Psychological Adjustment of Adolescents 18 Months After the Terrorist Attack in Beslan, Russia: A Cross-Sectional Study

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Objective: Children exposed to terrorism are at high risk for developing emotional and behavioral problems, but only a few studies have examined adolescents' long-term psychological adjustment after a terrorist attack. We aimed to assess psychological distress, problem behaviors, and coping in adolescents who survived the terrorist attack on School No. 1 in Beslan, Russia.

Method: Seventy-one youths aged 14 to 17 years held as hostages by terrorists completed self-reported measures of psychological symptoms, emotional and behavioral difficulties, and coping behaviors 18 months after the traumatic event. They were compared with 100 adolescents who were not directly exposed to the attack. Data were collected during a 1-month period in May 2006.

Results: No significant differences were found between the 2 groups in overall levels of psychological symptoms as well as in emotional and behavioral problems. Girls in both groups reported significantly more psychological distress ($p = .0001$) and total difficulties ($p = .0001$) than boys. In the directly exposed group, avoidant coping was related to worse psychological functioning for girls ($r = 0.54$, $p < .001$) and boys ($r = 0.50$, $p < .01$), whereas in the indirectly exposed group this strategy was associated with psychological distress ($r = 0.43$, $p < .01$) and total difficulties ($r = 0.40$, $p < .01$) for girls only.

Conclusions: More than 1 year after a terrorist attack, adolescents may experience psychological distress regardless of being directly or indirectly exposed. Professionals working with adolescents affected by terrorism should be sensitive to developmental level and gender, consider the cultural context, and foster coping skills that may be differentially effective for girls and boys.

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Giovanna Axia died on June 2, 2007. The rare spirit she brought to children and families will forever inspire all of us who knew and worked with her. The authors thank all the adolescents who participated in the study.

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On September 1, 2004, a group of 32 terrorists seized School No. 1 in Beslan (North Ossetia, Russian Federation) and took hostage over 1300 children and adults during the traditional "Day of Knowledge" at school. Hundreds of young children spent 57 hours without water or food in an overcrowded hot gymnasium wired with explosives. They witnessed the beatings and murders of family members, friends, and teachers. The hostage crisis ended in extreme violence with gunshots, grenade explosions, and fire that directly killed 329 persons, 186 of them children, and injured many hundreds.

As Parfitt[1] noted, the school massacre in Beslan is one of the worst atrocities enacted on a civilian population in Europe in recent history. Nonetheless, surprisingly little is known about the long-term effects of this tragic event on the mental health of children and their families. Portnova[2] examined a sample of 92 children and adolescents held as hostages during the terrorist attack and found that this group of victims suffered from extremely severe trauma and demonstrated the main signs of acute stress reactions. Our previous study among caregivers of children who survived the Beslan school siege revealed high rates of severe posttraumatic stress reactions in both adults and children 3 months after the attack.[3] In addition, caregivers reported a sense of helplessness and of "living in constant fear" due to the perceived lack of protection by institutional forces and the general sociopolitical situation of the North Caucasus, characterized by significant ethnic

conflicts involving North Ossetia and its neighboring countries (e.g., Chechnya and Ingushetia).[4]

Although the effects of direct and indirect exposure to terrorist activities on children's mental health are well-documented (see Fremont[5] and Hagan et al.[6] for recent reviews), less information is available on adolescents' psychological adjustment in the aftermath of terrorism. Several authors suggest that adolescents are a particularly vulnerable group, as they are experiencing a period of complex transitions.[7,8] The physical changes, cognitive attainments, and emotional shifts most likely affect youth's reactions to, and interpretations of, traumatic events. Commonly observed responses to terrorism include anxiety and depression,[9] as well as feelings of guilt and helplessness that are exacerbated if the adolescent knew someone directly involved in the trauma or was involved himself or herself.[7] Gender also plays a key role in adolescents' adjustment after terrorism, although the evidence is mixed. Some studies report that female adolescents are more vulnerable to trauma,[10] whereas others indicate that boys require a longer recovery period than girls.[9] Coping is another source of variation in people's responses to terrorist attacks,[11] but only one study has addressed this issue in adolescents surviving terrorism. Wadsworth et al.[12] found that in a U.S. sample of adolescents, young adults, and adults who were geographically distant from the September 11th attacks, girls used emotion-focused strategies more than boys, and boys endorsed more disengagement behaviors than girls; these behaviors were related to different psychological functioning.

We aimed to investigate the characteristics of psychological symptoms, emotional and behavioral difficulties, and coping strategies in adolescent survivors of the terrorist attack on Beslan's School No. 1 in comparison with a group of adolescents who were not in the school at the time of this violent event.

METHOD

Setting and Patients

This study is part of an ongoing project on the mental health of Beslan's children and families initiated in November 2004. At that time, we were contacted by the president of the Italian nongovernmental organization "Help Us Save the Children" to provide psychological assistance to a group of families surviving the terrorist attack in Beslan who were hosted for 6 weeks in a private residential structure in the city of Trento, Italy. In light of the extremely negative psychological conditions of these families (see Moscardino et al.[4] and Scrimin et al.[3]), we planned a large-scale assessment of children's and adolescents' psychosocial adjustment, as well as several psychoeducational activities (e.g., focus groups) to be conducted at the new School No. 1 in Beslan. Our goal was to provide a basis for the implementation of intervention strategies to be used by adults working with Beslan's youth on a daily basis (i.e., principals, counselors, and teachers).

After receiving the necessary permits from the North Ossetian Ministry of Education, we selected 2 professional interpreters for the translation of instruments and informally contacted several families from Beslan to help organize meetings with the personnel of the new School No. 1. During the 1-month period of data collection in Beslan (May 2006), we worked in strict collaboration with the local school psychologist, who introduced us to youths and teachers and supervised our activities in class. All measures were carefully evaluated to ensure their cultural sensitivity, appropriateness, and noninvasiveness.

We randomly selected 171 adolescents aged 14 to 17 years who were attending grades 8, 9, and 10 in Beslan's new School No. 1. Of these, 71 (42%) were held as hostages during the terrorist attack (direct exposure group), and 100 (58%) were not (indirect exposure group). Directly exposed adolescents (29 boys and 42 girls) had a mean age of 15.1 years (SD = 0.90 years), and indirectly exposed adolescents (53 boys and 47 girls) had a mean age of 15.2 years (SD = 0.96 years). The 2 groups did not differ in sex and mean age. The questionnaires were administered by class, in groups ranging in size from 15 to 25; assessments lasted approximately 90 minutes (range, 60–120 min). The school psychologist introduced our research group and then left the room. Next, we asked youngsters to briefly introduce themselves, explained the aims of our work, and answered related questions. Prior to the administration of each questionnaire, we illustrated its content through the help of our professional translators and provided instructions for filling out the instruments.

Psychoeducational groups were conducted after we completed the administration of questionnaires in all classes, i.e., at the end of our stay. Indeed, one of the main purposes of these activities was to qualitatively report the major findings to adolescents in order to provide feedback and stimulate discussion.

Measures and Procedures

All instruments were selected for their well-established psychometric properties, as well as for their easiness of comprehension and reduced number of items to limit participant burden.

Adolescents were assessed with the Brief Symptom Inventory 18 (BSI-18),[13] the Strengths and Difficulties Questionnaire,[14] and the Brief COPE.[15] The BSI-18 is an 18-item version of the 53-item Brief Symptom Inventory,[16] a standardized scale measuring psychological distress. The questionnaire includes 3 subscales assessing symptoms of depression, anxiety, and somatization. Respondents indicate how frequently they have been distressed or bothered by symptoms in the prior week using a scale ranging from 0 (not at all) to 4 (always). For this

study, adolescents were instructed that ratings should be made with regard to the past 4 weeks. Measures of depression, anxiety, and somatization are derived by summing across specific subsets of items, whereas a global severity index is obtained by summing all of the scores, with possible scores ranging from 0 to 72. The questionnaire was translated into Russian for purposes of the present study using the translation–back translation method. The BSI-18 has been widely used with psychiatric, medical, and community populations,[13] demonstrating good internal consistency and reliability also for adolescent samples (e.g., Gil-Rivas et al.[17]). In this study, the reliability of the scale was excellent ($\alpha = .91$).

The Strengths and Difficulties Questionnaire is a 25-item self-report measure covering areas of emotional and behavioral difficulties that can be administered to parents and teachers of 4- to 16-year-olds and to 11- to 16-year-olds themselves.[18] The questionnaire includes 5 subscales of 5 items each, generating scores for emotional symptoms, conduct problems, hyperactivity-inattention, peer problems, and prosocial behavior.[14] Items are rated on a scale ranging from 0 (not true) to 2 (certainly true). A total difficulty score is obtained by summing all of the subscale scores but the last, with possible scores ranging from 0 to 40. The Strengths and Difficulties Questionnaire is available in more than 40 languages and can be downloaded free from http://www.sdqinfo.com. The Russian version has been used in clinics and research studies, indicating good acceptability and internal consistency.[19] In the present study, we used the total difficulty score as an index of adolescents' psychological adjustment. Internal consistency measured by Cronbach α for this score was .71.

The Brief COPE is a shortened, 28-item inventory based on the 60-item COPE instrument.[20] The items of the COPE are derived from the Lazarus and Folkman model of coping[21] and yield 14 subscale scores describing a range of theoretically based coping responses. Respondents were asked to rate each item (0 = I haven't been doing this at all to 3 = I've been doing this a lot) in relation to how they had "been coping with stress in [their] life, including stress related to the terrorist attack" during the past month. Scale scores are calculated by simply adding the item scores. The Brief COPE has been widely used with clinical and community samples,[15,22] demonstrating good reliability and validity also for adolescents.[23] Following previous research,[24] we performed a confirmatory factor analysis to derive the following 3 scales: (1) *Active coping* (Cronbach $\alpha = .78$) included items measuring positive reframing, planning, taking action, acceptance, and humor. (2) *Support coping* (Cronbach $\alpha = .81$) included indicators of seeking emotional and instrumental support and seeking comfort from religion. (3) *Avoidant coping* (Cronbach $\alpha = .71$) included items measuring behavioral disengagement, self-distraction, denial, self-blame, venting, and substance abuse. Although the χ^2 was significant ($\chi^2 = 151.32$, df = 74, $p < .001$), the other indices (comparative fit index = 0.91, root mean square error of approximation = 0.08) pointed to an acceptable fit of the observed data, considering that comparative fit index values of 0.90 or greater[25] and root mean square error of approximation values of 0.08 or less[26] are indicative of good model fit.

Statistical Analyses

We used univariate analyses of covariance with group and gender as between factors and age as a covariate to examine differences on psychological symptoms, total difficulties, and coping strategies. Associations between adolescents' coping behaviors and psychological outcomes (i.e., global severity index and total difficulties) were explored via Pearson product moment correlations. Variables were transformed as necessary to meet the assumptions of parametric statistical testing; however, untransformed values are reported to facilitate interpretation.

RESULTS

We recorded no significant difference in overall levels of psychological distress between directly and indirectly exposed adolescents. A significant main effect of gender emerged, with girls reporting more symptoms than boys (see Table 1), whereas age was not significant. The most frequently reported symptoms of the BSI-18 (symptoms occurring much or most of the time) in girls were feeling tense or keyed up (35 of 87, 40%), faintness or dizziness (21, 24%), nervousness or shaking hands (20, 23%), feeling fearful (18, 21%), spells of terror/panic (18, 21%), and thoughts of ending life (18, 21%). A similar pattern of results was found for total difficulties—i.e., adolescents in both groups reported the same levels of behavioral and emotional problems, and there were significant differences between girls and boys, with girls scoring higher than boys on total difficulties; no age effect was found. The most frequently reported difficulties (items rated as certainly true) of the Strengths and Difficulties Questionnaire in girls included worrying a lot (28 of 89, 31%), being restless (26, 29%), getting angry and losing temper (24, 27%), being unhappy, downhearted, or tearful (23, 26%), getting easily distracted (22, 25%), and having many fears/being scared (19, 21%).

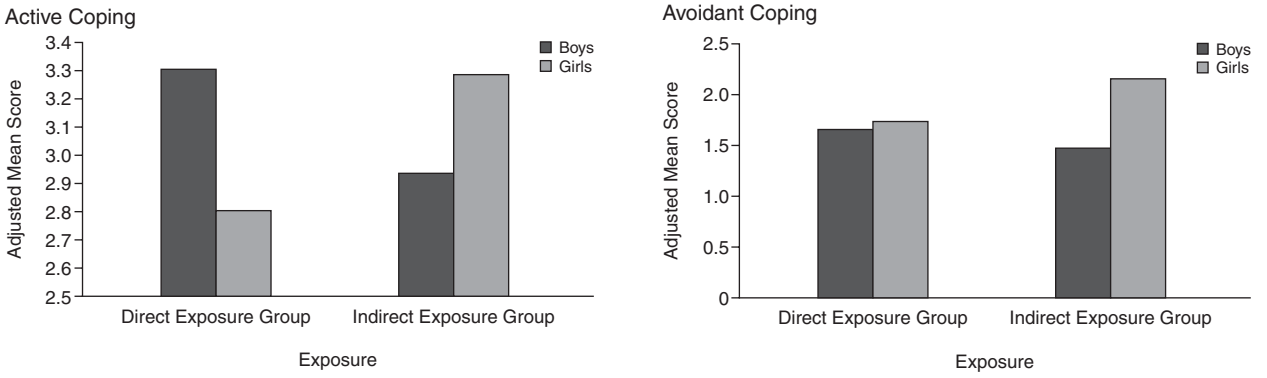
Overall, no significant difference emerged between directly and indirectly exposed adolescents in the total number of coping activities used, but girls (mean = 8.72, SD = 1.41) reported more coping strategies than boys (mean = 7.65, SD = 2.37) ($F = 11.81$, df = 1,163; $p = .001$). A significant main effect of gender was found, with girls reporting more support and avoidance coping than boys (Table 1). In addition, a significant interaction

Table 1. Psychological Distress, Emotional and Behavioral Difficulties, and Coping Among Adolescents 18 Months After the Beslan Terrorist Attack

Measure	Direct Exposure Group (N = 71), Mean (SD)	Indirect Exposure Group (N = 100), Mean (SD)	Boys (N = 82), Mean (SD)	Girls (N = 89), Mean (SD)	Group Effect F (df)	Group Effect p Value	Gender Effect F (df)	Gender Effect p Value	Interaction of Group by Gender F (df)	Interaction of Group by Gender p Value
BSI-18 global severity index	14.52 (12.80)	14.23 (13.24)	8.54 (8.14)	19.76 (14.36)	0.05 (1,163)	.822	27.09 (1,163)	.0001	0.00 (1,163)	.970
SDQ total difficulties	11.87 (4.93)	12.61 (5.00)	10.58 (4.16)	13.87 (5.15)	2.05 (1,165)	.154	21.42 (1,165)	.0001	0.30 (1,165)	.583
Brief COPE										
Active coping	3.00 (1.09)	3.14 (1.18)	3.05 (1.30)	3.07 (0.96)	0.09 (1,162)	.778	0.15 (1,162)	.699	5.44 (1,162)	.021
Support coping	1.88 (1.41)	2.21 (1.47)	1.76 (1.42)	2.38 (1.41)	8.30 (1,162)	.073	3.26 (1,162)	.004	0.71 (1,162)	.401
Avoidant coping	1.68 (0.84)	1.78 (0.88)	1.54 (0.89)	1.93 (0.78)	0.94 (1,162)	.335	8.91 (1,162)	.003	5.12 (1,162)	.025

Abbreviations: BSI-18 = Brief Symptom Inventory 18, SDQ = Strengths and Difficulties Questionnaire.

Figure 1. Interaction Effects of Gender and Exposure on Active and Avoidant Coping Strategies Among Adolescents 18 Months After the Beslan Terrorist Attack[a]



[a]Means are adjusted for age.

emerged between group membership and gender for active and avoidant coping (Figure 1). Directly exposed boys scored higher than their female counterparts in active coping, whereas this pattern was reversed in the indirectly exposed group, with girls scoring higher than boys. Girls in both groups reported more avoidant behaviors than boys, but this difference was larger in the indirectly exposed group, with girls scoring much higher compared to boys.

Correlations between adolescents' coping strategies and psychological outcomes are shown in Table 2. In the direct exposure group, avoidant coping was associated with increased psychological distress for boys and girls, and with total difficulties for girls only. In addition, support coping was associated with higher levels of psychological distress for adolescent girls only. In the indirect exposure group, significant associations were found between avoidant coping and the 2 psychological outcomes, but only for girls.

DISCUSSION

This research presents the results from a cross-sectional study assessing psychological adjustment among adolescents who survived the 2004 terrorist attack in Beslan's School No. 1. Although the detrimental effects of terrorism on children's and adolescents' mental health are well documented, no previous studies have ever addressed the long-term consequences of this extremely violent event that was directed specifically at children, occurred in an everyday life setting (i.e., school), and involved the whole community.

The comparison of former hostages during the terrorist attack and their indirectly exposed counterparts revealed no significant difference between the 2 groups in overall levels of psychological distress, as well as emotional and behavioral problems. These findings are in line with previous research suggesting that both directly and indirectly exposed children are at risk of developing adverse psychosocial symptoms after terrorism-induced trauma,[27–29] especially in countries where terror acts represent a continuous threat.[30] Considering that the school siege occurred in a small, traditional society where almost every member suffered the loss and/or injury of a relative or a friend,[1] it is likely that the event exerted a profound effect on the entire population. As explained by a female

Table 2. Correlations Between Coping, Psychological Distress, and Total Difficulties by Gender and Exposure Among Adolescents 18 Months After the Beslan Terrorist Attack

	Global Severity Index (BSI-18)		Total Difficulties (SDQ)	
Category	Boys	Girls	Boys	Girls
Direct exposure group[a]				
Active coping	0.23	0.18	–0.02	0.18
Support coping	0.23	0.30*	0.03	0.12
Avoidant coping	0.50**	0.54***	0.23	0.41**
Indirect exposure group[b]				
Active coping	0.06	0.00	0.13	–0.12
Support coping	0.13	0.28	–0.05	0.09
Avoidant coping	0.24	0.43**	0.18	0.40**

[a]Direct exposure group: boys, N = 27; girls, N = 40.
[b]Indirect exposure group: boys, N = 49; girls, N = 47.
*p < .05.
**p < .01.
***p < .001.
Abbreviations: BSI-18 = Brief Symptom Inventory 18, SDQ = Strengths and Difficulties Questionnaire.

adolescent during one of our psychoeducational groups, "Before this all happened we used to live like animals in a herd, but now everyone follows his own path, not knowing which direction to take."

Our results further indicate that girls were more vulnerable to psychological distress and reported more emotional and behavioral problems than boys, with almost 25% of female adolescents suffering from symptoms related to fear, panic/terror, nervousness, worries, and thoughts of ending life. This cluster of symptoms is consistent with findings from studies of youth exposed to war or terrorism, in which anticipatory anxiety and fear reactions have been associated with the unpredictable, indefinite nature of terrorist events.[31] In addition, survivor guilt and the inability to protect and/or save other hostages from the massacre may partly explain the high incidence of suicidal thoughts in this sample. The significant gender effect on adolescents' responses to the attack is consistent with previous reports[32,33] and can be attributed to differences in emotional experience, a tendency of girls to be more expressive about their emotions than boys, or a combination of both. In the context of Ossetian culture, traditional gender roles are emphasized, and boys are socialized from an early age to restrain their emotional expressions in front of others to demonstrate their physical and moral strength[4]; the polarization of sex roles may contribute to a different perception of vulnerability and a higher reluctance of boys to report symptoms.[7] Coping style represents another source of variation in girls' and boys' psychological responses to terrorism. Our study revealed that girls endorsed more support-seeking and avoidant behaviors than boys and that the difference between boys and girls in the use of avoidance varied as a function of exposure, with girls in the indirectly exposed group scoring much higher than their male peers. In addition, we found that in the directly exposed group, avoidance was related to worse psychological functioning for both girls and boys, whereas in the indirectly exposed group this strategy was associated with psychological distress and total difficulties for girls only. Previous research indicates that females tend to rely on social ties as a means of coping with stressful events, but they also worry about the people close to them[33]; hence, this behavior may actually exacerbate psychological distress. Avoidant coping has also been linked with increased psychological distress in young adults' responses to terrorism[12]; specifically, the frequent use of strategies such as behavioral disengagement, denial, self-blame, and venting of emotions among girls of both groups may indicate that female adolescents were affected the most by the terrorist attack and thus avoided further exposure to any reminders of terror. This explanation is supported by our finding that girls in the directly exposed group scored lower than their male counterparts on active coping, whereas the reversed pattern was observed in the indirectly exposed group. The ability to actively cope with stressful events in daily life through cognitive as well as behavioral strategies contributes to a sense of self-efficacy and controllability,[30] which appeared to be severely compromised in this sample of female adolescents held as hostages by the terrorists.

The findings of this study should be interpreted with caution due to a number of limitations, such as the reliance on self-report measures, absence of detailed measurement of potentially confounding sociodemographic variables, and lack of information on adolescents' symptoms of posttraumatic stress disorder. However, it should be noted that ethical reasons prevented us from administering a measure of PTSD, since the psychologist and the school principal were extremely concerned about its possible distressing effects on youths, including excessive emotional arousal and reexperiencing of the event.

Nonetheless, much can be learned from our results. Adolescents may experience psychological distress and emotional and behavioral problems more than 1 year after a terrorist attack regardless of being directly or indirectly exposed. Girls are at higher risk of developing symptoms of anxiety and depression, partly because they tend to use coping strategies that may enhance psychological distress. Cultural factors are also likely to affect individuals' reactions to terrorist attacks and thus need to be considered in intervention programs with populations affected by terrorism. Health professionals and clinicians working with adolescent survivors of terrorism should be sensitive to developmental stage and gender and should promote coping skills that may be differentially effective for girls and boys. In particular, adolescents may benefit from school-based psychoeducational interventions aimed at fostering active coping behaviors (e.g., positive reframing of the event, acceptance, taking action) and reducing symptoms of fear and anxiety by means of brief psycho-

logical techniques (e.g., relaxation training, cognitive restructuring, grief and anger management). However, further research is needed to address the effectiveness of different interventions.

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