on a 3-point scale, where 1 = not at all, 2 = 1–10 times, 3 = 11+ times).

Worry

For all three events, there was more worry among older children, Hispanic children, those living in single-parent families, and those exposed to more adversities (see Table 6).

For September 11, children living in New York and Washington, DC, did not worry more than children who lived elsewhere. However, when we controlled for location, children who saw more September 11 media coverage were more worried about themselves or a family member being a victim of a similar event.

For kidnappings, Black, non-Hispanic children worried more than White, non-Hispanic children, as did children of lower socioeconomic status and children who had been maltreated. Unlike the September 11 attacks, geographical proximity to the events made a difference for worry about kidnapping. Children who lived in California worried more about themselves or a family member being the victim of kidnapping than children who lived in other states. This finding remained when exposure to media coverage of the kidnappings was entered into the model, suggesting not only that the effect of geographical proximity was to increase exposure to media coverage of the kidnappings, but that both geographical proximity and media were independently related to worry.

For the sniper shootings, Black, Hispanic and children who identified as another non-White race/ethnic group worried more than White, non-Hispanic children. Similar to the kidnappings, but unlike September 11, children who lived in the sniper shooting area worried more than children who lived outside of the area, and both geographical proximity and media coverage contributed to the prediction of worry.

Change in Activities

Black, non-Hispanics were more likely than White, non-Hispanics to change their activities following all three events (see Table 6).

Following September 11, older children, those exposed to greater adversity, and those living in New York State or Washington, DC, were more likely than other children to change their activities. Media exposure did not predict change in activities for the September 11 attacks.

Girls, Hispanic children, children of lower socioeconomic status, and children living with a single parent or stepparent (as compared to two-parent, non-stepparent families) were more likely to change their activities following the kidnappings. Exposure to media coverage about the kidnappings was associated with more change in activities. As discussed previously, girls saw more kidnapping coverage than did boys.

For the sniper shootings, girls, older children, Hispanic children, and children who had experienced more adversity changed their activities more. Children who had been sexually assaulted changed their activities less than children who had not been sexually assaulted. Children who lived in the area of the shootings (Washington, DC, Maryland, or Virginia) were more likely to change their activities, a relation that remained even with media exposure in the model. For the sniper shootings, geographical proximity and media exposure were independently related to change in activities.

Vulnerable Groups of Children

In order to identify groups of children who may be especially vulnerable to negative effects of media exposure of victimization, we ran a series of three multivariate analyses of variance (MANOVAs) with age (4 groups: 2–5 years, 6–9 years, 10–13 years, and 14–17 years) and media exposure predicting change in activities and worry about the three types of victimization coverage (September 11, kidnappings, and sniper shootings). In the MANOVA analysis, exposure levels above 11 times were collapsed because preliminary analysis suggested similarities of patterns, and a smaller number of categories made results more interpretable.

In the MANOVA predicting reactions to kidnappings, gender was also entered into the model because of the possibility that girls would feel particularly vulnerable because all of the kidnapping victims portrayed in the media were girls. These tests revealed a main effect of age for all three kinds of victimization (see Table 7). Post hoc Bonferroni-corrected

TABLE 7. Multivariate analyses of variance for worry and change in activities following media coverage.

Source	9/11 Terrorist Attacks			Kidnappings			Sniper					
	Multivariate		Univariate	Multivariate		Univariate	Multivariate		Univariate			
	<i>df</i>	<i>F</i>	Worry	Change	<i>df</i>	<i>F</i>	Worry	Change	<i>df</i>	<i>F</i>	Worry	Change
Age	3	37.40***	48.42***	54.84***	3	24.18***	16.58***	39.56***	3	16.73***	32.65***	13.95***
Media Exposure	2	12.45***	25.15***	4.01*	2	66.80***	118.80***	97.17***	2	11.99***	18.33***	17.56***
Age × Exposure	6	1.92*	3.59***	0.53	6	3.44***	2.60*	2.19*	6	3.19***	4.28***	1.02
Gender					1	1.90	2.67	3.12				
Age × Gender					3	1.19	1.99	0.34				
Gender × Exposure					2	2.94*	4.13*	3.65*				
Age × Gender × Exposure					6	3.69***	4.03**	3.87**				
<i>MSE</i>			0.43	0.41			0.35	0.33			0.37	0.34

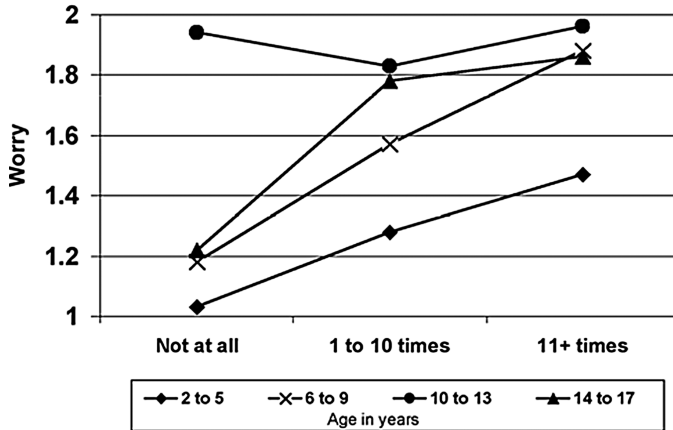
Notes: Multivariate *F* ratios were generated from Pillai's statistic.

**p* < .05.

***p* < .01.

****p* < .001.

FIGURE 1. Worry Following September 11 by Age and Media Exposure



contrasts revealed that 10- to 13-year-olds changed their activities and worried more than children in the other three age group ($ps < .001$).

For the September 11 attacks and for the sniper shootings, the interaction of age and exposure was significant for worry but not for change in activities (see Table 7). In both cases, worry went up as exposure increased for all children except 10- to 13-year-olds, who had high levels of worry across the board regardless of their level of exposure (see Figure 1, which shows the pattern for September 11. The pattern for the sniper shootings was similar.)

For the kidnappings, there was a significant Age \times Exposure interaction for both worry and change in activities. In the case of worry, exposure increased worry for all ages, but the increase was greatest for the 6- to 9-year-olds. In the case of change in behaviors, the increase was greater for the 10- to 13-year-olds and 14- to 17-year-olds. Finally, there was a significant Gender \times Exposure interaction for both change in activities and worry. In both cases, increasing exposure produced a greater reaction in girls than in boys.

DISCUSSION

Our results support recommendations that it may be helpful to children to moderate their exposure to media coverage of crime and terrorism

events. Exposure to media, above and beyond other factors, predicted increased worry following the September 11 terrorist attacks, child kidnappings, and sniper shootings. It was also associated with change in activities for the latter two events. Limiting younger children's television exposure to disturbing events may be a practice that many parents have already adopted. Indeed, previous research indicated that parents were likely to limit media exposure following September 11 for younger children (Schuster et al., 2001). Our results, however, point to the vulnerability of older youth as well. Older children see more crime and terrorism news than younger children. Moreover, children aged 10 to 13 were more worried and more likely to change their activities following the child kidnappings and sniper shootings than any other age group. They were also as likely as older youth and more likely than younger youth to worry and change their activities following the September 11 attacks. One possibility is that 10- to 13-year-olds are old enough to be exposed to and understand the importance of news events but lack perspective and cognitive maturity to gauge their own personal risk.

One complicating finding from the research is that, although the level of most children's reactions was dampened if they had less media exposure, this was not true for the most highly affected group of children, the 10- to 13-year-olds. These youth had higher levels of worry even with relatively little media exposure. We are not certain about the meaning of this finding. Perhaps social networking processes in this age group mean that all children get a high level of exposure to the concerns, even when they do not themselves view the media. It may mean that limitations on exposure for this group do not moderate worry as well as for other groups. Or, if networking processes are at work, it may mean that limitations on exposure for those who do view media will also reduce the worry levels for those who do not. Another possibility is that children of this age are acquiring the cognitive skills to consider the greater repercussions of events, such as the possibility that military action may result from terrorist attacks, but lack the experience to gauge the effects of hypothetical events. Parents may be less likely to discuss these broader implications with younger teens when compared to older teens.

In any case, if it is helpful to reduce exposure of older children (those older than age 10, including the teenagers), this is not a goal that can necessarily be achieved through parent-imposed limitations, as in the case of young children. Because older children have independent access to the media, adults may need to discuss events with these older children and explain why self-restraint in watching media coverage may be healthy.

Schools, child care providers, and youth-serving organizations should be careful to limit television exposure and refrain from showing live images of unfolding tragedies to children (Cantor, 2001, 2004; Fremont et al., 2005). The media itself can help by placing the most graphic images on pages other than the front page and by giving parents time to change the channel before breaking into regular television programming (Cantor, 2001, 2004).

This study also provides some guidance about children who may be particularly affected by media stories about crime and terrorism. Children who perceive themselves as potential targets of victimization may be at higher risk for negative reactions. Girls aged 10 to 17, relative to other children, reacted the most following kidnappings, precisely the demographic of victims of kidnappings in the summer of 2002. It is possible that a similar effect occurred during the sniper shootings, in which a 13-year-old boy was shot at school. Living in an affected area was also a significant predictor of worry and change in activities, except for worry following the September 11 attacks, an event that was highly distressing to most people living in the United States. Children of racial/ethnic groups other than White, non-Hispanic in general worried and changed their activities more following crime and terrorism events. To some extent this also held for children of lower socioeconomic status as well and children who had experienced adversity. It may be that experiencing more challenging life circumstances gives children a preexisting sense of vulnerability that makes them more reactive to threatening news events. It may also be that these children have fewer resources that buffer the sense of danger created by such events. Therefore, although there was one exception, our results suggest that personal disadvantage and adversity does not steel children or distract them from the effects of highly publicized events.

One limitation of our findings is that the cross-sectional data from this study cannot prove a causal relation between media exposure and reactions to crime and terrorism. For example, although it is reasonable to hypothesize that media exposure causes reactions, it is also possible that the association stems from distressed children being more likely to seek out media exposure. One argument against such a reverse causality, however, is posttraumatic stress disorder research showing that many distressed individuals tend to avoid traumatic reminders. In any case, whether media exposure causes reactions or is simply a marker for reactions, parents should discuss viewing with youth and set limits.

Another limitation of the study involves its self-report methodology. Respondents provided reports of both media exposure and reactions. Reports of both exposure and reactions from the same respondent introduced some degree of shared method variance. Future work may make use of other observers as informants on children's reactions.

Measurement was limited in that the same question was used for all children. There may be important developmental differences in what it means, for example, for a preschooler versus an adolescent to change activities following a terrorist event. The ability to collect the same data across a wide developmental span in a national, large, and representative sample was considered worth this downside.

Future research is needed to understand where children get their news about crime and terrorism. To what extent do children learn about important and distressing events from parents, peers, print media, television, or the Internet? How can news media targeted to children best present information about crime and terrorism? Do children watch television and go online alone or with others, and does companionship buffer the impact of exposure? How does talking about events with parents and peers affect distress?

Similarly, there is a need to understand children's motives for accessing media. Do children turn to the media in order to manage distress because they identify with perpetrators or victims, or to be informed when the topic comes up with peers?

There is also a need to understand the influence of crime- and terrorism-related media exposure on social and cognitive development. Researchers need better information on how children perceive personal risk of events portrayed in the media, and how they react. Do concerns about terrorist attacks lead children to become more interested in the military or law enforcement? Do some children voluntarily limit television viewing to limit distress?

Previous studies have pointed to the role of parents' reactions and family context in children's reactions to violent media. Parents may be more likely to limit media exposure for younger or more upset youth (Schuster et al., 2001). However, parents who keep the television on so that they can keep up on events may expose children to media without realizing children are attending to the broadcasts. Furthermore, parents' own emotional reactions about missile attacks have found to be related to children's distress (Bat-Zion & Levy-Shiff, 1993), and parents' distress may not be independent from their own and their children's media exposure.

Looking forward, since the sniper shootings, the media has covered more traumatic material, including photos of abused prisoners and video of hostage beheadings in Iraq. These have been voluntarily censored in the mass media to some extent, but video of hostages being beheaded is available on the Internet. This has raised the issue of the Internet as a source of information for youth, as it contains more extreme material and parents may be less aware of children's activities online. Whether the Internet or any other form of media, it is important for parents and producers of media to be cognizant of the impact of exposure on children of all ages.

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