Multi-type Maltreatment in Childhood and Psychological Adjustment in Adolescence: Questionnaire Study Among Adolescents in Western Herzegovina Canton

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Aim To determine the prevalence and intercorrelation of different forms of childhood maltreatment and psychological problems in adolescents in Western Herzegovina Canton.

Method A questionnaire study was conducted in March 2003 on a convenient sample of 458 third-grade high-school students (39% boys) aged between 15 and 20 (median age, 17). Data were collected using a sociodemographic questionnaire, Family Adaptability and Cohesion Evaluation Scales III, Child Maltreatment Questionnaire, Youth Self-Report, and Rosenberg Self-Esteem Scale. Sociodemographic and family characteristics and exposure to maltreatment were analyzed as possible predictors of exposure to a particular type of abuse and subsequent psychological adjustment problems.

Results Out of 458 students, 77% were emotionally abused, 52% physically abused, 30% neglected, 20% witnessed family violence, and 13% of girls and 21% of boys were sexually abused before the age of 14. Significant association between the maltreatment by a mother, father, and other adults were found for emotional and physical abuse and for neglect and witnessing family violence ($r = 0.413$-0.541, $P<0.001$ for all). Significant correlation was found between all forms of abuse ($r = 0.163$-0.594, $P<0.05$), except between sexual abuse and witnessing family violence ($r = 0.048$, $P = 0.351$). Almost two-thirds of students were exposed to multi-type maltreatment in childhood. Family characteristics and maltreatment scores significantly predicted anxiety/depression ($R = 0.456$, $R^2 = 0.076$), withdrawal ($R = 0.389$, $R^2 = 0.049$), somatic complaints ($R = 0.437$, $R^2 = 0.059$), social problems ($R = 0.417$, $R^2 = 0.063$), attention deficit and hyperactivity disorder ($R = 0.368$, $R^2 = 0.045$), rule-breaking behavior ($R = 0.393$, $R^2 = 0.045$), aggression ($R = 0.437$, $R^2 = 0.078$) ($P<0.001$ for all), as well as self-esteem ($R = 0.371$, $R^2 = 0.035$, $P = 0.003$).

Conclusion Most third-grade high-school students in Western Herzegovina Canton were exposed to multi-type maltreatment in childhood, regardless of the war experience. Emotional and physical abuse were most frequently combined forms of maltreatment. Sociodemographic and family characteristics and exposure to some forms of abuse were significant predictors of exposure to other forms of abuse. Exposure to maltreatment in childhood predicted difficulties in psychological adjustment in adolescence.

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The focus of research on child maltreatment has recently shifted from sexual and physical abuse and physical neglect to different types of psychological maltreatment, including witnessing family violence in childhood (1,2). A growing body of evidence shows that childhood maltreatment takes many different forms, and a significant proportion of maltreated children are exposed not only to repetitive episodes of a single type of maltreatment, but also to multiple forms of maltreatment (3). Individuals who were sexually and physically abused in childhood have lower self-esteem, higher depression level, more psychosexual problems, more trauma symptoms, asocial/antisocial behavior, and poor mental health (3). According to research among adults who were exposed to maltreatment in childhood, multi-type maltreatment is generally associated with greater psychological and emotional impairment than single-type maltreatment (3,4). Individuals who were exposed to a combined physical and psychological maltreatment in childhood have to cope with low self-esteem, dysfunctional sexual behavior, and problems with anger or aggression in adult age (5), as well as higher levels of depression (6). Witnessing family violence is a unique predictor of trauma symptoms and low self-esteem, because it often leads, together with multi-type maltreatment, to anxiety, depression, dissociation, sleeping problems, and sexual dysfunction (3).

The role of dysfunctional family background as a cause of adjustment issues in adolescence or adulthood is another increasingly investigated problem. Poor family functioning has been reported as a risk factor for child maltreatment (particularly sexual abuse). The study by Higgins and McCabe (7) showed that family factors in childhood, either independently or in combination with child maltreatment, were associated with adjustment difficulties in adulthood and that family violence during childhood was likely to have negative effects on psychological adjustment in early adulthood. Besides family cohesion, adaptability, and interpersonal relationships, some other family variables have also been found to increase the risk of family maltreatment (7). These include low social status, parental conflicts, parental divorce, living with only one parent, living with a stepfather, long-term absence of one parent before the age of sixteen, parental alcoholism or drug abuse, chronic illness of a parent or other family members, and low parental education (7).

The fact that different types of maltreatment often overlap must be taken into account when the adjustment problems associated with one particular type of maltreatment are considered. The same applies to family dysfunction. Furthermore, the impact of child maltreatment, including neglect, should be assessed within the context of the overall family environment. The aims of our study were to determine the prevalence and intercorrelation of different forms of maltreatment in childhood; establish the frequency of maltreatment by the mother, the father, or other adults; and evaluate possible predictors of maltreatment in childhood and consequent psychological adjustment problems in adolescence. The study was performed in Western Herzegovina Canton of Bosnia and Herzegovina because there is no knowledge about the prevalence and type of childhood maltreatment or its psychological consequences in adolescents in this area.

Participants and methods

Participants

The study was conducted among third-grade students from all high schools in Western Herzegovina Canton in March 2003.

According to the data from the Western Herzegovina Canton Council of Education, the total number of third-grade students in the

academic year 2002/2003 was 1029. We determined the number of respondents required to enter the study from each town in western Herzegovina according to the proportion of students of that town in the population of students in the Canton and according to the number of different types of high-schools in each town (general, four-year vocational, and three-year vocational high schools). Schools for children with special needs were not included. The expected sample size was 50% of student population in the Canton, ie, 518 students. The students were surveyed at school during classes. Due to the variation in the number of students per class and the fact that some students were absent from school at the time of survey, the total number of students was 458. There were 180 (39%) boys and 278 (61%) girls. The median age of students was 17 years (range, 15-20 years). Of 458 students included in the study, 180 (39%) were from Široki Brijeg, 72 (16%) from Grude, 83 (18%) from Posušje, and 123 (27%) from Ljubuški.

Questionnaires

We used a sociodemographic questionnaire, Family Adaptability and Cohesion Evaluation Scales III (FACES III), and Child Maltreatment Questionnaire to collect data on sociodemographic characteristics, family-of-origin characteristics, and exposure to maltreatment in childhood, respectively. Youth Self-Report and Rosenberg Self-Esteem Scale were used to collect data on present psychological adjustment problems.

Sociodemographic variables. Sociodemographic variables included data on student sex, age, family size, family wholeness, number of siblings, parental age, parental education, parental employment status, parental alcohol/drug abuse, and family income.

Family-of-origin characteristics. We used FACES III to collect the data on the family characteristics (8). FACES consists of 20 items

related to family functioning. A half of the questions (ten even-numbered questions) refer to the family adaptability or flexibility and the other half (ten odd-numbered questions) refer to the family cohesion. The respondents were asked to describe their family by choosing one answer on a 5-point scale (from 1 – "almost never" to 5 – "almost always"). The sum of the scores for even-numbered items indicates the adaptability dimension, whereas the sum of the scores for odd-numbered items indicates the cohesion dimension (9). Cohesion is defined as the emotional bonding that exists between family members, whereas adaptability is the family's ability to change its power structure, role relationships, and rules to respond to situational or developmental needs. Olson et al (9) have asserted that the results should be viewed as curvilinear, ie, that optimal functioning exists in families who have moderate rather than extreme scores on the two dimensions. Low score on the adaptability subscale indicates a rigid family, whereas high score indicates a chaotic family. Low score on the cohesion subscale shows a disengaged family, whereas high score indicates an enmeshed family.

Childhood maltreatment experience. The exposure to multi-type maltreatment in childhood was assessed with Child Maltreatment Questionnaire (10,11) based on the Comprehensive Child Maltreatment Scales for Adults (3). This questionnaire is intended to reveal potentially abusive or neglectful behavior experienced during childhood and consists of five subscales for assessment of sexual abuse, physical abuse, psychological maltreatment, neglect, and witnessing family violence. Respondents rate the frequency of a particular type of behavior by their mother, father, or other adults to which they were exposed in childhood. The behavior of the mother, the father, and other adults is rated separately. Neglect is rated only for the father and the mother. The last group

of questions in the questionnaire refers to sexual abuse before the age of 14. The result for each of the five scales is obtained by adding the scores for each item on the scale, whereas the result for the entire questionnaire is based on the total score. Composite results for emotional, physical, and sexual abuse, neglect, and witnessing family violence may also be obtained (3,10). For each scale, higher scores indicate more frequent or more pronounced abusive behavior. Furthermore, it is possible to assess the abusive behavior of the mother, the father, and other adults separately. To describe the proportion of respondents who experienced a particular type of maltreatment, the scores above the mean on the Comprehensive Child Maltreatment subscales were used as cutoff values to classify the respondents as having experienced that type of maltreatment (1). Thus, respondents with summative score above the arithmetic mean were classified as abused; the percentage was obtained by calculating their proportion in the total number of respondents.

Psychological adjustment in adolescence. Psychological adjustment in adolescence was assessed by the Youth Self-Report (12,13) and Rosenberg Self-Esteem Scale (14). The Youth Self-Report is a self-report questionnaire consisting of two parts – Competencies and Adaptive Scales and Empirically Based-Syndrome and Total Problem Scales. It is composed of 112 items describing different symptoms or behaviors. Each item is rated on a 3-point Likert scale, ranging from 0 (not true or almost never) to 2 (very true or often true). All ratings refer to symptoms or problems experienced during the preceding 6 months. In the present study, we used only the Empirically Based-Syndrome and Total Problem Scales. The Total Problem scale can be divided into 9 syndrome subscales as follows: "Withdrawn," "Somatic complaints," "Anxious/depressed," "Social problems," "Thought problems," "At-tention problems," "Delinquent behavior," and "Aggressive behavior." The subscales "Withdrawn," "Somatic complaints," and "Anxious/depressed" comprise a broad "internalizing" dimension, whereas "Delinquent" and "Aggressive Behavior" subscales constitute an "externalizing" dimension. The higher the score on the subscale, the more expressed is the trait measured.

The Rosenberg Self-Esteem Scale is a 10-item scale used for assessment of the child's self-concept, ie, positive and negative feelings about oneself. The Scale has excellent psychometric properties (14) and is used in investigating the relationship between child maltreatment and psychological adjustment. The items are rated on a 4-point scale (from 1 – strongly agree, to 4 – strongly disagree) and the final score is determined by summing up all the ratings. The minimum score is 0 and maximum 40. The score between 15 and 20 is considered normal, score <15 indicates low self-esteem, and score >25 indicates high self-esteem (1,14).

Survey

Students were surveyed at school. After obtaining the consent from the school authorities, one of the investigators (KS) administered the questionnaires during a regular class, as previously agreed upon with the teacher. The students were informed on the purpose of the study, assured that the survey was anonymous, and asked to complete the questionnaires individually and in silence. After the entire class had finished completing the questionnaires, the questionnaires were collected and sealed in an envelope.

Statistical analysis

The data were presented as percentages, frequencies, and mean values with standard deviations ($\pm$SD). Correlation between particular predictive variables was assessed by the Pearson coefficient of correlation. Mul-

tivariate technique of hierarchical regression analysis was used to calculate multiple correlations between predictive variables (demographic characteristics, family cohesion and adaptability, and exposure to abuse) and criteria variables (modeling psychological adjustment in adolescence). This type of analysis reveals the highest possible correlation (R, the coefficient of multiple correlation) in a mathematically optimized combination of the used predictors and criteria variables. Multiple correlation squared (R^2) was calculated to show the percentage of the explained variance, ie, the total variability of the results in a particular criterion explained by a set of predictors. *P<0.05* was considered statistically significant. Statistical analyses were performed with Statistical Package for Social Sciences, version 10.0 (SPSS Inc, Chicago, IL, USA).

Results

According to FACES III, the degree of students' connection to their family of origin was relatively high, showing a good family cohesion, whereas the degree of adaptability of the family was more assessed as rigid than flexible (Table 1). The Child Maltreatment Questionnaire showed that 77% of the respondents were emotionally abused, 52% were physically abused, 30% were neglected, 20% witnessed family violence, and 13% of girls and 21% of boys were sexually abused before the age of 14. Youth Self-Report scores showed that each measured trait was present to a degree in most students. Majority of students scored high on the Rosenberg Self-Esteem Scale, which indicated higher degree of self-depreciation or self-derogation (Table 1).

Table 1. Scores of third-grade high-school students from western Herzegovina on Family Adaptability Cohesion Evaluation Scale III (FACES III), Child Maltreatment Questionnaire Youth Self-Report Questionnaire, and Rosenberg Self-Evaluation Scale

Questionnaire	No. of respondents*	Score mean±SD	potential range†	given range‡
FACES III:				
cohesion	303	49.75±10.19	13-65	13-65
adaptability	384	15.55±4.72	6-30	6-30
Child maltreatment questionnaire:				
emotional abuse	395	3.97±4.13	0-42	0-26
physical abuse	398	0.99±1.32	0-24	0-9
neglect	429	0.76±1.67	0-20	0-12
witnessing family violence	403	0.47±1.12	0-12	0-8
sexual abuse (other):				
female	257	0.59±2.19	0-117	0-20
male	61	1.35±3.72	0-105	0-26
total score on emotional and physical abuse and neglect subscale	382	5.56±6.03	0-86	0-43
total score on emotional and physical abuse, neglect, and witnessing family violence scales	378	5.95±6.70	0-98	0-50
total scores:				
female	215	6.41±7.47	0-215	0-39
male	147	7.67±8.43	0-203	0-50
Youth Self-Report:				
anxious/depressed	414	6.08±4.29	0-26	0-26
withdrawn	439	3.79±2.92	0-16	0-15
somatic complaints	409	3.22±2.96	0-20	0-14
social problems	429	3.72±2.87	0-22	0-15
thought problems	376	3.40±2.96	0-24	0-16
attention problems	426	6.63±3.09	0-18	0-16
delinquent behavior	414	5.08±3.56	0-30	0-18
aggressive behavior	425	7.81±4.35	0-34	0-23
internalizing dimension	376	12.79±8.23	0-62	0-45
externalizing dimension	400	12.87±7.13	0-64	0-41
total score	220	62.67±21.42	0-298	0-113
Rosenberg Self-Esteem Scale	442	29.81±6.42	0-40	0-40

*The number of respondents who answered the question.
†Theoretical maximum score range on the scale.
‡The score range of the surveyed students.

Table 2. Intercorrelation matrix of childhood abuse variables measured by the Child Maltreatment Questionnaire in third-grade high-school students from western Herzegovina

Subscales[†]	Pearson correlation coefficient*										
	emotional abuse			physical abuse			neglect		witnessing violence by		
	father	mother	others	father	mother	others	father	mother	father	mother	others
Emotional abuse:											
father	1.000										
mother	0.525	1.000									
others	0.441	0.366	1.000								
Physical abuse:											
father	0.462	0.287	0.321	1.000							
mother	0.240	0.504	0.272	0.435	1.000						
other	0.242	0.222	0.541	0.317	0.252	1.000					
Neglect:											
father	0.445	0.303	0.275	0.242	0.127	0.242	1.000				
mother	0.319	0.490	0.363	0.190	0.315	0.214	0.596	1.000			
Witnessing violence:											
father	0.536	0.285	0.288	0.370	0.184	0.234	0.470	0.184	1.000		
mother	0.216	0.503	0.242	0.146	0.346	0.216	0.138	0.308	0.421	1.000	
other	0.265	0.232	0.413	0.262	0.264	0.483	0.246	0.250	0.408	0.332	1.000

*P<0.001 for all.
†Summative scores.

To determine if the respondents abused by the father were also abused by the mother or other adults, we calculated Pearson correlation coefficient for each possible abuser and each of the four forms of abuse (Table 2). Moderate positive correlations were found between all forms of abuse by either one or both parents and abuse by other adults (from r = 0.435 to r = 0.525, P<0.001), except for neglect because it was not a pertinent variable for other adults. Neglect and emotional abuse by one parent moderately correlated with the same type of behavior of the other parent (P<0.001 for both). The lowest correlations were found between mother's physical abuse and father's neglect (P = 0.008) and between father's neglect and witnessing mother's violence (P<0.005).

With respect to sexual abuse, our study showed that none of the respondents were exposed to sexual abuse by the father and the mother. Therefore, the sexual abuse variable was not included in the correlation matrix.

We found significant correlations between different forms of abuse, which showed that the respondents exposed to one form of abuse were more likely exposed to other forms of abuse (Table 3). Although the correlations between sexual abuse and other forms of abuse were significant, they were weaker than those between other forms of abuse. The correlations between emotional abuse, physical abuse, neglect, and witnessing family violence were low to moderate (P<0.001 for all).

According to the scores on Child Maltreatment Questionnaire scales, 346 of 458 stu-

Table 3. Intercorrelation matrix of summative scores of third-grade high-school students from western Herzegovina on Child Maltreatment Questionnaire subscales

Subscales*	Pearson correlation coefficients				
	emotional abuse	physical abuse	neglect	witnessing family violence	sexual abuse
Emotional abuse	1.000				
Physical abuse	0.594[†]	1.000			
Neglect	0.524[†]	0.339[†]	1.000		
Witnessing family violence	0.525[†]	0.462[†]	0.418[†]	1.000	
Sexual abuse	0.163[‡]	0.182[†]	0.146[§]	0.048[¶]	1.000

*Summative scores.
†P<0.001.
‡P = 0.002.
§P = 0.003.
¶P = 0.351.

dents included in the study experienced some form of abuse before the age of 14. As far as multi-type maltreatment was concerned, 54 of 346 students (16%) were exposed to emotional and physical abuse, 24 (7%) to emotional and physical abuse and neglect, 16 (5%) to emotional abuse and neglect, 19 (6%) to emotional and physical abuse and witnessing family violence, and 20 (6%) to emotional and physical abuse, neglect, and witnessing family violence. Eight (2%) students were exposed to all types of maltreatment. These results indicated that every respondent exposed to multi-type maltreatment in childhood was also emotionally abused. Sexual abuse rarely or almost never accompanied other forms of abuse. Fifteen out of 346 students (4%) were exposed to sexual, emotional, and physical abuse, 11 (3%) were exposed to sexual, emotional, and physical abuse and neglect before the age of 14, and 197 (57%) were exposed to different combinations of multi-type maltreatment before the age of 14.

Predictors of maltreatment

Hierarchical multiple regression analysis was performed after calculating Pearson correlation coefficients to assess the successive contribution of different variables to the prediction of maltreatment scores. Predictive variables included demographic characteristics (such as sex, number of family members, number of children in the family, mother's age, father's age, mother's employment status, father's employment status, and father's alcohol abuse), family cohesion and adaptability, and maltreatment scales except for the maltreatment scale that was used as a criterion variable. For example, if emotional maltreatment was the criterion variable, then physical and sexual abuse, neglect, and witnessing family violence were used as predictive variables.

Emotional maltreatment. All predictive variables together explained 48.2% of variance of emotional abuse as the criterion variable (Table 4). Five predictive variables that provided a significant contribution to the prediction of emotional abuse were physical abuse ($\beta = 0.367$), neglect ($\beta = 0.291$), witnessing family violence ($\beta = 0.182$), mother's employment status ($\beta = 0.106$), and high level of family adaptability ($\beta = 0.104$) ($P<0.001$ for all).

Physical maltreatment. The predictive variables together explained 36.4% of variance of physical maltreatment as a criterion variable (Table 4). The most significant predictors were exposure to emotional abuse ($\beta = 0.451$, $P<0.001$), sexual abuse ($\beta = 0.097$, $P = 0.013$), and witnessing family violence ($\beta = 0.221$, $P<0.001$). Neglect was not found to be a significant predictor of physical maltreatment ($\beta = -0.011$, $P = 0.802$).

Neglect. The predictive variables together explained 29.5% of the variance of neglect as

Table 4. Hierarchy regression analysis of possible predictors of childhood abuse based on summative scores of third-grade high-school students from western Herzegovina on Childhood Maltreatment Questionnaire subscales*

	Childhood Maltreatment Questionnaire subscales[‡]									
	emotional abuse		physical abuse		neglect		witnessing family violence		sexual abuse	
Added group of predictors[†]	R[§]	Δ R[‖]	R	Δ R^2	R	Δ R^2	R	Δ R^2	R	Δ R^2
Demographic	0.257	0.066[¶]	0.224	0.050	0.200	0.040	0.330	0.109[¶]	0.189	0.036
Demographic + family	0.347	0.054[¶]	0.226	0.021	0.280	0.038[¶]	0.381	0.037[¶]	0.195	0.002
Demographic + family + maltreatment	0.706	0.378[¶]	0.619	0.312[¶]	0.563	0.239[¶]	0.609	0.225[¶]	0.278	0.039
Percent of explained variance		48.0		36.0		30.0		35.0		4.8

*A new group of predictors was included in each further step of the analysis.
†Demographic predictors include sex, number of family members, number of children in the family, mother's age, father's age, mother's employment, father's employment, and father's alcoholism; family predictors include levels of family cohesion and adaptability; maltreatment predictors include emotional maltreatment, physical abuse, sexual abuse, neglect, and witnessing family violence.
‡P<0.01 for all correlation coefficients.
§Multiple correlation coefficient.
‖ Percentage of variance explained by the inclusion of a new group of predictors.
¶P<0.001.

a criterion variable (Table 4). Three independent variables that provided significant contribution to the prediction of neglect were emotional abuse (β = 0.396 P<0.001), witnessing family violence (β = 0.200, P<0.001), and low cohesion of family functioning (β = -0.096, P = 0.023).

Witnessing family violence. For this criterion variable, 35% of variance was explained by all predictive variables together (Table 4). Emotional abuse (β = 0.228, P<0.001), physical abuse (β = 0.225, P<0.001), neglect (β = 0.184, P<0.001), and father's alcoholism (β = 0.204, P<0.001) provided significant contribution to the prediction of this criterion variable.

Sexual abuse. Only 4.8% of variance of sexual abuse as a criterion variable was explained by all predictive variables together (Table 4). Two independent variables that provided significant contribution to the prediction of sexual abuse were exposure to physical abuse (β = 0.144, P = 0.013) and being of male sex (β = 0.141, P = 0.005).

Predictors of adjustment problems

Hierarchical multiple regression analysis was performed after calculating Pearson correlation coefficients to assess the successive contribution of different variables to the prediction of psychological adjustment problems in adolescence. The scores on Youth Self-report Questionnaire subscales and Rosenberg Self-esteem Scale were used as criteria variables. Predictive variables were demographic data (sex, family members, number of children in the family, mother's age, father's age, mother's employment status, father's employment status, and father's alcohol abuse), family cohesion and flexibility, and scores on five maltreatment scales (emotional, physical, and sexual abuse, and neglect and witnessing family violence).

The regression analysis results showed that all predictor variables together could explain 18% of variance in anxiety or depression score on the Youth Self-report Questionnaire (Table 5). Three predictive variables that significantly contributed to the prediction of anxiety or depression were female sex (β = -0.294, P<0.001), high level of family adaptability (β = 0.089, P = 0.050), and exposure to emotional maltreatment (β = 0.235, P<0.001). All predictive variables explained 12% of the variance of withdrawal (Table 5), with female sex (β = -0.128) and low level of family cohesion (β = -0.197) being significant contributors (P<0.001 for both). For somatic complaints as criterion variable, the variance explained was 16%. Five independent variables that provided significant contribution to the prediction of somatic complaints were female sex (β = -0.306, P<0.001), father's alcoholism (β = 0.090, P = 0.051), fa-

Table 5. Hierarchy regression analysis of possible predictors of psychological adjustment difficulties in adolescence based on summative scores of third-grade high-school students from western Herzegovina on Youth Self-Report subscales and Rosenberg Self-Esteem Scale*

| | Youth Self-report subscales and Rosenberg Self-esteem Scale‡ | | | | | | | | | | | | | | | | | |
| | anxiety/depression | | withdrawal | | somatic complaints | | social problems | | thought problems | | ADHD§ | | rule-breaking behavior | | aggression | | self-esteem | |
Added group of predictors†	R‖	Δ R²¶	R	Δ R²	R±	Δ R²	R±	Δ R²	R±	Δ R²	R±	Δ R²	R±	Δ R²	R±	Δ R²	R±	Δ R²
Demographic	0.331	0.109**	0.214	0.046	0.343	0.118**	0.193	0.037	0.236	0.056	0.208	0.043**	0.228	0.052	0.220	0.048	0.143	0.020
Demographic + family	0.364	0.023	0.320	0.056**	0.362	0.014	0.334	0.074**	0.301	0.035**	0.342	0.074	0.331	0.057**	0.335	0.064**	0.320	0.082**
Demographic + family + maltreatment	0.456	0.076**	0.389	0.049**	0.437	0.059**	0.417	0.063**	0.368	0.045**	0.439	0.076**	0.393	0.045**	0.437	0.078**	0.371	0.035
Explained variance (%)	18.0		12.0		16.0		15.0		11.0		17.0		13.0		16.0		11.0	

*A new group of predictors was added in each further step of the analysis.
†Demographic variables included sex, number of family members, number of children in the family, mother's age, father's age, mother's employment, father's employment, and father's alcoholism; family variables included levels of family cohesion and adaptability; maltreatment variables included emotional maltreatment, physical abuse, sexual abuse, neglect, and witnessing family violence.
‡P<0.01 for all correlation coefficients.
§ADHD – attention deficit and hyperactivity disorder.
‖ Multiple correlation coefficient.
¶Percentage of variance explained by the inclusion of new group of predictors.
**P<0.001.

ther's age ($\beta = -0.135$, $P = 0.034$), and exposure to emotional ($\beta = 0.121$ $P = 0.046$) and sexual abuse ($\beta = 0.090$ $P = 0.044$). For social problems, the variance explained was 14.6%, and the most significant contributing variables were low level of family cohesion ($\beta = -0.174$, $P < 0.001$), high level of family adaptability ($\beta = 0.158$, $P < 0.001$), exposure to emotional abuse ($\beta = 0.200$, $P < 0.001$), witnessing family violence ($\beta = 0.116$, $P = 0.034$), and female sex ($\beta = -0.114$, $P = 0.012$). For thought problems as a criterion variable, all independent variables together explained 10.6% of variance, with female sex ($\beta = -0.106$, $P = 0.021$) and high level of family adaptability functioning ($\beta = 0.149$, $P = 0.002$) being the most contributing variables. All predictive variables explained 16.6% of variance in attention problems and hyperactivity, with exposure to emotional abuse ($\beta = 0.243$, $P < 0.001$), low level of family cohesion ($\beta = -0.165$, $P < 0.001$), and high level of family adaptability ($\beta = 0.158$, $P < 0.001$) being the most significant predictors. Predictive variables explained 12.6% of variance in delinquent behavior and the significant contributing variables were low family cohesion ($\beta = -0.135$, $P < 0.001$), high level of family adaptability ($\beta = 0.175$, $P < 0.001$), male sex ($\beta = 0.140$, $P < 0.001$), and exposure to emotional ($\beta = 0.167$, $P < 0.001$) and sexual abuse ($\beta = 0.097$, $P = 0.033$). Predictive variables explained 16% of variance in aggressive behavior, and exposure to emotional ($\beta = 0.142$, $P = 0.019$) and physical abuse ($\beta = 0.156$, $P < 0.005$), high level of family adaptability ($\beta = 0.202$, $P < 0.001$), and father's employment ($\beta = 0.121$, $P < 0.001$) provided significant contribution to the prediction of aggressive behavior.

When Rosenberg Self-esteem Scale scores were used as criteria variables, all independent variables together explained 10.9% of variance (Table 5). Two independent variables that contributed significantly to the prediction of scores on Rosenberg Self-esteem Scale were low family cohesion ($\beta = 0.259$, $P < 0.001$) and exposure to emotional abuse ($\beta = -0.152$, $P = 0.015$).

Discussion

Our study showed that over three quarters of third-grade high-school students reported being maltreated before the age of 14. Emotional abuse was the most frequent form of abuse, whereas sexual abuse was least frequent. Two thirds of students maltreated in childhood were exposed to multiple forms of abuse, most often to a combination of emotional and physical abuse, and a small proportion of students was exposed to all types of maltreatment. Emotional abuse was shown to be the most significant predictor of difficulties in psychological adjustment in adolescence, either alone or in combination with some other form of abuse.

Based on our previous studies on sexual abuse prevalence (1-3,10,11), we expected girls to be exposed to sexual abuse more often than boys. However, the results of our study were opposite to these findings and showed that more boys than girls in our sample were sexually abused by the age of 14. This may be related to the anonymous nature of the questionnaire, which is better for collecting data on sexual abuse from men (4), because men less readily admit in the presence of other persons or when they can be identified that they had unwanted sexual experience. Besides, some researchers believe that the real number of abused boys is larger and that sexual abuse of boys is underestimated due to sociological, cultural, and educational reasons (1-3). It is possible that victimization of male children is less detected or recorded because the society expects most victims to be female and most abusers to be male. Moreover, a boy may not even define a certain type of behavior as sexual abuse, but rather considers it as sexual ex-

perience, especially if a female person was involved. This may partly explain our results, because none of the respondents in our study reported exposure to sexual abuse by the father or the mother.

We found a moderate correlation between emotional and physical maltreatment and significant correlations between emotional abuse and neglect and witnessing family violence, which is in accordance with previous studies (1-3,15-18). Emotional abuse always accompanied other forms of abuse, ie, children suffered emotionally whether they were beaten, neglected, sexually abused, or exposed to witnessing family violence. The correlation between witnessing family violence and physical maltreatment of the child who is also emotionally abused has already been confirmed by other authors (4,5,19). Although some studies reported significant correlations between all forms of abuse (1,2,10,20,21), our study showed no significant correlation between witnessing family violence and sexual abuse, which is consistent with findings by Engels et al (22) and Higgins and McCabe (3).

In our study, students who were emotionally and physically abused and neglected in childhood by their father and who witnessed other family members being abused by their father were also exposed to the same forms of abuse by their mother or other adults. The highest correlation was found between neglect and emotional abuse by the mother and the father, while the lowest correlation was found between physical abuse by the mother and neglect by the father and between neglect by the father and witnessing violence by the mother. Other studies also showed high correlation between maltreatment by the mother and maltreatment by the father (3,10,19,23-25). Briere and Runtz (23) called this syndrome "generalized parental abusiveness."

We found that father's alcoholism was significantly associated with physical abuse and neglect. This finding is in accordance with previous studies investigating predictors of child maltreatment (22,26-30). However, we did not find father's alcoholism to be a significant predictor of sexual abuse, as reported by other authors (19,22,28). Rather, it was the male sex of the child. We also found father's alcoholism to be a significant predictor of both witnessing family violence and emotional abuse.

Low family cohesion and high adaptability in our study were significant predictors of exposure to almost all forms of maltreatment in childhood, which is in accordance with the results of previous studies (1,2,31,32). However, if the adaptability subscale scores are interpreted according to the instructions of the authors of the questionnaire (9), the extreme score on the adaptability scale indicates a chaotic family functioning, and the obtained results are therefore expected, irrespective of the fact that they have not been confirmed in previous studies. Nevertheless, they were not predictive of sexual abuse, as reported by other authors (33,34).

We found that exposure to one form of maltreatment was the strongest predictor of exposure to other forms of maltreatment. Other studies have also found that exposure to emotional or physical abuse or neglect was the most significant risk factor for other forms of maltreatment (35,36). In our study, the only form of maltreatment that was a significant predictor of sexual abuse was physical abuse. Previous studies reported that witnessing family violence was also predictive of sexual abuse, but only in female children (22,37,38). Our results confirmed the findings by Higgins and McCabe (3) that sexual abuse rarely comes in combination with other forms of abuse. However, many other studies reported the opposite (17,18,22,39,40). Given the significant overlap between different forms of abuse, some authors think that exposure to only one type of maltreatment is actually atypical (1,2). It

seems that sexual abuse is a form of maltreatment independent from other forms of abuse. Family dynamics and family characteristics, as well as exposure to other forms of abuse had no obvious influence on the exposure to sexual abuse in our study, probably because none of the students in our study reported being sexually abused by their parents.

Our study showed that emotional maltreatment in childhood, either alone or in combination with other forms of maltreatment, was the most significant predictor of difficulties in psychological adjustment in adolescence. According to previous research, there is an association between the exposure to emotional abuse and anxiety, depression, attention and hyperactivity problems, thought problems, internalizing difficulties, and low self-esteem (1,2,5,6,32,41). Exposure to emotional abuse in combination with physical and/or sexual abuse or witnessing family violence is strongly connected with difficulties in psychological adjustment, manifesting through aggressive and rule-breaking behavior, somatic complains, social problems, and external psychological difficulties in adolescence (5).

Although exposure to sexual abuse in childhood is a significant predictor of anxious disorders, somatic complains, depression (7,38,40,42-48), and low self-esteem in adulthood (44,49,50), it was not confirmed in our study because few students were exposed only to sexual abuse. This confirms the conclusions of Higgins and McCabe (3) that exposure to only one form of abuse is rare and that no conclusions about the consequences can be drawn without taking into account the exposure to other forms of abuse. Although exposure to sexual abuse in childhood always leaves serious consequences, no psychological symptoms could be found in around one-third of sexually abused children (51). It seems that some victims of sexual abuse have little or no conse-

quences, others have moderate, whereas some victims develop serious problems (43).

Our results indicated that psychological adjustment of students who were exposed to some form of abuse depended on the characteristics of their family. Students who had been maltreated in childhood and lived in families characterized by low cohesion and high flexibility (chaotic family functioning), father's alcoholism, and father's and mother's unemployment had a significant risk of having psychological difficulties. These findings are concordant with previous studies (1,2) and suggest that psychological problems are the consequence not only of child maltreatment, but also of negative family background, as well as independent source of trauma for a child. We cannot say that exposure to maltreatment is more important predictor of psychological difficulties in adolescence than family or demographic characteristics. All these factors contribute to the development of difficulties in psychological adjustment, and family factors increase the probability of negative consequences in psychological adjustment for all forms of abuse (32).

Psychological maltreatment attracts very little attention although it is the key to understanding of the dynamics of child maltreatment. It is associated with all other forms of abuse and seems the most important predictor of difficulties in psychological adjustment in adolescent and adulthood (4). Without taking into consideration all forms of abuse and all forms of psychological difficulties, it is not possible to determine specific effects or consequences of different forms of abuse on adjustment difficulties. Higgins and McCabe (52) believe that victims of a single type of maltreatment should be distinguished from the victims of multiple maltreatment. Most studies have investigated only two or three types of maltreatment and, therefore, could not determine the intercorrelations between all dif-

ferent forms of abuse or possible influences or consequences of different forms of multiple maltreatments on psychological adjustment in adulthood.

The limitations to our study are mostly related to its retrospective design. The information asked from students was of private nature and required them to recall negative experiences from the childhood. Some negative experiences could have been repressed and forgotten, whereas others could have been exaggerated. Recalling negative childhood experiences could have given rise to different feelings and influence students' ability to provide a critical evaluation of their parents' characteristics and behavior (3,7). Therefore, recall bias and response bias have to be taken into account when interpreting our results. Another limitation was that students were asked to evaluate their exposure to maltreatment before the age of 14. Events that happened after that age could also have influenced students' psychological adjustment. Further limitation is that the prevalence of childhood maltreatment determined on the basis of adult recall is almost always underestimated (53,54). There is evidence that one of three incidents of sexual abuse in childhood is not remembered in adulthood. The younger the child is at the time of abuse and the closer it is with the abuser, the more likely it is that there will be no recollection of abuse in adult age (55). Also, intellectual ability, coping skills, cognitive interpretation of maltreatment by the child, and professional intervention may function as mediator variables between maltreatment and its psychological consequences (51).

There is a possible ethical concern raised by our study. Answering the questions for the study purposes could have additionally traumatized respondents, especially those that had been sexually abused. The researchers asked for information about maltreatment but did not offer professional help to the respondents.

Therefore, future similar studies should use data collection methods that allow more privacy, and professionals should prepare study participants through organized workshops. After the study, additional education and information on prevention and possible intervention in case of maltreatment (especially sexual maltreatment) should be offered. Professionals in schools should also be prepared for possible increased interest of children to receive help.

Our study was based on a convenient sample of respondents, so it is possible that the results are biased. The findings should be confirmed on a random sample or different population sample (children, adults diagnosed with adjustment difficulties, or children included in protection programs due to difficulties in family functioning). Also, a longitudinal study design would allow for investigation of causal association between variables.

Psychological consequences of war trauma on parents and children in Bosnia and Herzegovina could have contributed to the observed prevalence of child maltreatment and psychological vulnerability of adolescents. However, war-related trauma as a risk factor for child maltreatment was not investigated in our study and should be explored in future research.

In conclusion, our results indicate that an integrative approach to understanding of child abuse and family dysfunction, as well as their long-term consequences, should be developed. The established prevalence of multi-type abuse is important for therapists and other experts in children's rights protection, who should be aware of the fact that one form of abuse is often accompanied with other forms of abuse. Individual, group, or other forms of therapeutic interventions should be offered to the victims of abuse.

The question arising is whether therapeutic interventions should be delivered in special-

ized centers or there should be a more general approach to treatment (treatment aimed at relieving negative life circumstances). Accordingly, efficacy of different treatment methods should be compared. Educational and preventive programs are needed that would increase the awareness of the family functioning as a risk factor for multiple abuse. Communication skills need to be developed, as well as higher level of sensitivity and flexibility within families, which would decrease the risk for children in these families of becoming victims to multiple abuse by the parents or other persons.

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