

Anxiety and Depressiveness in Students With Childhood War-Related Experiences

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The aim of this study was to determine differences in intensity of anxiety and depressiveness, as well as the frequency of the clinically relevant form of these emotions, in students exposed to warfare during childhood. The study included 324 students from Serbia and Kosovo, 18–25 years of age. At the time of the clashes (in 1999), their ages ranged from 6 to 13 years. We used a general questionnaire, the Beck Depression Inventory I (BDI-I), and the Beck Anxiety Inventory (BAI). Approximately two thirds of the examinees had clinically significant anxiety, while one third had clinically significant depressiveness. Females had a higher intensity of anxiety (16.22 vs. 11.6; $p < .001$) and depressiveness

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(9.57 vs. 7.05; $p = .004$) than males. Examinees who reported war-related experiences (WREs) from two or three types of events had more intense anxiety ($p = .013$) and depressiveness ($p = .013$) than a group with one or no WREs. There was an association between WREs during childhood and anxiety as well as depression in adolescence that was more prominent in females.

KEYWORDS anxiety, children, depressiveness, students, war

There are conflict-affected areas in the world that inevitably involve clashes of varying degrees. These types of conflicts include a large number of traumatic events. In the Balkans, this description could be applied to an international conflict in Kosovo and Metohija that involved NATO bombing of this area and the rest of Serbia. It took place from 24 March through 10 June 1999. This type of conflict leads to very high levels of stress, which can negatively affect both the mental and physical health of those exposed to it.

Great importance is given to the effects of traumatic events on children, who are in the most intense period of emotional, social, and cognitive development. Previous research has confirmed that various types of trauma, related to both wartime and peacetime, can negatively affect psychological development and promote the occurrence of mental disorders in youth and adults (Daruy-Filho, Brietzke, Lafer, & Grassi-Oliveira, 2011; Harkness, Lumley, & Truss, 2008; Hasanović, Sinanović, Selimbasić, Pajević, & Avdibegović, 2006; Krstić, 2009; Lis-Turlejska, Luszczynska, Plichta, & Benight, 2008; Panter-Brick, Eggerman, Gonzalez, & Safdar, 2009; Pejović-Milovančević et al., 2002; Pesonen et al., 2007; Samardžić, Nikolić, Grbeša, Simonović, & Milenković, 2010). In addition, it has been confirmed that trauma can change the functioning of certain parts of the central nervous system, creating vulnerability to mental health disorders. For instance, heightened reactivity of the amygdala to aversive stimuli during major depression is associated not only with the depression itself, but also with physical trauma in childhood. This characteristic is regarded as a measure of vulnerability to the occurrence of major depression rather than a feature of this condition (Grant, Cannistraci, Hollon, Gore, & Shelton, 2011). At the same time, childhood trauma in the form of abuse can lead to increased sensitivity to anxiety, which represents an intermediate phenotype for anxiety disorders (Klauke et al., 2011).

On the other hand, not only direct trauma can have negative effects on the mental health of children. A traumatic event may also indirectly contribute to changes in the psychological state of children. It has been found that exposure of a close and significant person (such as parents) to a traumatic event has great significance for the mental health of children. It has been shown that events in which one or both parents have died (Hasanović et al., 2006; Lis-Turlejska et al., 2008; Morgos, Worden, & Gupta,

2007–2008; Papageorgiou et al., 2000), suffered torture in a concentration camp (Yehuda, Halligan, & Bierer, 2001), or suffered from posttraumatic stress disorder (Brand, Schechter, Hammen, Brocque, & Brennan, 2011; Yehuda et al., 2001) are important in the development of depression and anxiety in children (Yehuda et al., 2001).

Results of previous studies in the field of post-conflict mental health suggest that certain psychological consequences can persist for years after traumatic events. Of the few studies of this kind, most have focused on posttraumatic stress disorder, and only a small number have investigated the existence of depression and anxiety (Fiedler et al., 2006; Hasanović et al., 2006; Lis-Turlejska et al., 2008; Llabre & Hadi, 2009; Nelson et al., 2004; Pesonen et al., 2007). For this reason, we decided to investigate the presence of anxiety and depression in young people who were exposed to war-related trauma during childhood. Special emphasis is given to clinically significant forms of these emotions.

METHOD

Participants and Procedure

The research included 360 students from the faculties of law and philosophy at Kragujevac and Kosovska Mitrovica universities; among these, 180 (50%) participants were from the territory of central Serbia, and 180 (50%) were from the territory of Kosovo. The ages of the participants ranged from 18 to 25 years. At the time of the clashes (in 1999), their ages ranged from 6 to 13 years, the period of childhood and early adolescence. The genders of the participants represented the actual gender distribution within the student population.

The research was undertaken at the end of May and the beginning of June 2011. We obtained a list of students (at all levels) from the records of the Office of Student Affairs and then, using random sampling, chose 90 students from each faculty (equal numbers of students from all study years). First, we contacted students by phone and obtained their consent to participate in the study. After that, we organized a gathering at their respective faculties in groups of 30 students, where they completed the questionnaires. In the lecture halls, the researcher handed out the questionnaires that the participants were asked to fill in during the next 2 hours. In order to remain anonymous, the participants returned the questionnaires in sealed envelopes. After an additional check of the questionnaires, it was found that 36 questionnaires were not completely filled out (either in whole or in part) and had to be excluded from the final processing. Questionnaires were correctly filled out by 324 participants. In the final sample, there were 140 male examinees (43.2%) and 184 females (56.8%). During the period from 1995 to 2000, when international conflicts and the NATO bombing occurred, all of the examinees had lived in the territories of Serbia or Kosovo and Metohija.

Assessment Instruments

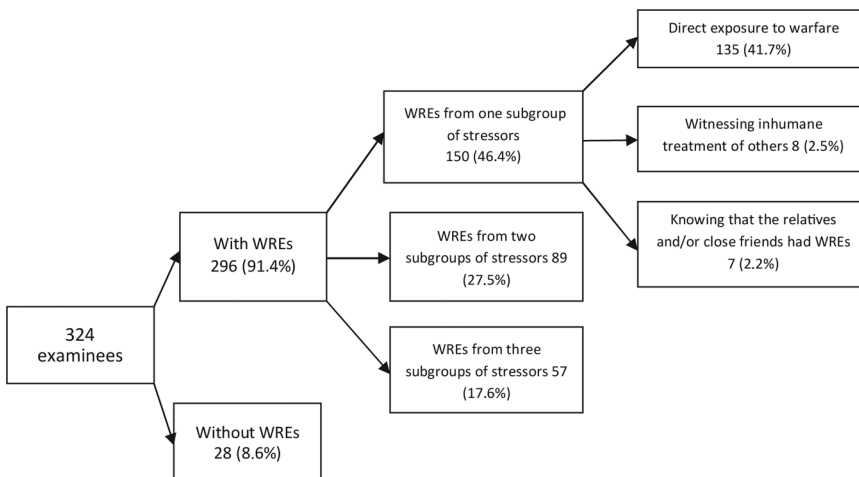
Several questionnaires were used to obtain the necessary data. A *general questionnaire* collected sociodemographic data and data on exposure to war-related stressful experiences.

The *Beck Depression Inventory I* (BDI-I; Beck, 1961; Richter, Werner, Heerlien, Kraus, & Sauer, 1998) is a self-report questionnaire used to assess the intensity of depression. It is composed of 21 items that are answered on a 4-point Likert scale ranging from 0 to 3 (with scores ranging from 0–63); higher scores indicate greater severity of depression. The cut-off score for the presence of clinically significant depression is 10. The instrument's reliability in this sample, based on Cronbach's alpha coefficient, was satisfactory (.79). The scale used here was in Serbian.

The *Beck Anxiety Inventory* (BAI; Beck, Epstein, Brown, & Steer, 1988; Lam, Michalk, & Swinson, 2005) is a multiple-choice self-report inventory used for measuring the severity of anxiety. It contains 21 questions scored on a Likert scale ranging from 0 (not at all) to 3 (severe). The cut-off score for the presence of clinically significant anxiety is 8. The scale used here was in Serbian, and the instrument proved to be highly reliable in this sample ($\alpha = .93$).

Data Analysis

The participants were divided into two groups: (a) a group that reported having war-related experiences (WREs) during childhood or early adolescence ($n = 296$) and (b) a group that did not report war-related stressful events ($n = 28$) (Figure 1).



*WRE = War related experience

FIGURE 1 Exposure to WREs during childhood.

We further divided all war-related experiences into three subgroups facing different kinds of stressors: one with direct exposure to stressful events and two with indirect exposure, as follows (Figure 1):

- *Direct exposure to warfare*: events in which the subject was exposed to gunfire, crossfire, artillery attacks, bomb explosions, maltreatment and torture, or arrest. WREs from this group of stressors were reported by 278 students, while 135 examinees stated that these were the only types of WREs they had experienced.
- *Witnessing inhumane treatment of others*: events in which the examinees witnessed abuse, torture, wounding, murder, or massacre of other people. The total number of examinees who experienced these WREs was 217, of whom only eight did not report associated WREs.
- *Knowing that relatives and/or close friends had WREs*: having wounded, imprisoned, tortured, missing, or murdered family members or close friends. Of the 108 examinees who reported having had a close relative or individual with WREs, seven had only this type of stressor.

The examined groups were also analyzed with regard to average intensity of anxiety and depression, as well as the incidence of clinically significant levels of anxiety ($BAI \geq 8$) and depression ($BDI \geq 10$).

Statistically significant differences among the groups were determined by Student's *t* tests, ANOVAs, chi-square tests, and correlation analyses. Post hoc analysis was performed using Tukey's honestly significant difference (HSD) test. We assigned the level of statistical significance as $p < .05$. Statistical processing was performed using SPSS 17.

RESULTS

General Data

STRUCTURE OF THE SAMPLE

The examined group consisted of 324 students of law and philosophy of both genders: 140 (43.2%) young men and 184 (56.8%) young women. One hundred sixty-two (50%) examinees came from the territory of the Republic of Serbia, and the same number of examinees came from the territory of Kosovo. The ages of the examinees ranged from 18 to 25 years.

EXPOSURE TO WAR-RELATED EXPERIENCES IN CHILDHOOD

A significant number of examinees (91.4%) experienced war-related stressful events during childhood and adolescence. The largest number of examinees (46.4%) reported having had childhood WREs from just one category;

however, there were also examinees with WREs from two (27.5%) or all three groups of stressors (17.6%) (Figure 1).

In the group of examinees who reported having stressful experiences from only one category, the majority were directly exposed (135 examinees, or 41.7% of the total sample), while the two other groups consisted of a small number of examinees. There were 28 examinees (8.6%) without war-related experiences (Figure 1).

Approximately two thirds of the examinees had clinically significant anxiety (219 examinees, or 67.7%). Slightly more than one third had clinically significant depressiveness (112 examinees, or 34.6%).

GENDER DIFFERENCES

The average intensities of anxiety and depressiveness differed between males and females. Females had a significantly higher average intensity of anxiety (16.22 vs. 11.6; $p < .001$) and depressiveness (9.57 vs. 7.05; $p = .004$) than males.

Regarding the whole sample, clinically significant anxiety was found in 141 (76.63%) females and in 78 (55.71%) males ($p < .001$). Clinically significant depressiveness was not as frequent as anxiety. It was found in 71 (38.6%) females and in 41 (29.3%) males ($p = .097$).

Differences in Anxiety and Depressiveness Among the Examined Groups

After data processing, significant differences in the average intensities of anxiety and depressiveness were not found among the groups with and without WREs. However, clinically significant depressiveness was more frequent in the group with WREs (36.1% vs. 17.9%; $p = .037$) (Table 1).

The cumulative effect of stressful experiences proved to be significant. The examinees who reported WREs from two or three types of events had more intense average anxiety ($p = .013$) and depressiveness ($p = .013$) than those who had only one WRE or no WREs. The examinees with WREs from all three groups had the highest average levels of anxiety and depressiveness, as well as the most frequent clinically significant forms. Of those with WREs from all three stressor categories, 87.7% had clinically significant anxiety ($p = .002$), while 49.1% had clinically significant depressiveness ($p = .018$) (Table 1).

Gender and Differences in Anxiety and Depressiveness

A comparison of the groups with and without WREs did not reveal differences in the average intensity of anxiety and depressiveness with respect to gender ($p > .05$) (Tables 2 and 3).

TABLE 1 Mean Values and Frequency of Clinically Significant Anxiety and Depressiveness According to WREs.

	Anxiety				Depressiveness			
	Mean intensity							
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>p</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>p</i>
War-related experience								
With WREs	296	14.1	11.71	<i>ns</i>	296	8.72	7.92	<i>ns</i>
Without WREs	28	13.32	12.11		28	6.00	5.94	
Cumulative effect of WREs								
Without WREs	28	13.32	12.11	.013	28	6.00	5.94	.013
One type of WRE	150	12.18	10.99		150	7.73	7.67	
Two types of WREs	89	14.87	11.83		89	8.87	8.35	
Three types of WREs	57	17.98	12.47		57	11.07	7.49	
Type of WRE								
Direct exposure	135	12.09	11.22	<i>ns</i>	135	7.96	7.90	<i>ns</i>
Witness of inhumane treatment	8	10.13	5.22		8	4.88	4.94	
Trauma of close person	7	16.29	11.34		7	6.71	4.89	
	Clinically significant intensity							
	<i>n</i>	%		<i>p</i>	<i>n</i>	%		<i>p</i>
War-related experience								
With WREs	202	68.20		<i>ns</i>	107	36.10		.037
Without WREs	17	60.70			5	17.90		
Cumulative effect of WREs								
Without WREs	17	60.70		.002	5	17.90		.018
One type of WRE	91	60.70			46	30.70		
Two types of WREs	61	68.50			33	37.10		
Three types of WREs	50	87.70			28	49.10		
Type of WRE								
Direct exposure	79	58.50		NA	43	31.90		NA
Witness of inhumane treatment	6	75.00			2	25.00		
Trauma of close person	6	85.70			1	14.30		

Note. NA = not applicable because of small number of examinees in groups.

However, when the cumulative effect was assessed, female subjects had significantly higher average anxiety and depressiveness scores, with an increase in groups with WREs. The most intense anxiety was in the group with all three types of WREs (21.94). Post hoc analysis showed that this intensity was significantly higher than anxiety in the group without WREs (12.44) ($p = .042$), as well as in the group with only one WRE (13.89) ($p = .008$). A similar result was found for depressiveness. The highest average value was obtained in the group that had all three types of WREs (13.13). This was significantly higher than depressiveness in female students without WREs ($p = .044$) and with WREs from only one group ($p = .021$) (Tables 2 and 3).

TABLE 2 Mean Values and Frequency of Clinically Significant Anxiety in Relation to Gender.

	Males				Females			
	Mean intensity							
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>p value</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>p</i>
War-related experience								
With WREs	130	10.88	9.81	<i>ns</i>	166	16.63	12.46	<i>ns</i>
Without WREs	10	14.9	11.74		18	12.44	12.56	
Cumulative effect of WREs								
Without WREs	10	14.90	11.74	<i>ns</i>	18	12.44	12.56	.003
One type of WRE	55	9.22	9.61		95	13.89	11.41	
Two types of WREs	50	11.68	9.20		39	18.95	13.58	
Three types of WREs	25	12.92	11.80		32	21.94	12.14	
Type of WRE								
Direct exposure	50	9.40	9.97	<i>ns</i>	85	13.67	11.67	.009
Witness of inhumane treatment	3	8.33	6.50		5	11.20	4.76	
Trauma of close person	2	6.00	2.83		5	20.40	10.81	
	Clinically significant intensity							
	<i>n</i>	%	<i>p</i>	<i>n</i>	%	<i>p</i>		
War-related experience								
With WREs	71	54.60	<i>ns</i>	131	78.90	.026		
Without WREs	7	70.00		10	55.60			
Cumulative effect of WREs								
Without WREs	7	70.00	.019	10	55.60	.002		
One type of WRE	22	40.00		69	72.60			
Two types of WREs	31	62.00		30	76.90			
Three types of WREs	18	72.00		32	100.00			
Type of WRE								
Direct exposure	31	62.00	NA	19	38.00	NA		
Witness of inhumane treatment	1	33.30		2	66.70			
Trauma of close person	1	50.00		1	50.00			

Note. NA = not applicable because of small number of examinees in groups.

With respect to the incidence of clinically significant anxiety, differences were found only between examinees with and without WREs (Table 2). The examinees with WREs had significantly higher frequencies of clinical levels of anxiety (78.9%) than those without WREs (55.6%) ($p = .026$) (Table 2). With respect to the frequency of clinically significant depressiveness, a statistically significant difference was not found (Table 3).

The cumulative effect observed in both genders proved to be significantly associated with the existence of clinically significant anxiety (for males, $p = .019$; for females, $p = .002$) (Table 2). In the case of clinically significant depressiveness, the cumulative effect was significant only in female subjects ($p = .034$) (Table 3).

TABLE 3 Mean Values and Frequency of Clinically Significant Depressiveness in Relation to Gender.

	Males				Females			
	Mean intensity							
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>p value</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>p</i>
War-related experience								
With WREs	130	7.25	7.03	<i>ns</i>	166	9.87	8.39	<i>ns</i>
Without WREs	10	4.5	4.7		18	6.83	6.51	
Cumulative effect of WREs								
Without WREs	10	4.50	4.70	<i>ns</i>	18	6.83	6.51	.01
One type of WRE	55	6.71	6.35		95	8.33	8.31	
Two types of WREs	50	7.24	7.84		39	10.95	8.61	
Three types of WREs	25	8.44	6.86		32	13.13	7.42	
Type of WRE								
Direct exposure	50	6.50	6.49	<i>ns</i>	85	8.80	8.55	.014
Witness of inhumane treatment	3	7.33	4.73		5	3.40	4.93	
Trauma of close person	2	10.50	6.36		5	5.20	3.96	
	Clinically significant intensity							
	<i>n</i>	%		<i>p</i>	<i>n</i>	%		<i>p</i>
War-related experience								
With WREs	40	30.80		<i>ns</i>	67	40.40		<i>ns</i>
Without WREs	1	10.00			4	22.20		
Cumulative effect of WREs								
Without WREs	1	10.00		<i>ns</i>	4	22.20		.034
One type of WRE	15	27.30			31	32.60		
Two types of WREs	15	30.00			18	46.20		
Three types of WREs	10	40.00			18	56.31		
Type of WRE								
Direct exposure	37	74.00		NA	13	26.00		NA
Witness of inhumane treatment	2	66.70			1	33.30		
Trauma of close person	1	50.00			1	50.00		

Note. NA = not applicable because of small number of examinees in groups.

DISCUSSION

Many studies have focused on psychosocial consequences among children exposed to war-related events immediately after the conflicts. However, only a small number of studies have considered long-term effects of war-related events. In our study, we explored possible long-term emotional consequences of war-related experiences 15 years after the conflict.

The research undertaken in the conflict-affected countries in our immediate region has demonstrated that a large number of persons, including children, have been exposed to WREs (Fernandez et al., 2004; Goldstein,

Wampler, & Wise, 1997; Smith, Perrin, Yule, Hacam, & Stuvland, 2002). Similar results were obtained during our research. A significant percentage of the examined group of students had at least one war-related experience during childhood (91.4%).

In a study performed immediately after the war in Croatia, the results showed that children who had been exposed to traumatic events had higher levels of depression than children of the same age assessed before the war (Zivčić, 1993).

In the case of children from Lebanon, a higher number of traumas was followed by a higher number of complaints. The authors found that various types of trauma were associated with different forms of pathological manifestation. For instance, higher levels of depression were found in children separated from their parents (Macksoud & Aber, 1996). Similarly, children from Bosnia whose close relatives were exposed to trauma, torture, or death showed more symptoms than children exposed to other WREs (Goldstein et al., 1997).

One study analyzing delayed effects was undertaken in Croatia approximately 4 years after the war, recruiting children aged 12 to 15 years. It was found that boys suffered more consequences than girls (Brajsa-Zganec, 2005). In our research, there were also gender differences, but the problems were more prominent in female students. In the female group, there was a rise in the average intensity of anxiety with increases in numbers of WREs. There were also differences regarding the type of WRE. The highest anxiety was found in the group with indirect trauma (e.g., knowing that relatives and/or close friends had experienced WREs). The same results were obtained regarding the average intensity of depressiveness, except for type of trauma. The highest depressiveness was in the group of female students with direct exposure to WREs. In general, these young women had significantly higher intensities of anxiety and depression compared with their male peers.

Regarding clinical forms of anxiety and depressiveness, there are only a few studies considering the delayed effects of WREs. In a study performed 7 years after the war in Bosnia and Herzegovina (Hasanović et al., 2006), depression was found to be present in 22% of children and was similar in both genders. The highest rate of depression was among children who had lost one of their parents. The relation of depression and war trauma has also been confirmed in studies performed in other conflict areas. One of them, performed with Cambodian refugee youths, pointed out two facts. First, depression was present in children with war trauma, and second, rates of depression increased over time (Sack, Him, & Dickason, 1999).

Taking into account our results, the presence of clinical manifestations of anxiety and depression was linked to separate factors. For the occurrence of clinically significant depression, it was of great importance to have been

exposed to WREs during the childhood period, while for anxiety it was of importance to have been exposed to multiple WREs (e.g., cumulative effects of stressful events). With respect to gender differences, in the group of female students depression was associated with cumulative effects of WREs, while anxiety was related to both exposure and cumulative effects. For male students, there were different findings. In this group, only clinical anxiety was linked with multiple exposures to WREs. We did not find any differences in clinical manifestations of depression due to exposure to WREs or cumulative effects.

The results were different for young females and males in terms of types of WREs. The highest intensity of depressiveness was present in male examinees who had traumatic experiences such as shootings, artillery attacks, bomb explosions, bombardment, arrest, and torture. The largest percentage of females suffering from pathological anxiety reported only having WREs related to inhumane treatment of others, while the largest percentage of examinees with pathological depressiveness included those whose close relatives or friends had had war-related experiences. The current emotional state of the male examinees who had experienced WREs during childhood was largely associated with direct trauma effects and being in jeopardy, while in the females indirect trauma effects were more significant (i.e., the lives of close relatives or friends had been jeopardized). However, the results related to types of WREs should be interpreted with caution because the youth groups with only one type of WRE were very small and the results of the statistical analysis cannot be taken as reliable. These data can serve as a starting point for new research that should include a much larger number of participants.

In addition to the aforementioned, our study had a few more limitations. First, this was not a follow-up study in which levels of anxiety and depressiveness were immediately determined and later monitored as time passed. In a follow-up study, we could claim with greater certainty that current emotions were linked to traumatic events. Present psychological reactions could be expressions of various experiences later in life. There is a possible influence of mood and time effects on memory recall as well. Second, our results refer to a certain group of students and therefore cannot be generalized to the young population as a whole. Finally, we must point out that the self-report nature of the study and the strong correlation between the two Beck inventories (in general as well as within genders) may represent limiting factors for an adequate interpretation of our results.

CONCLUSION

The current research has confirmed a significant association between war trauma experienced in childhood, on the one hand, and anxiety and

depressiveness in adolescence on the other hand. Our study has not intended to, nor is it able to, determine whether the mentioned linkage is a direct result of the negative impact of stressful events during the war period (causal relationship) or a result of mediators such as additional postwar stressful and traumatic events. It could be both; that is, the primary influence of WREs on the development of vulnerability, later mediated by environmental factors, could have facilitated the development of emotional changes in the participants. Regardless, our results may be used as a good basis for conceptualizing preventive interventions for children who have been exposed to trauma. Depending on the type and number of traumas, children can be included in such programs and instructed to use control skills to overcome emotions before possible consequences arise.

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