Victimization and PTSD in a Lithuanian National Youth Probability Sample

VEJUNE DOMANSKAITÉ-GOTA[1]
ASK ELKLIT[2] *
DORTE M. CHRISTIANSEN[3]

Keywords: Adolescents, PTSD, Traumatic events, Life events, National Sample

** Correspondence: Danish National Centre for Psychotraumatology, Campusvej 55, DK-5230 Odense, Denmark. E-mail: Aelklit@health.sdu.dk. Telephone +45 6550 2320.*

Abstract

Twenty-one potentially traumatizing and distressing events, and the impact of these events were described in a representative sample of 183 9th grade Lithuanian adolescents (M = 15.1 years). The participants had been directly exposed to a mean of 1.9 events, and indirectly exposed to a mean of 2.4 events. The estimated lifetime prevalence of PTSD was 6.1%. Subclinical levels of PTSD reached 12.2%. Results are generally comparable to other European youth studies. Variables pertaining to female gender, living with a single parent, direct and indirect exposure to traumatic events, number of traumatic events, and the temporal proximity of trauma events, predicted higher PTSD levels. Both direct and indirect exposure to traumatic events may lead to subsequent mental health problems and PTSD in adolescents.

Introduction

Epidemiological studies of trauma and posttraumatic stress disorder (PTSD) that build on national probability samples are rare. Epidemiological studies are conducted in communities rather than clinical samples. Probability sampling means that each member of a population has a known, nonzero chance of selection, yielding a sample that is highly representative of the population. High response rates are important to ensure that the probability sample approximates the popu-

1 Departemt of Clinical and Organizational Psychology, University of Vilnius, Lithuania.
2 Danish National Centre for Psychotraumatology, University of Southern Denmark.
3 Department of Psychology, University of Aarhus, Denmark.

Nordic Psychology 2009, Vol. 61(3), 66-81
DOI 10.1027/1901-2276.61.3.66

lation. Third-generation measures (Norris & Slone, 2007) replaced single-items screens with more detailed event inventories. The most notable study using these measures, The National Comorbidity Survey (NCS) of 5,877 US citizens aged 15 to 54 years found that 61% of the men and 51% of the women had been exposed to at least one traumatic event (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). The lifetime prevalence of PTSD was estimated to be 7.8 percent. The prevalence was higher among women than among men, with the largest difference being found in the youngest age group (15-24 years; gender ratio nearly 4:1). This overrepresentation warrants special attention to the trauma history of females in an epidemiological study of traumatic events and PTSD among adolescents.

Giaconia, Reinherz, Silverman, Pakiz, Frost, & Cohen (1995) conducted a longitudinal study assessing a sample of 384 eighteen year old Americans. The study concluded that over 40% of the subjects reported having been exposed to at least one traumatic life event. Among those exposed, 15% developed PTSD (6% of the total sample). Three studies, similar in methodology and analysing techniques, have been carried out on European youth probability samples with adolescents aged 13-16 years. Elklit (2002) employed the use of a Danish national probability sample of 390 adolescents (M = 14.5 years) and concluded that 87% of females and 78% of males had been exposed to at least one event (M = 2.5 direct events and M = 3.2 indirect events). The prevalence of PTSD was reported as 9% (boys 5.6%; girls 12.3%), an additional 14% met the criteria for subclinical PTSD. An analysis of variance showed posttraumatic symptoms to be related to female gender, living with only one parent, direct, and indirect trauma exposure. Petersen, Elklit, and Olesen (in press) employed the use of a Faroese youth probability sample (N = 687; M = 14.2 years) and concluded that 94% of females and 89% of males had been exposed to at least one traumatic event (M = 2.9 direct events and M = 4.8 indirect events). The prevalence of PTSD was reported as 20% (boys 14%; girls 41%) and the prevalence of subclinical PTSD was reported as 14%. Finally, in an Icelandic youth probability sample (N = 206; M = 14.5 years) Bödvarsdóttir and Elklit (2007) found that 74% of females and 79% of males had been either directly or indirectly exposed to a potentially traumatizing event (direct exposure M = 2.6; indirect exposure M = 3.5). They found a PTSD prevalence of 16% (boys 12.0%; girls 20.4%) and a subclinical PTSD prevalence of 12%.

The most frequent events reported by youths in all three studies were the death of someone close, threats of violence, serious accidents, and humiliation/persecution by others. In the Faroese and Icelandic youth samples, there was also a relatively high exposure to near-drowning incidents. Sexual abuse, rape, pregnancy/abortion, severe childhood neglect, and physical abuse were found to be the

least reported events in all three samples. However, all these events were more prevalent in the Faroese sample than in the Danish and Icelandic samples.

Two of the studies (Bödvarsdottír & Elklit, 2007; Petersen et al., in press) conducted logistic regression analyses in order to assess which events were most strongly related to PTSD status. Bödvarsdottír & Elklit found that rape, humiliation/persecution, and absence of a parent were significantly related to PTSD status for the Icelandic sample. Petersen et al. conducted the analyses separately for boys and girls and found that direct exposure to serious accidents was the only experience that was significant for both genders in the Faroese sample. In addition, the Faroese sample revealed that direct exposure to a suicide attempt, making a girl pregnant/become pregnant, severe childhood neglect, and robbery/theft were significant for boys but not for girls. Direct exposure to physical abuse, threats of violence, and humiliation/persecution were significant for girls but not for boys. The models for both the direct and the indirect events were significant for both genders. Moreover a finding consistent across the Danish, Faroese and Icelandic studies leads to the conclusion that female gender, living in a single-parent household, and having been exposed to multiple traumatic events, were all factors strongly associated with higher levels of PTSD.

The availability of information pertaining to traumatic events and serious life events for Lithuanian adolescents is very sparse. In a study of 115 Lithuanian teenagers, aged 17 years, from Vilnius and Kaunas (the two largest Lithuanian cities), Cizauskaite (2002) found that adolescents had been exposed to an average of 6.6 traumatizing events, 2.8 of which were experienced directly (i.e. self experiencing or witnessing an event), and 3.8 of which were experienced indirectly (having someone close to them experiencing a traumatizing event). Similarly, Lasiene (2001) studied psychological traumatization in 136 adolescents aged 17-18 years in three secondary schools in Kaunas. The subjects reported a lifetime exposure to an average of seven traumatic events; within the past year they had been exposed to an average of 1.2 potentially traumatizing events. A positive association was found between exposure levels and symptom levels, and girls had significantly higher levels of psychological traumatization than boys.

The dose-response theory of traumatization states that events that are directly experienced, prolonged, and damaging lead to the highest degree of traumatization (Bowman, 1999). According to this model, direct exposure to events should lead to a higher degree of traumatization than indirect exposure to the same event, and events such as rape and being exposed to life danger should be more traumatizing than bullying or parental divorce. Although there is some support for this model, the evidence is mixed, and it appears that individual characteristics play an important role in mediating the impact of potentially traumatizing events, thus also mediating dose-response relations. Therefore, more research now

includes less obviously traumatic events when studying the effect of trauma on later psychological functioning. Giaconia et al. (1995) suggested that the effect of traumatic exposure on the development of PTSD might be magnified by the presence of other potential risk factors, including individual characteristics and family environments. Joseph, Mynard, and Mayall (2000) included less severe and more commonly occurring events such as parental separation/divorce and problems with alcohol or drugs in the family in their study of exposure to traumatic events among English adolescents. They found parental separation/divorce to be among the events most strongly associated with the symptoms of posttraumatic stress. Attributes of resilience factors most frequently reported in the child/adolescent literature include an easy-going temperament, high intellectual ability, positive family environment, internal locus of control, socioeconomic advantage, and supportive relationships with peers, family members, and other adults (Layne, Warren, Watson, & Shalev, 2007). Therefore, such factors should be included in trauma research of this population.

The current study was designed to provide epidemiological information about the exposure to traumatic events and life events, and PTSD prevalence in a Lithuanian national probability sample. The study aims were two-fold, to (1) estimate the lifetime prevalence of traumatic events, life events, and PTSD, overall and by gender; and to (2) examine the relationships between such events and PTSD. The study was designed in a similar way to the three above mentioned European studies in order to ease cross-cultural comparison.

Method

Participants

The data in this study was collected by a questionnaire survey of a national representative probability sample of 183 ninth graders aged 13-17 years (M = 15.06, *SD* = .61). In comparison, the size of the sample in relation to the size of the population is 2.5 times higher than the sample size used in the NCS (Kessler et al., 1995). The population was geographically stratified into five regions representing the capital, the big cities, other cities, towns, and the countryside. Sample allocation was proportionate to the Lithuanian population distribution. From a list of all the public schools in the country which had 9th grade classes, two or three schools representing each of the five regions were randomly selected. All twelve approached schools accepted to participate (100% coverage). Each class consisted of between six and 31 pupils (Mean = 14.1). An average of 1.9 pupils were missing on the day of the study (corresponding to a presence rate of 89%). All pupils present completed the questionnaires.

The gender distribution was 55% female and 45% male. Seventy-nine percent of pupils lived with both parents, 17 percent lived with one parent, and four percent had other arrangements. The parent's level of education was used as a crude measure of socioeconomic status in order to counteract a possible limitation highlighted in other studies (e.g. Balvig, 1999), which have shown that an adolescent's knowledge of their parent's income and occupational status is not reliable. Mothers had a significantly longer education than fathers ($\chi 2 = 178.2$; df = 9; $p \leq .0005$). Significant regional differences were seen in terms of educational levels, with parent's educational level being positively associated with urbanization ($r = .31$ fathers; .40 mothers; both p's $\leq .005$).

Procedures

The authors followed the Nordic ethical guidelines for psychologists, and it was made clear to the subjects that in addition to anonymity and confidentiality, they had the option of not participating. The study was introduced through: (1) a telephone call to the headmasters of the schools explaining the selection procedure, the purpose of the study, and the confidentiality principles; (2) the first author met with the headmaster and the 'head teacher' of each school, and explained the purpose of the study, the procedure, and the confidentiality procedures, and (3) the first author met with the pupils of the participating classes explaining the purpose of the study, the confidentiality, the option of not participating, and the filling out of the questionnaires. Questionnaires were collected at the end of the lesson and put in an envelope that was sealed in front of the students. In schools with more than one 9th grade the primacy of the initials of the 'head teacher' were used to decide which class was used in the study.

Measures

The first part of the questionnaire contained questions about gender, age, parents' level of education, and living arrangements (living with one parent, two parents, or others such as grandparents or in an institution). The second part of the questionnaire included 20 questions about exposure to traumatic events and life events (Table 1). Pupils were asked to indicate, for each question, whether the exposure had been direct or indirect (i.e. self experiencing or witnessing an event or having a person close to them experiencing an event). The events were selected from the relevant literature and from clinical experience, covering possible life-threatening experiences and distressing family conditions. Sexual abuse was defined as sexual exploitation in a close relationship by an older relative or another close person. Rape was defined as forced intercourse.

Table 1: Trauma and Life Events According to Exposure and Gender

	Direct exposure			Indirect exposure		
	Percent females (n=99)	Percent males (n=83)	Percent all [a)] (n=182)	Percent females (n=99)	Percent males (n=83)	Percent all* (n=182)
Traffic accident	15.2	19.3	16.9	40.4	41	40.7
Other serious accidents	4	7.2	5.5	13.1	10.8	12.1
Physical assault	4	4.8	4.4	11.1	14.5	12.6
Rape	3	-	1.6	4	2.4	3.3
Witnessed other people being injured or killed	4	2.4	3.3	15.2	9.6	12.6
Came close to being injured or killed	6.1	6	6	6.1	4.8	5.5
Threatened to be beaten	21.2	39.8	29.7[2)]	19.2	14.5	17
Near-drowning	27.3	25.3	26.4	14.1	16.9	15.4
Attempted suicide	10.1	2.4	6.6[1)]	14.1	4.8	9.9[1)]
Robbery/theft	16.2	24.1	19.8	20.2	13.3	17
Pregnancy/abortion	-	-	-	6.1	2.4	4.4
Serious illness	9.1	6	7.7	21.2	21.7	21.4
Death of someone close	25.3	22.9	24.2	22.2	10.8	17[1)]
Divorce	13.1	9.6	11.5	14.1	10.8	12.6
Sexual abuse	8.1	-	4.4[2)]	8.1	-	4.4[2)]
Physical abuse	6.1	1.2	3.8	8.1	8.4	8.2
Severe childhood neglect	2	-	1.1	10.1	1.2	6[1)]
Humiliation or persecution by others (mobbing)	13.1	6	9.8	14.1	3.6	9.3[1)]
Absence of a parent	4	4.8	4.4	5.1	2.4	3.8
Other traumas	4	4.8	4.4	1	-	0.5
Mental disease in a family	2	2.4	2.2	7.1	7.2	7.1
Total	79.8	80.7	80.2	81.8	66.3	74.7

a) One did not state the gender.
b) $p \leq .05$ [1)].05 [2)].01 [3)].005 [4)].001 [5)].0005

The age group represented in the sample has a very low birth rate, and the authors expected the vast majority of pregnancies to be represented by abortions. Abortion and pregnancy were therefore addressed together by one item, thus including any pregnant females who had not yet decided on an abortion. Moreover, the authors did not want to address pregnancy in a separate item, as such may have indicated that pregnancy is decidedly a negative event. There were two questions in the study about parenthood, one about divorce and the other about the absence of a parent. The latter question was meant to identify situations where divorce is not formal or where one parent is absent from the household because of a family crisis or because

of other obligations. Psychometric data is not yet available for the event measure but comparable data from the other three European studies exists and supports the external validity of the items (Bödvarsdóttir & Elklit, 2007; Elklit, 2002; Petersen, et al., in press).

The Harvard Trauma Questionnaire-Part IV (HTQ; Mollica, Caspi-Yavin, Bollini, Truong, Tor, & Lavelle, 1992) was used to estimate the occurrence of PTSD in the time following the most distressing experience. The HTQ consists of 30 items scored on a four-point Likert scale. Sixteen items address PTSD symptoms directly, and measure the intensity of the three core symptom groups of PTSD: Re-experiencing, avoidance, and arousal. A probable PTSD diagnosis according to DSM-IV criteria (American Psychiatric Association, 1994) was given to individuals experiencing at least one intrusive, three avoidance, and two arousal symptoms as indicated by an item score of at least three. A subclinical diagnosis of PTSD was given to respondents who met criteria for two of the three symptom clusters and missed the criteria for the third symptom cluster (not re-experiencing) by only one symptom. The subscales were scored separately. The original Mollica et al. (1992) article found good reliability and validity for the total scale and the sub-scales. The internal consistency of the scale in the present study was good, as Cronbach's alphas were .93 for the HTQ total scale and .66, .73, and .70 for the re-experiencing, avoidance, and arousal subscales, respectively. The inter-item coefficients for the subscales in the current study were .30 for the total scale, and .28, .33, and .32 for the subscales, which indicate good discriminatory power of the scales (Briggs & Cheek, 1986).

Results

Initial analyses

Eighty percent of the participants (boys 81%; girls 80%) reported that they had been directly exposed to at least one potentially traumatic or stressful event (Mean = 1.9 events: 0 events = 20%, 1 event = 35%; 2 events = 14%; 3 events = 15%; 4 events = 8%, and 5 events or more = 8%). No overall gender difference was found regarding the number of direct exposure events. There was a positive association between age and the total number of direct exposure events (rho = .17; p = .05). The most frequently reported direct exposure events were threats of violence, near-drowning experiences, death of someone close, robbery/theft, and traffic accidents (Table 1). The sequence varied slightly between the genders, with boys reporting the threat of being beaten most frequently, followed by near drowning experiences, robbery/theft, death of someone close, and traffic accidents. Girls reported near drowning experiences most frequently, followed by death of

someone close, threats of violence, robbery/theft, and traffic accidents. The only significant difference between the genders in terms of exposure to these commonly reported events was the higher exposure of boys to threats of violence ($\chi 2 = 7.4$; df = 1; $p \leq .01$) and the trend towards girls more often attempting suicide ($\chi 2 = 4.3$; df = 1; $p \leq .07$). The least frequently reported events were rape, witnessing someone else being killed or injured, physical abuse, neglect, pregnancy, and a family history of mental disorder. The only significant difference between the genders, regarding the less frequently reported events, was that girls reported more exposure to sexual abuse ($\chi 2 = 7.0$; df = 1; $p \leq .01$).

Seventy-five percent of the subjects (boys 66%; girls 82%) reported that they had been indirectly exposed to traumatizing events (M = 2.4 events: 0 events = 26%, 1 event = 24%; 2 events = 15%; 3 events = 9%; 4 events = 9%; and 5 or more events = 17%). There was a tendency for girls to report more indirect exposure to traumatizing events than boys although the overall difference did not reach significance ($t = -1.93$; $p = .06$). The most frequently reported indirect exposure events were traffic accidents, serious illness, near drowning experiences, robbery/theft, and witnessing someone being physically threatened. The least frequently reported events were rape, pregnancy/abortion, absence of a parent, sexual abuse, and other traumas. The prevalence of indirect exposure to traumatic events was generally higher than that of direct exposure. The most noticeable exceptions were the death of someone close, threats of being beaten and near-drowning experiences, where direct exposure was higher than indirect exposure. Girls reported significantly more often than boys that they had been indirectly exposed to suicide attempts, the death of someone close, sexual abuse, severe childhood neglect, and humiliation or persecution (all $\chi 2$'s ≥ 4.1; all df's = 1; all p's $\leq .05$).

The estimated PTSD prevalence in the total sample was 6.1% (boys 2.4%; girls 9.1%). Additionally, 8.5% of the boys and 15.2% of the girls met the criteria for sub-clinical PTSD (12.2% total). A total of 24.3% of the adolescents met the criteria for the re-experiencing symptom cluster (boys 20.7% and girls 27.3%), 12.2% met the criteria for the avoidance symptom cluster (boys 6.1%; girls 17.2%), and the criteria for the increased arousal symptom cluster were met by 14.4% of the adolescents (boys 15.9%; girls 38.4%).

Logistic regression analyses

In order to examine the impact of the different types of events on PTSD, logistic regression analyses were carried out on the total sample as well as for the two genders separately. Analyses were carried out first with direct exposure and then with indirect exposure as independent variables. The model for direct exposure

Table 2: Logistic Regression Analysis for PTSD Status with Direct Exposure to Potentially Traumatic Events as Independent Variables

Trauma	*B*	S.E.	Wald	*df*	*p*	Odds Ratio	95.0% C.I. for Odds Ratio	
							Lower	Upper
Traffic accident	-.56	1.02	.30	1	.59	.57	.08	4.22
Other serious accidents	1.26	1.35	.86	1	.35	3.52	.25	49.82
Physical assault*	.81	1.47	.30	1	.58[a]	2.24	.13	39.97
Rape*	28.52	15151.70	.00	1	1.00 [a]	2E + 012	.00	-
Witnessed other people being injured or killed*	1.16	1.56	.55	1	.46	3.19	.15	67.83
Came close to being injured or killed	1.56	1.32	1.41	1	.24 [a]	4.77	.36	63.27
Threatened with violence	-.03	.90	.00	1	.97	.97	.17	5.65
Near-drowning	.31	.91	.12	1	.73	1.36	.23	8.10
Attempted suicide	4.02	1.28	9.80	1	.002[a]	55.72	4.50	690.77
Robbery/theft	.49	1.04	.22	1	.64	1.63	.21	12.46
Serious illness	.92	1.52	.36	1	.55	2.50	.13	49.04
Death of someone close	1.30	.92	2.00	1	.16	3.66	.61	22.17
Divorce	.25	1.28	.04	1	.85	1.28	.11	15.65
Sexual abuse*	-28.72	15151.70	.00	1	1.00	.00	.00	-
Physical abuse*	2.53	1.36	3.45	1	.06	12.52	.87	180.31
Severe childhood neglect*	-14.39	10715.00	.00	1	1.00	.00	.00	-
Humiliation or persecution	-1.06	1.35	.62	1	.43	.35	.03	4.84
Absence of a parent*	-18.90	19681.62	.00	1	1.00	.00	.00	-
Other traumas*	-2.56	2.48	1.07	1	.30	.08	.00	10.00
Mental disease in the family	-17.64	13776.92	.00	1	1.00	.00	.00	-

* = based on small numbers: less than 5% of the total sample was exposed
[a] = Significant in cross tabulation analysis ($p \leq .05$)

was significant across the whole sample ($\chi 2$ (20, N = 181) = 35.84, $p \leq .05$), indicating that it was possible to distinguish between respondents with and without PTSD following exposure to the events included in the model. The model explained between 18.0% (Cox and Snell R^2) and 44.5% (Nagelkerke R^2) of the

variance in PTSD status and correctly classified 94.5% of cases. Only three of the events were associated with a marked increase in the risk of developing PTSD. These were rape (OR = 2.4 x 1012), suicide attempts (OR = 55.72), and childhood physical abuse (OR = 12.52). Serious accidents other than traffic accidents, physical assault, coming close to being injured or killed, witnessing others being killed or injured, serious illness, and death of someone close were all associated with a moderate increase in PTSD risk (odds ratios between 2.2 and 4.8). However, suicide was the only event to reach significance in the model, indicating that it had not been ruled out that increases in PTSD risk for the other events were due to chance. The gender specific models (not shown) did not differ much from the total sample, except that none of the associations were significant. The model was not significant for boys, but for girls it explained between 36.6% and 76.1% of the variance and correctly classified 96% of cases according to PTSD status ($\chi 2$ (20, N = 99) = 45.06; $p \leq .001$).

Regarding indirect exposure, the model shown in Table 2 was significant for the whole sample ($\chi 2$ (21, N = 181) = 32.6; p = .05) and explained between 16.5% and 40.8% of the variance. The model correctly classified 94.5% of the cases but none of the events were significantly related to PTSD status. The male-only model was not significant, but for girls, the model was significant ($\chi 2$ (21, N = 99) = 44.52; $p \leq .005$), explaining between 36.2% and 75.4% of the variance in PTSD status and correctly classifying 97.0% of cases (models not shown).

The low prevalence of many of the potentially traumatizing events limits the reliability of the logistic regression analysis. Therefore, in order to further examine which events were significantly related to an increased risk of developing PTSD cross tabulations were carried out comparing exposure vs. non-exposure to each of the events to probable PTSD vs. non-PTSD status. Chi-square ($\chi 2$) tests were used to establish significance. A significant relationship between direct exposure and PTSD status was found for physical assault, rape, coming close to being killed or injured (all $\chi 2$'s ≥ 11.5; all df's = 1; all p's $\leq .05$), and attempted suicide ($\chi 2$ = 35.3; df = 1; $p \leq .0005$). Indirect exposure was significantly related to PTSD status for threats of violence, sexual abuse, severe childhood neglect (all $\chi 2$'s ≥ 4.5; all df's = 1; all p's $\leq .05$), and suicide attempts ($\chi 2 = 12.7$; df = 1; $p \leq .005$).

Analysis of variance

In order to assess which demographic factors were related to the severity of PTSD, an analysis of variance between HTQ total and subscale scores as dependent variables and demographics and number of events as independent variables was carried out. Results are shown in Table 3. Female gender was positively associated with PTSD, arousal symptoms and avoidance symptoms, (all F's ≥ 8.29,

Table 3: Analysis of Variance between Trauma and Life Events and PTSD Severity. One-way ANOVA. F-ratio values

	PTSD	df	Re-experiencing	df	Avoidance	df	Arousal	df
Gender	8.29[3)]	1	3.31	1	12.06[4)]	1	17.48[5)]	1
Age	1.53	4	2.40	4	1.53	4	2.95[1)]	4
Education father	0.88	4	1.43	4	0.60	4	0.8	4
Education mother	0.97	4	0.52	4	0.21	4	2.18	4
Not living with two parents	4.12[2)]	3	5.86[4)]	3	3.49[1)]	3	2.42	3
Direct exposure	7.75[5)]	9	12.3[5)]	9	5.35[5)]	9	6.72[5)]	9
Indirect exposure	2.04[1)]	12	0.88	12	1.92[1)]	12	2.21[1)]	12
Recent event (< 1 year)	8.11[5)]	7	7.04[5)]	7	4.53[5)]	7	8.9[5)]	7

$p \leq$ [1)].05 [2)].01 [3)].005 [4)].001 [5)].0005

all p's ≤ .005) but not with re-experiencing. Age was negatively associated with arousal (F = 2.95, p ≤ .05) but not with either re-experiencing, avoidance or full PTSD diagnosis. Parents' level of education was not related to PTSD symptoms. Living with a single parent was positively associated with PTSD, as well as with re-experiencing and avoidance symptoms (all F's ≥ 3.49, all p's ≤ .05). The number of directly experienced events and the presence of recent events were positively associated with PTSD and all subscales (all F's ≥ 4.53, all p's ≤ .0005). Indirect exposure to traumatic events was positively associated with PTSD and arousal only (all F's ≥ 1.92, all p's ≤ .05).

Discussion

Cross-cultural comparison

Nearly 94% of the adolescents reported some exposure (direct or indirect) to the events studied (boys 91.6%; girls 96%) which suggest a high degree of traumatic exposure. The percentage of youths exposed to potentially traumatizing events was thus somewhat higher than that found in the three comparison studies (74%-94% for females and 78%-89% for males). However, the average number of events each adolescent was exposed to was found to be somewhat lower among the Lithuanian youth sample compared to the Danish (Elklit, 2002), Faroese (Petersen et al., in press), and Icelandic (Bödvarsdóttir & Elklit, 2007) youth samples, with an average of 1.9 direct exposures (vs. 2.5, 2.9, and 2.6, respectively) and 2.4 indirect exposures (vs. 3.2, 4.8, and 3.5, respectively). When considering

the four year age difference, these results appear to be in accordance with findings from the Cizauskaite (2002) study which reported an average exposure to 2.8 direct and 3.8 indirect events in 19 year olds.

Compared to the Danish, Faroese, and Icelandic studies (Elklit, 2002; Petersen et al., in press; Bödvarsdóttir & Elklit, 2007), the Lithuanian youth sample in this study were significantly less exposed to accidents other than traffic accidents (5.5% vs. 11.5%, 11.9%, and 11.1%), death of someone close (24.2% vs. 51.8%, 53.3%, and 42.7%), and humiliation and persecution (9.8% vs. 22.6%, 30.5%, and 23.3%) respectively. Furthermore, unlike in Denmark, the Faroe Islands, and Iceland there were no incidents of pregnancies and abortions. However, there was an increased number of near-drowning experiences among girls in Lithuania (27.3%) compared to the three other countries (15.1%, 19.0%, and 15.5%, respectively).

As in the three other countries, the highest degree of exposure was reported for death of someone close, threats of violence, serious accidents (traffic accidents and other accidents) and near drowning experiences (the latter was not found in the Danish study). However, unlike in the Danish, Faroese, and Icelandic studies, humiliation/persecution was not among the most frequently reported events. The least frequently reported events were rape, witnessing someone else being killed or injured, physical abuse, childhood neglect, and mental disease in the family, all of which were also among the least reported events in the other three studies, except for family mental illness, which was not assessed in the other studies. However, unlike in the Danish, the Faroese, and the Icelandic study, although sexual abuse was relatively rarely reported (4.4%) it was as frequent as physical assault, parental absence, and the other trauma types category.

In line with the lower exposure to potentially traumatic events compared to the other three studies (Bödvarsdóttir & Elklit, 2007; Elklit, 2002; Petersen et al., in press), meeting full criteria for a PTSD diagnosis was relatively rare. The estimated lifetime prevalence for the total sample was 6.1% compared to 9%, 20%; and 16% in Denmark, the Faroe Islands, and Iceland, respectively. An additional 12.2% of the adolescents met the criteria for sub-clinical PTSD which was comparable to that found in the other three studies (14%, 14%, and 16%, respectively). Female gender, living with one parent, direct exposure, indirect exposure, and recent exposure were all related to increased PTSD symptomatology. These findings were in line with results from the Danish study (Elklit, 2002).

Gender differences

In accordance with the NCS (Kessler et al. 1995), the PTSD prevalence in girls was nearly four times higher than in boys (9.1% versus 2.4%) and girls were nearly twice

as likely as boys to meet the criteria for sub-clinical PTSD (15.2% versus 8.5%). Female gender was significantly related to PTSD, avoidance, and arousal symptoms. Significantly more girls had been exposed to sexual abuse than boys, whereas boys had been exposed to threats of physical assault more often. There was also a trend towards girls more often attempting suicide. The other three studies did not show significant gender differences regarding sexual abuse, but the gender differences regarding attempted suicide and threats of violence were also found in the Danish, Icelandic, and Faroese youth samples. It has been suggested (e.g. Elklit, 2002; Gianocia et al., 1995) that boys may be victimized in relation to out-of-home activities more often than girls, whereas girls are more often exposed to intra-familial victimization (e.g. sexual abuse/incest), and self-inflicted events (e.g. suicide attempts). Our results are thus in accordance with this hypothesis. Furthermore, the tendency for girls to report more indirect exposure events than boys may be taken as further support for this contention, since it may indicate that girls, more often than boys, witness or are included in family-related problems, such as parental disagreements, domestic violence etc. This gender difference is consistent with Lasiene's (2001) study that found more direct exposure among boys and more indirect exposure to traumatic events among girls. Boys may also actively participate in more high-risk behaviours than girls. Mancini & Huebner (2004) found in their study of 2701 youths (aged 13-18) that male gender was a significant predictor of more risk behaviours, and thus the risk for direct exposure is higher for boys. In contrast, girls appear to be more exposed to events over which they have no control such as rape, sexual abuse, incest etc. The lack of significant gender differences for traffic accidents, other serious accidents, and physical assault is probably due to the age of the sample.

The fact that the logistic regression models for direct as well as indirect exposure were significant for girls but not for boys implies that exposure in itself may be highly related to PTSD in girls but not in boys. This suggests that for boys, risk factors other than exposure may be more important in predicting the risk of PTSD. However, this finding is not in accordance with findings from the Faroese youth sample, where both directly and indirectly experienced events were shown to be significantly related to PTSD status in both males and females. Thus, the failure of the male direct and indirect models to reach significance may be related to the low degree of exposure to the different events.

Relationship between exposure to different trauma types and PTSD

The dose-response hypothesis was only partially supported by this study. While only attempted suicide was significant in the logistic regression analysis, physical assault, rape, and coming close to being killed or injured were all significantly

related to PTSD status when the less prevalence-sensitive cross tabulation analyses were used. The finding that only exposure to some of the more severe but less frequent events was associated with PTSD diagnosis is in line with the dose-response hypothesis. However, it should be noted that the causality in the relationship between attempted suicide and PTSD status is unclear. Although coming close to ending one's own life may well count as a traumatic event leading to symptoms of PTSD, it should be kept in mind that experiencing a traumatic event (Vermeiren, Ruchkin, Leckman, Deboutte, & Schwab-Stone, 2002) and suffering from PTSD (Libschitz, Winegar, Hartnick, Foote, & Southwick, 1999) can also lead to suicidal ideation and suicide attempt. The list of potentially traumatizing events also included events that are not considered traumatic. These included, parental divorce, absence of a parent, and humiliation or persecution by others. We chose to include these experiences on the list because it was hypothesised that they might be related to other types of trauma (e.g. domestic violence) and because they may be a source of distress for children and adolescents. We did not replicate the Joseph et al. (2000) findings that parental separation/divorce was strongly associated with the symptoms of posttraumatic stress nor the finding from the Icelandic study that humiliation/persecution and absence of a parent was predictive of PTSD status (Bödvarsdottir & Elklit, 2007). In fact, neither divorce nor absence of a parent was significantly associated with PTSD status in either of the analyses and nor was humiliation/persecution by others or mental disease in the family. Although it does not rule out that these events remain important in studies of traumatization in youth, these results are in accordance with the dose-response hypothesis that less "severe" events show a weaker relationship with PTSD. Last but not least, the fact that the direct event model for the whole sample was equivalent to the indirect event model in classifying cases according to PTSD status is not in accordance with the dose-response hypothesis. For girls the indirect event model was equivalent to the direct event model in relation to both the amount of variance explained and the percentage of correctly classified cases but for boys neither the direct nor the indirect model was significant. This suggests that gender may be a mediating factor in the dose-response relationship.

Limitations

The present study has a number of limitations. First, it relies on students' self reports which may produce some bias. Thus, reluctance to be honest and factual as well as the potential avoidance of disturbing thoughts and memories may have led to an under-reporting of exposure, especially with regards to some of the more severe events. On the other hand, childhood trauma may be better recalled in adolescents than at a later time, increasing the credibility of self reports in chil-

dren and adolescents compared to adults. Second, the event questionnaire has not been validated and was constructed to reflect a Danish national and social context (Elklit, 2002). However, as the same questionnaire has been used in the Icelandic and the Faroese studies, which have produced findings similar to those found in the Danish study, we do not expect this to be a significant limitation. Third, because of the design of the study, there was no way of reporting whether a certain event had occurred more than once, and thus the distinction between the effects of single event traumas and repetitive traumas can not be made. Fourth, the risk data for events that have low prevalence should be interpreted with caution. The study's strengths include the use of a national probability sample with the sample allocation being proportionate to the Lithuanian population distribution and the fact that it provides information about a large number of potentially traumatizing events and their effects in a way that eases cross-cultural comparison.

Future research

Only very few studies have examined traumatic exposure and PTSD prevalence in national representative youth samples. Even fewer studies have also included less traumatic but more prevalent stressful events, which may affect levels of PTSD in adolescents. More studies are needed to shed further light on these issues and to give more information on cross-cultural variation in exposure to traumatic events and their psychosocial consequences in youth. Furthermore, results from this study suggest that the widely acknowledged dose-response model may possibly be mediated by gender differences. More research is needed with a focus on gender as a possible mediator of the relationship between trauma exposure and traumatization in children, adolescents, and adults.

REFERENCES

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders (4th ed.)*. Washington DC: Author.

Balvig, F. (1999) *Risikoungdom – Ungdomsundersøgelse 1999*. [Youth at Risk – Youth Study 1999]. Copenhagen: Det Kriminalpræventive Råd.

Bowman, M. L. (1999). Individual Differences in Posttraumatic Distress: Problems With the DSM-IV Model. *Canadian Journal of Psychiatry, 44*, 21-33.

Briggs, R. S, Cheek, J. M. (1986). The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality, 54,* 106-128.

Bödvarsdottír, I. & Elklit, A. (2007). Victimization and PTSD-like states in an Icelandic youth probability sample. *BMC Psychiatry 7*:51.

Cizauskaite, J. (2002). Mokyklą pakeitusių paauglių streso įveikos ypatumai. [Coping characteristics of adolescents who changed school]. Bakalauro darbas, University of Vilnius.

Elklit, A. (2002). Victimization and PTSD in a Danish national youth probability sample. *Journal of the American Academy of Child and Adolescent Psychiatry*, *41,* 174-181.

Giaconia, R. M., Reinherz, H. Z., Silverman, A. B., Pakiz, B., Frost, A. K., & Cohen, E. (1995). Traumas and Posttraumatic Stress Disorder in a Community Population of Older Adolescents. *Journal of the Academy of Child and Adolescent Psychiatry, 34*, 1369-1380.

Joseph, S., Mynard, H., & Mayall, M. (2000). Life-events and post-traumatic stress in a sample of English adolescents. *Journal of Community & Applied Social Psychology, 10*, 475-482.

Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry, 52*, 1048-1060.

Lasiene, S. (2001). 17-18 metu paaugliu psichologinio traumatizmo ypatumai. [Characteristics psychological traumatization in 17-18 years old adolescents]. Magistro darbas, University of Vilnius.

Layne. C.M., Warren, J. S., Watson, P. J., & Shalev, A. Y. (2007). Risk, Vulnerability, Resistance, Resilience: Towards an Integrative Conceptualisation of Posttraumatic Adaptation. In Friedman, M. J., Keane, T. M., & Resick, P. A. (Eds.): Handbook of PTSD. (pp. 497-520). New York: Guilford.

Libschitz, D. S., Winegar, R. K., Hartnick, E., Foote, B., & Southwick, S. M. (1999). Posttraumatic stress disorder in hospitalized adolescents: Psychiatric comorbidity and clinical correlates. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*, 385-392.

Mancini, A. J. & Huebner, J. A. (2004). Adolescent Risk Behavior Patterns: Effects of Structured Time-Use, Interpersonal Connections, Self-System Characteristics, and Socio-Demographic Influences. *Child & Adolescent Social Work Journal, 21*, 647-668.

Mollica, R. F., Caspi-Yavin, Y., Bollini, P., Truong, T., Tor, S., & Lavelle, J. (1992). The Harvard Trauma Questionnaire. Validating a Cross-cultural Instrument for Measuring Torture, Trauma, and Posttraumatic Stress Disorder in Indochinese Refugees. *Journal of Nervous Mental Disease, 180,* 111-116.

Norris, F. H. & Slone, L. B. (2007). The Epidemiology of Trauma and PTSD. In Friedman, M. J., Keane, T. M., & Resick, P. A. (Eds.): Handbook of PTSD. (pp.78-98). New York: Guilford.

Petersen T., Elklit A., & Olesen J. G. (in press). Victimization and PTSD in a Faroese youth total population sample. *Scandinavian Journal of Psychology*.

Vermeiren, R., Ruchkin, V., Leckman, P. E., Deboutte, D., & Schwab-Stone, M. (2002). Exposure to violence and suicide risk in adolescents: A community study. *Journal of Abnormal Child Psychology, 30*, 529-537.

