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Effects of Media Exposure on Adolescents Traumatized in a School Shooting

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This study analyzes the impact of the media on adolescents traumatized in a school shooting. Participants were trauma-exposed students ($n = 231$) and comparison students ($n = 526$), aged 13–19 years. A questionnaire that included the Impact of Event Scale and a 36-item General Health Questionnaire was administered 4 months after the shooting. Being interviewed was associated with higher scores on the Impact of Event Scale ($p = .005$), but posttraumatic symptoms did not differ between those who refused to be interviewed and those not approached by reporters. Following a higher number of media outlets did not affect symptoms.

A devastating school shooting in Jokela, Finland, in November 2007 received extensive national and international media coverage. The shooting occurred at Jokela High School, a public secondary school (students aged 13–19). One of the school's students, an 18-year-old male, shot and killed eight people: five male students and one female student, the school principal, and the school nurse. The shooter shot himself after the arrival of the police. The majority of the students were exposed to the traumatic event. The morning of the incident, the shooter posted a video on YouTube announcing the massacre at the school.

A noticeable feature was the speed of the media response. Within half an hour dozens of journalists were on the scene, filming and photographing escaping students and school workers. The pressure to get information and interviews was such that phone calls and text messages were sent to students who were just rescued or still waiting to be rescued within the school building (Ministry of Justice, Finland, 2009). News broke online while television and printed news followed later. The role of the Internet communities was unique as they identified the probable shooter and videos posted on the Internet while the police operation was still ongoing.

Journalists' actions were perceived as intrusive and insensitive, sensationalizing a grieving community (Ministry of Justice, Finland, 2009). Especially problematic were interviews with the shocked minors without informing the parents, with some not remembering having been interviewed afterwards. The conduct of the media was later criticized, though these phenomena are not unique to Finnish media (Hawkins, McIntosh, Cohen, & Holman, 2004; Jemphrey, & Berrington, 2000). The youth of Jokela started a debate over the issue and collected a petition questioning the actions of the media (Ministry of Justice, Finland, 2009).

Little is known about the psychological consequences of direct contact with news journalists and media coverage on victims, survivors, or the bereaved (Libow, 1992; Maercker & Mehr, 2006). The possibility of revictimization or exacerbation of stress and traumatic reactions is recognized within ethical and practical

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guidelines that have been developed for journalists covering violence and catastrophes (Simpson, 2006). Based on case reports and interviews (Libow, 1992), it has been hypothesized that a traumatic event ruins the feeling of security and sense of being in control in the first place, with uncontrollable media intrusion prolonging the time of not being in control. The interviewee may be in shock, albeit they may act calmly and not understand that he or she is giving an interview, regretting it later. The interviewee does not control how the interview is used afterwards and it may be circulated on a distressingly large scale. The victim or survivor may be portrayed in the role of a hero or become stigmatized as a vulnerable person, both potentially harmful to the sense of self.

Previous studies and case reports have looked at how journalists' actions were perceived by the victims, survivors, or bereaved following school shooting incidents at Dunblane, Scotland (Jemphrey & Berrington, 2000); Columbine High School in Littleton, Colorado (Hawkins et al., 2004); Gutenberg-Gymnasium in Erfurt, Germany (Wilms, 2007); and Virginia Tech in Blacksburg, Virginia (Piercy et al., 2009; Walsh-Childers, Lewis, & Neely, 2008). There are examples of both positive and negative interactions with media. Three types of journalistic behaviour were experienced by the Virginia Tech survivors: "journalists behaving badly," "media mob," and "journalists displaying compassion." Moreover, the overwhelming number of media representatives was experienced as distressing (Walsh-Childers et al., 2008).

The association between following news on catastrophes and psychological symptoms (e.g., posttraumatic, anxiety, and depressive symptoms) has been recognized in the studies of traumatic stress (Fremont, 2004). Studies have been conducted with children, adolescents, and adults on different tragic events like the Challenger explosion (Terr et al., 1999), the Gulf War (Cantor, Mares, & Oliver, 1993), the Oklahoma City bombing (Pfefferbaum et al., 1999, 2001, 2003), the September 11 terrorist attacks (Ahern et al., 2002; Ahern, Galea, Resnick, & Vlahov, 2004; Bernstein et al., 2007; Duggal, Berezkin, & John, 2002; Otto et al., 2007; Schlenger et al., 2002; Schuster et al., 2001), the Indian Ocean tsunami of 2004 (Lau, Lau, Kim, & Tsui, 2006), and the Virginia Tech shooting of 2007 (Fallahi, Shaw Austad, Fallon, & Leishman, 2009). The indirect effects of extensive media coverage of school violence and shootings may include feelings of insecurity in schools, increases in school absenteeism, and increases in the amount of threats made towards schools (Brener, Simon, Anderson, Barrios, & Small, 2002). The latter was also observed in Finland.

Children and adolescents may watch many hours of newscasts of traumatic events (Pfefferbaum et al., 2001; Schuster et al., 2001), with children directly involved watching even more (Pfefferbaum et al., 1999). Both short-term surveys and long-term studies have shown that the number of reported posttraumatic stress symptoms seems to be associated with the hours of media consumed and on the other hand with peritraumatic appraisal of the threat (Holmes, Creswell, & O'Connor, 2007; Otto et al., 2007; Pfefferbaum et al., 2001, 2003; Schuster et al., 2001). It is yet to be determined whether vulnerable children and adolescents increase their media consumption during heavily covered disasters and consequently develop posttraumatic stress symptoms or whether longer periods of exposure lead to increased distress (Pfefferbaum et al., 2003). Whether following media coverage qualifies as a traumatic event has been a matter of debate (Marshall, Amsel, & Jung Suh, 2008; McNally & Breslau, 2008). However, it has been suggested that parents should monitor children's media consumption and limit excessive exposure (Duggal et al., 2002; Laugharne, Janca, & Widiger, 2007; Otto et al., 2007).

This study is part of a comparative follow-up study that aims to evaluate the effects of exposure to a school shooting and psychological and psychosocial consequences for those exposed. The present study analyzes the impact of the media on traumatized and control students, both through their direct contacts with journalists and through following the news media channels. Although the impact of being interviewed has not been empirically studied we expected that both types of media exposure would cause measurable distress.

METHOD

The data presented here were collected using a questionnaire administered in a school setting in March 2008. Participation was voluntary and every participant was required to sign a written informed consent after being given an adequate description of the study. Parents or guardians were informed with a letter. A complementary written informed consent was required from the parent or guardian of those aged under 15 years, in accordance with Finnish legislation. For those students who were absent from school, the questionnaires, information, and approval forms were mailed with a return envelope. Reminder letters were sent twice. The study protocol was accepted by the Ethics Committee of Helsinki University Central Hospital.

Participants

All 474 students of the Jokela High School at the time of the incident, aged 13–19 years, were invited to participate in the study. Of the 474, 49% ($n = 231$) completed the questionnaire, 38% declined participation (student or parent), 7% of students or parents could not be reached, and 6% did not fill in the questionnaire although each had consented to participate. Among those who completed the questionnaire 39% were male adolescents and 61% female adolescents, with a mean age of 15.0 years ($SD = 1.7$). The majority of adolescents not participating were male (65%, $p < .001$). There were no differences in mean age between those who participated and those who did not (15.0 vs. 14.9).

The comparison group was drawn from the 878 students of the Pirkkala High School, aged 13–19 years. In the comparison school 60% ($n = 526$) of the students completed the questionnaire, 18% declined, 19% could not be reached, and 3% did not fill in the

questionnaire although each had given consent. Of the participants, 43% were male adolescents, 57% were female adolescents and the mean age was 14.7 years ($SD = 1.5$). More male students declined participation (53% vs. 25%, $p < .001$), but there was no difference in mean age (both 14.7).

The distance between Jokela and Pirkkala is approximately 140 kilometers (87 miles). There have been no major traumatic incidents or accidents in the Pirkkala High School. A higher proportion of the families in Pirkkala belong to the upper-middle class compared to Jokela, though there are no major differences in sociocultural background or crime rates between the two communities.

Measures

The questionnaire was partly based on previous studies among Finnish youth (Fröjd et al., 2008; Karlsson et al., 2008). The first part contained questions about background characteristics (socioeconomic status and living arrangements), previous psychosocial support, and exposure to the shooting.

The Impact of Event Scale (IES) was used to assess posttraumatic distress (Horowitz, Wilner, & Alvarez, 1979). The inventory consists of questions that map symptoms according to two subscales, Intrusion and Avoidance, resulting in a sum score of 0–75 points. The internal reliability of the IES has been reported as satisfactory, Cronbach's $\alpha = .86$ (Horowitz et al., 1979). In our sample Cronbach's α was .93 with both the exposed and the comparison students. The questionnaire has been previously translated into Finnish and used in clinical practice by the Center for Posttrauma Therapy and Trauma Education in Helsinki, Finland. The participants were instructed to report the frequency of symptoms in the last week in regard to the school shooting event (the trauma-exposed students) or the most distressing event experienced during the past 4 months (the comparison students).

The 36-item General Health Questionnaire (GHQ) was used to measure psychological and psychosocial symptoms (Goldberg, 1972). When calculating the sum score the 4-point Likert scale items were first scored in a bimodal fashion (0–0–1–1), the theoretical range of the scale being 0–36 (Holi, Marttunen, & Aalberg, 2003). Internal consistency (Cronbach's α) of the GHQ was .95 among the exposed students and .94 among comparison students. The IES and the GHQ sum scores were used as continuous variables in the analyses.

The severity of trauma exposure was rated based on threat to life and losses suffered. For this purpose, we created six categories of exposure with a *no exposure* category for the comparison students and categories of *mild*, *moderate*, *significant*, *severe,* and *extreme* exposure for the students of Jokela School. Significant exposure was rated when a student had to act to escape the shooter, or had to hide to avoid a danger to life, or saw bodies, or lost acquaintances. Severe exposure was rated when a student was near mortal danger or saw somebody threatened with a gun or lost a friend(s) or someone significant. Extreme exposure was rated when a student was in mortal danger, or saw somebody being shot and killed, or lost a family member. In the analyses, mild to significant exposure was collapsed into one category and severe and extreme exposure formed a second category.

The extent of media exposure was assessed with questions designed for this study. The first part asked about de facto direct contacts with media representatives and also recalled feelings related to being interviewed: "Did a reporter or reporters ask you about the events (*yes/no*)?" "Did you answer the questions put by a reporter or reporters (*yes/no*)?" "What thoughts did you have afterwards if you answered the questions (*answering the questions made me feel better; the questions did not have an effect on my feelings; the questions made me feel worse*)?" "How did the reporter or reporters approach you (an open question)?" These answers were grouped into three categories: positive (e.g., respectively, politely), neutral (e.g., just approached, asked permission to interview), and negative (e.g. intrusively, boldly, attacked, took photos or interviewed after refusal) for the analyses.

The second part of the media exposure questions asked about following the news and recalled-feelings related to the newscasts: Did you follow the news coverage of the events during that day or over the next few days (*no/yes, radio/yes, television/yes, internet/yes, newspapers/yes*)? If you answered yes, what kind of effect did the news coverage have on your feelings (*the news coverage made me feel better/the news coverage did not have an effect on my feelings; the news coverage made me feel worse*)? All the media exposure questions were asked of the Jokela High School students and only questions from the second part were asked of the comparison students. About half (54%) of all the students in the sample had followed up to two media outlets, which was used to assign the students into high and low media following groups (0–2 media outlets followed versus 3–4 media outlets followed).

Data Analysis

The distributions of variables were presented as percentages for categorical variables and means (M) and standard deviations (SD) for continuous variables. Differences between the groups were tested using the chi-square test and analysis of variance (ANOVA). The effects of the direct and indirect media exposure on psychological outcomes were analyzed using multivariate linear regression analyses. In the regression analyses those background variables that differed between the study groups were included (exposure: *mild-to-significant* = 0, *severe-to-extreme* = 1; gender: male = 0, female = 1; previous mental support: no = 0, yes = 1; and age as a covariate). The interaction terms between the level of exposure and the different media exposure variables were also examined. In the analyses, two-tailed significance levels less than .05 were chosen. However, a conservative Bonferroni corrected significance level ($< .05 / 2 = .025$) was used with the parallel tests using the IES and the GHQ scores. The analyses were also tested with square

root-transformed symptom scale scores due to their skewed distribution. The results with the transformed scores differed marginally from the original results and are not shown here. All analyses were performed using SPSS 16.0 for Windows.

RESULTS

Contact With Journalists

The journalists asked 63% ($n = 146$) of the students taking part in the study about the events. Of these, 60% ($n = 87$) answered the journalist's questions. Those approached by the journalists were older, their mean age was 15.3 years ($SD = 1.7$); the mean age of those not approached was 14.5 years ($SD = 1.5$), $F(1, 229) = 12.89$, $p < .001$. The journalists approached three out of four severely or extremely exposed students, $\chi^2(1, N = 231) = 5.30$, $p = .021$. Age and level of exposure differed between those who had been interviewed, those who had refused an interview, and those who were not approached (Table 1); age $F(2, 228) = 8.45$, $p < .001$; level of exposure $\chi^2(2, N = 231) = 6.37$, $p = .041$. The open question "How did the reporter or reporters approach you?" was answered by 130 students, of which, 17% reported that reporters approached them in a positive way, 52% in a neutral way, and 32% in a negative way. Neither age, sex, nor severity of exposure had an effect on the way being approached by reporters was perceived.

Distribution of the perceived impact of being interviewed by the reporters is shown in Table 2. Female adolescents reported feeling worse after being interviewed more often than male adolescents (Table 2). Differences in perceived impact between genders were significant, $\chi^2(2, N = 86) = 7.35$, $p = .025$. Of the severely or extremely exposed, 26% ($n = 7$) reported answering the questions made them feel worse, while 22% ($n = 6$) reported feeling better, leaving 52% ($n = 14$) reporting no effect, $\chi^2(2, N = 86) = 10.43$, $p = .005$.

Following the News Coverage

The event was widely followed through different media outlets. Television was the most frequently followed media as 94% of the trauma-exposed students and 81% of the comparison students reported having followed television newscasts. Further, the trauma-exposed group used the Internet (84%) and read newspapers (78%) extensively. Half of the trauma-exposed group heard

Table 1. Sociodemographic and Clinical Characteristics of the Study Groups

	Approached by reporter						Number of followed media outlets							
	Exposed students						Exposed students				Comparison students			
	Interv		Refuse		Not		3–4		0–2		3–4		0–2	
Characteristic	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Sex														
Male	31	34.4	26	28.9	33	36.7	57	63.3	33	36.7	65	28.6	162	71.4
Female	56	39.7	33	23.4	52	36.9	114	80.9	27	19.1	113	37.8	186	62.2
SES														
High	35	37.6	25	26.9	33	35.5	72	77.4	21	22.6	99	36.1	175	63.9
Low	43	38.4	27	24.1	42	37.5	84	75.0	28	25.0	69	35.0	128	65.0
Living														
Both parents	63	37.1	43	25.3	64	37.6	129	75.9	41	24.1	135	33.6	267	66.4
One parent	24	40.0	16	26.7	20	33.3	42	70.0	18	30.0	43	35.0	80	65.0
Mental support														
Yes	9	36.0	6	24.0	10	40.0	20	80.0	5	20.0	33	45.2	40	54.8
No	78	37.9	53	25.7	75	36.4	151	73.3	55	26.7	144	31.9	307	68.1
Level of exposure														
Mild-to-significant	60	36.6	36	22.0	68	41.5	118	72.0	46	28.0				
Severe-to-extreme	27	40.3	23	34.3	17	25.4	53	79.1	14	20.9				

Note. Interv = interviewed by a reporter; Refuse = was approached by a reporter but refused an interview; Not = not approached by a reporter; SES = socioeconomic status; High = entrepreneur or upper-middle class; Low = lower-middle class or working class, including students, housewives, and pensioners; Both parents = living with both biological parents; One parent = living with one biological parent, including ($n = 2$–5) living alone, with significant other, or with an adult other than guardian; Mental support = previous mental support.

Table 2. Effect of Sex on Perceived Impact of Being Interviewed by the Reporters and Being Exposed to News Coverage of the Event

	Interviewed by the reporters						Exposed to news coverage											
	Exposed students						Exposed students						Comparison students					
	Felt better		No effect		Felt worse		Felt better		No effect		Felt worse		Felt better		No effect		Felt worse	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Female	2	3.6	40	72.7	13	23.6	16	11.5	67	48.2	56	40.3	41	14.1	187	64.5	62	21.4
Male	6	19.4	22	71.0	3	9.7	17	18.9	53	58.9	20	22.2	12	5.6	191	89.3	11	5.1
Total	8	9.3	62	72.1	16	18.6	33	14.4	120	52.4	76	33.2	53	10.5	378	75.0	73	14.5

radio broadcasts (51%). Following a higher number (3–4) of media outlets was more typical of those exposed; 74% compared to 34% in the comparison group, $\chi^2(1, N = 757) = 1.04 \times 10^2$, $p < .001$. Following a higher number of media outlets was associated with being female in both groups; the exposed $\chi^2(1, N = 231) = 8.77$, $p = .004$; the comparisons $\chi^2(1, N = 526) = 4.83$, $p = .032$. Within the comparison group, being older, $F(1, 524) = 9.69$, $p = .002$, and having previous mental support, $\chi^2(1, N = 524) = 4.95$, $p = .032$, were also associated with following a higher number of media outlets (Table 1). Those who had been approached by journalists were more likely to have followed three to four media outlets (80% vs. 65%), $\chi^2(1, N = 231) = 6.08$, $p = .014$, in the trauma-exposed group, but the level of trauma exposure had no significant effect.

The perceived effects of following news coverage are presented in Table 2. The exposed reported more often having felt worse, $\chi^2(2, N = 733) = 40.97$, $p < .001$. However, there was no association with the severity of exposure and the reported effect of following news coverage among the exposed group, $\chi^2(2, N = 229) = 3.47$ $p = .176$. Female adolescents reported feeling worse more often than male adolescents in both groups: in the exposed group, $\chi^2(2, N = 229) = 8.63$, $p = .013$; in the comparison group, $\chi^2(2, N = 504) = 41.01$, $p < .001$ (Table 2). Those who followed a higher number (3–4) of media outlets were more likely to have reported having felt worse afterwards than those who followed less, 36% versus 25% in the exposed, $\chi^2(2, N = 229) = 6.14$, $p = .046$, and 20% versus 12% in the comparison group, $\chi^2(2, N = 504) = 11.53$, $p = .030$.

Impact of Contact With Journalists and Following News Coverage

Trauma-exposed students who had been approached by reporters were observed to have higher scores, $M = 22.55$ ($SD = 18.31$) than those not approached, $M = 16.13$ ($SD = 14.83$); on the measure of posttraumatic distress, $F(1, 227) = 7.53$, $p = .007$. The GHQ scores were not significantly different (after Bonferroni correction) between those who had been approached, $M = 8.41$ ($SD = 8.91$), and those not approached, $M = 6.04$ ($SD = 8.23$).

A variable with three classes was used to find out whether giving an interview had a different outcome than refusing an interview compared to not being approached. The IES scores differed significantly between those giving an interview ($M = 24.85$, $SD = 19.59$), those refusing an interview ($M = 19.14$, $SD = 15.77$), and those not approached ($M = 16.13$, $SD = 14.83$), $F(2, 226) = 5.77$, $p = .004$. Post hoc analyses using the Scheffé post hoc criterion indicated that answering reporters' questions did not have a significant effect on symptom scores between the interviewed group and those refusing an interview, $p = .144$, or between those refusing and interview and those not approached, $p = .583$. A significant difference was indicated between the interviewed group and those not approached, $p = .004$. Differences in the GHQ scores were not significant.

Exposed students who followed a higher number of media outlets were observed to also have higher IES scores, $M = 22.02$ ($SD = 17.99$) versus $M = 14.81$ ($SD = 14.19$), $F(1, 227) = 7.79$, $p = .006$, and higher GHQ scores, $M = 8.67$ ($SD = 9.15$) versus $M = 4.30$ ($SD = 6.42$), $F(1, 228) = 11.66$, $p = .001$. Among the comparison group students, differences in the IES scores were not observed between the high and low media-following groups. There was an association between more general psychological symptoms measured by the GHQ and a higher level of media following, $M = 3.85$ ($SD = 5.60$) versus $M = 2.60$ ($SD = 4.89$), $F(1, 521) = 5.89$, $p = .016$.

Multivariate Analyses

Multivariate linear regression analyses were used to test for associations between symptoms and the three types of media exposure. Contact with journalists was dummy coded by two variables; those not approached were the reference group for both comparisons. Higher and lower media following were included simultaneously (*3–4 media outlets* = 1, *0–2 media outlets* = 0;

Table 3. Multivariate Regression of Symptom Scale Scores and the Effects of Being Interviewed and Number of Media Outlets

	Exposed students			Comparison students		
	B	*SE B*	β	*B*	*SE B*	β
Impact of Event Scale (IES)						
Approached/Interviewed	7.14	2.52	.20**	–	–	–
Approached/Refused interview	1.76	2.89	.04	–	–	–
Followed 3–4 media outlets	3.71	2.53	.09	0.81	1.10	.03
Severe-to-extreme exposure	6.84	2.54	.18**	–	–	–
Female gender	9.63	2.25	.27***	6.92	1.06	.28***
Age	0.04	0.68	.00	−0.29	0.35	−.04
Previous mental support	1.37	3.56	.02	3.49	1.51	.10*
General Health Questionnaire (GHQ)						
Approached/Interviewed	1.22	1.20	.07	–	–	–
Approached/Refused interview	0.49	1.38	.03	–	–	–
Followed 3–4 media outlets	2.63	1.20	.13	0.62	0.49	.05
Severe-to-extreme exposure	4.08	1.21	.21**	–	–	–
Female gender	5.51	1.07	.31***	2.52	0.47	.22***
Age	0.74	0.33	.14*	0.19	0.16	.05
Previous mental support	3.68	2.16	.13	4.48	0.67	.28***

Note. IES exposed, $n = 229$, $R^2 = .168$. IES comparison, $n = 507$, $R^2 = .105$. GHQ exposed, $n = 230$, $R^2 = .246$. GHQ comparison, $n = 521$, $R^2 = .160$.
$^{*}p < .025$. $^{**}p < .01$. $^{***}p < .001$.

Table 3). Interestingly, being interviewed had a significant effect on the IES scores among the exposed students, $p = .005$, but being approached and having refused an interview had no significant effect on posttraumatic symptoms, $p = .544$. Yet, the effect of following a higher number of media outlets on posttraumatic distress observed in the bivariate analysis was attenuated in multivariate analysis among the trauma-exposed students, $p = .143$. With the GHQ scores, the effects of either being interviewed or having refused the interview were not significant. Having followed a higher number of media outlets had an effect on the GHQ scores close to significance level, $p = .029$. The interaction terms between the level of exposure and the different media exposure variables were not significant and were not included in the final model.

The association of the IES scores and following three to four media outlets remained insignificant in the comparison group in the multivariate analysis (Table 3). Further, the association of higher media-following with the GHQ scores was attenuated below the significance level in the multivariate analysis, where female gender and previous mental support were significant predictors of psychological symptoms.

DISCUSSION

Although there has been a concern about the possible revictimization or exacerbation of stress and traumatic reactions when news media seek interviews with or photographs of footage of traumatized persons, we were not able to find quantitative studies on this subject for any age group (Simpson, 2006). We present a novel attempt to characterize this proposed effect. Our results suggest that being approached by journalists and especially being interviewed had a significant effect on posttraumatic distress in traumatized adolescents. Analyses suggested an independent effect when the level of trauma exposure, a higher number of media outlets followed, and other background variables were controlled for. Moreover, one fifth felt worse after being interviewed and feeling worse was more prominent among severely traumatized and among female adolescents. Although vulnerable persons may find being interviewed distressing, the negative emotional affect caused by being interviewed may have a role in mediating observed higher risk for posttraumatic distress after being interviewed. The number of media representatives was overwhelming in Jokela after the incident and youths reported in some instances intrusive attempts at interviewing or photographing. Both have been suggested to have negative effects (Walsh-Childers et al., 2008).

Children and adolescents may spend considerable hours following news on catastrophic events (Pfefferbaum et al., 2001; Schuster et al., 2001). We observed that a higher level of following the media measured by the number of media outlets followed was more common among the exposed. This is in line with an earlier observation that directly traumatized children watch more newscasts than children without direct exposure (Pfefferbaum et al., 1999). Female gender was associated with following a higher number of

media outlets in both the trauma-exposed and comparison groups, whereas older age and previous mental support was associated only with the comparison group. Preadolescent females have been observed to follow more print media than preadolescent males previously (Pfefferbaum et al., 2003). Interestingly, being approached by media representatives was associated with higher numbers of media outlets followed in the trauma-exposed group.

Posttraumatic and other psychological distress has been associated with extensive news coverage of terrorist attacks and with the hours of media followed (Fremont, 2004; Otto et al., 2007; Pfefferbaum et al., 2001, 2003). We found an inconclusive association with general psychological symptoms and a higher number of media outlets followed in the directly exposed group. There was an association between having felt worse after following a higher number of media outlets. The association of symptoms and following more media outlets in the comparison group was attenuated when earlier need for support and gender were taken into the analyses. This suggests that those distant to the traumatic event and already vulnerable to psychological symptoms followed more media outlets, whereas for the trauma exposed, indirect media exposure also had an independent effect on symptoms. The results support the concern expressed about adolescents' media consumption after catastrophic events (Duggal et al., 2002; Laugharne et al., 2007; Otto et al., 2007).

Finally, this study is part of a comparative follow-up study, the Jokela School Shooting Recovery Study, which aims to evaluate the effects of exposure and psychological and psychosocial consequences on those exposed. We could only reach half of the exposed students, which limits the representativeness of our results. The questionnaire was administered 4 months after the incident and after the critique on media actions, both can potentially contribute to recall bias. The trauma-exposure measurement used does not recognize the level of perceived threat, which might be appropriate to take into account (Marshall et al., 2007). Further, to avoid the questionnaire being excessively long, we were only able to include a limited number of items on the media. Thus, the assessment of media use and its context is limited, as is true of many similar studies (Comer & Kendall, 2007).

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