CROATIAN MEDICAL JOURNAL
CMJ

43(2):213-220,2002

PUBLIC HEALTH AND PEACE

Psychological Status of Sarajevo Children after War: 1999-2000 Survey

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Aim. To make a survey of children's health and psychosocial needs after the 1992-1995 war in Sarajevo, Bosnia and Herzegovina.

Methods. Representative samples of school-age children (n = 310) from 6 public schools in the Sarajevo Canton, their parents (n = 280), and teachers (n = 156) were surveyed by means of self-administered questionnaires and standardized psychometric scale (Ryan-Wenger's Schoolagers Coping Strategies Inventory). The survey was conducted in October-November 1999, approximately four years after the war.

Results. At the time of survey, well-being of children in Sarajevo was still heavily impacted by many various unhealthy life conditions and psychosocial stressors. Many school-age children lived in unhealthy and dangerous environment, including overcrowded living conditions (40%), unsafe playgrounds (68%), and no access to sports fields (52%). Most felt unsafe on streets (74%), many (73%) coped with one or more school problems, and even 84% were ill at least once during the past 12 months. General poverty was the prime stressor (common variance explained: 23.5%), followed by school- and health-related risks (common variance explained: 17.0%). At the third place were family-associated risk factors impacting children's health and development, such as overcrowded living conditions and lack of social support within their own family (common variance explained: 10.5%). Parents and teachers also lived and worked in stressful life conditions and were concerned for both their children's and their own well-being. Despite all that, most children tended to use healthy strategies in coping with stressful events in their everyday lives.

Conclusion. The reinforcement of children with positive (healthy) coping skills and strengthening of their social support networks seems to be the most important intervention strategy to help the war-traumatized children in Bosnia and Herzegovina.

Key words: *adaptation, psychological; Bosnia-Herzegovina; child; health; social environment; social support; stress, psychological; war*

War-related trauma in children may be of diverse origin. It cumulates over time and can endanger social, moral, and healthy personality development of the child in many ways (1,2). Early research on war-related trauma in children from the former Yugoslavia showed that over 90% of children who lived in high-risk zones, such as Sarajevo, Bosnia and Herzegovina, or Vukovar, Croatia, have been exposed to severe traumatic life events (3). As a consequence, around 56% of the children who lived in frontline cities during the war in Croatia were in urgent need for professional help (3,4). Many children suffered or witnessed horrifying acts of violence and aggression, and teachers and parents soon started recognizing the symptoms of post-traumatic disorders in an alarmingly high number of children. Psychological impacts of war were more significant and more complex in refugee than in non-refugee children, including sadness, denial, grieving, and escapism (5). Wartime stressors impacting family functioning only added to detrimental effects of children's exposure to stressful life events (6).

The aim of this study was to make an account of a part of large-scale psychosocial aid program for Bosnia and Herzegovina, launched in 1998 by the Canadian International Children's Institute (ICI), Montreal, Canada, under the symbolic title "Building Bridges" Program (7). The program was first launched in Croatia in 1996 (ICI Building Bridges Program Conference, Dubrovnik, May 21-23, 1996; *http://www.icichildren.org/history_ici.asp*), and later in Kosovo in 1999 (ICI Building Bridges Pilot Program for Kosovo, 1999/2000. Working to Meet the Needs of Children in Kosovo: Progress Report I. Presentation to Consultative and Educators Committees. Research Highlights. Prishtina, May 2000).

The original research plan for Bosnia and Herzegovina had the following goals: 1) to identify psychological stressors after the war in children and their parents and teachers, concerning their children's well-being; 2) to evaluate children's coping

strategies in stressful situations; and 3) to identify the needs of parents, school-teachers, and other community members concerned with children's situation. This particular piece of research addressed these goals, specifically a baseline assessment of children's, parents', and schoolteachers' life conditions in Sarajevo some 4 years after the war. The results served for planning preventive intervention strategies, including action research perspective and initiatives.

Methods

Subjects

According to the initial research and evaluation plan, the Ministry of Education of Bosnia and Herzegovina selected 6 elementary schools in the larger region of the city of Sarajevo, applying the following selection criteria: a) elementary school children of different age (in grades 1-8) had to be included, b) schools from different parts of the Sarajevo Canton (urban-suburban) had to be chosen, c) children had to live within a relatively stable (non- immigrant) communities; and d) the probability that children were exposed to stressful events during the war had to be high. The selected schools were the following: "M. Čazim Ćatić", "Z. Baručija", "Grbavica", "B. Selimović", "A. Šantić", and "A. Škarić". The number of pupils attending the selected schools ranged from 542 to 1,347. Four grades were targeted in each school: 2nd, 4th, 5th, and 7th, covering the age range from 7 to 15 years. The seletion of classes at each grade level was left to the schoolboard after the consultation with the Program's advisory staff. The final sample consisted of 310 children: 158 boys (51%) and 152 girls (49%). Regarding the children's age, 70 children (23%) were aged between 7-9 years, 153 (49%) between 10-12, and 87 (28%) between 13-15 years.

The parents' sample comprised 280 persons from the same pool of schools. The respondents were of both sexes and with different family roles (85 fathers, 184 mothers, 9 other family members, and two relatives from a larger family). The parents' sample was balanced with the student sample, and it matched the stratification design by schools and school grades (42 parents of 2nd graders, 65 parents of 4th graders, 68 parents of 5th graders, and 105 parents of 7th graders). Respondents' selection was independent of children and teachers samples (except for occasional matching). Parents and close family members were invited to participate on a voluntary basis upon the call of school principals and classroom teachers.

The sample of 156 teachers represented a heterogeneous group. Sixty-four persons were classroom teachers in lower elementary school (grades 1-4), and 89 teachers taught older children (grades 5-8). The teachers were from the same pool of schools as the two other study groups, but selected independently. All teachers were invited to the survey on a voluntary basis upon the call of school principals.

Measuring Instruments

Four instruments were used in this study. Some of them were adopted from our earlier research (8) and others were developed according to the local research needs. The battery of instruments included the adapted versions of the Ryan-Wenger's Schoolagers Coping Strategies Inventory (SCSI) (9). The SCSI was first used and pre-tested for wider application during the war in Croatia on a representative sample of nearly 6,000 elementary school children from different parts of the country (3,008 boys and 2,815 girls) from 28 schools (unpublished data). In addition, three survey questionnaires were developed and used in this study, one for children, one for parents, and one for schoolteachers. All instruments were prepared in self-administered forms and applied in group settings (e.g., classroom setting, parents' meetings), with the help of instructed research assistants.

Ryan-Wenger Schoolagers Coping Strategies Inventory (SCSI). This is a simple-to-use psychometric assessment tool, which can be used either in a self-administered form (for older children) or in an interview form (for younger children). The Scale consists of two parts. In *Part A,* the child is asked to check on a 4-point self-assessment scale the frequency (never, sometimes, often, always) of its specific coping behaviors in stressful situations, such as "retrieving to be alone", "biting nails", "running or walking away", etc. In *Part B*, the child is asked to check "how much" it feels that the things it actually does in stressful situations are helpful or bring relief (I never do that; it does not help; it helps a little; it helps a lot).

Children's Questionnaire. The instrument was first applied and tested for psychometric validity on a representative sample of school-age children (n = 310) in Sarajevo, September 1999. The questionnaire consisted of the following 40 close-ended questions, thematically divided into the following sections: 1) general background information (school, grade, age, etc), 2) living conditions (housing, physical environment, etc), 3) environmental risk factors (e.g., drinking water, food supply, and danger of minefields), 4) safety issues (perceived safety at home, on streets, at school), 5) school environment (e.g., perception of grading system, time for play), 6) social climate at the school (e.g., perceived social isolation by peers), 7) patterns of socializing with peers (e.g., sports and recreation), 8) self-esteem (e.g., one's satisfaction with physical appearance), 9) indicators of ill health (e.g., headaches, nausea, fears, sadness, etc), and 10) social support indicators (e.g., asking for help when in trouble).

Parents' Questionnaire. The instrument was first applied and tested for psychometric validity on a representative sample of parents and close family members (n = 280) selected independently from the other two study groups in Sarajevo, September 1999. The questionnaire consisted of 26 close-ended questions divided into the following thematic sections: 1) providing general background information about the child (school, grade, age, etc), 2) perception of the school environment (e.g., grading, discipline), 3) expectation regarding the child's academic achievement (e.g., grades), 4) reporting on child's health (perceived symptomatic behavior), 5) parent's personal communication with schoolteachers (e.g., information gathering), and 6) parent-to-parent networking (e.g., joint activities).

Teachers' Questionnaire. The instrument was first applied and tested for psychometric validity in a pilot study on a representative sample of elementary schoolteachers (n = 156), selected independently from the other two study groups. The questionnaire consisted of 23 close-ended questions divided into the following thematic sections: 1) background information (school, grades, teaching experience, etc), 2) information available about the ICI Sarajevo Pilot Study, 3) perception of school problems affecting children, 4) perception of children's behavioral problems in school, 5) assessment of one's own personal problems at work, and 6) educational strategies in helping children with special needs.

Study Variables

A total of 400 survey data were drawn for statistical analysis from the database collected by the four instruments. The Ryan-Wenger SCSI yielded 52 variables, whereas 141 raw-score variables were coded from the children's questionnaire, 161 from the parent's questionnaire, and 91 from the teacher's questionnaire. In further text we shall refer to this database as the first-order (original) survey database. From selected sets of questionnaire items, a series of cumulative index measures was developed with the aim to make the conceptual clustering of raw-score data meaningful and the final results of the complex statistical analysis more comprehensible. In further text we shall refer to this compressed database as the index scales. The scales were drawn by computing the total number of marked categories ("Yes" = score 1) for each respondent in series of conceptually interrelated questionnaire items, constructed and treated as checklists. For example, the scale called "Health complaints in the past 12 months" consisted of summative scores of checked answers on a symptoms checklist, such as headaches, lack of appetite, bellyaches, sleeplessness, etc (16 items, in total). In this manner, 11 scales were drawn from the children survey database, 8 scales from the parents' database, and 5 scales from the teachers' database (web Table 1).

Statistics

Beyond descriptive statistics, two major methods of multivariate analysis were applied: factor analysis and multiple regression analysis (10). The assumption of the factor analysis was to disentangle complex interrelationships among the investigated phenomena into separate functional units or patterns, as descriptive constructs for investigated life conditions in Sarajevo. Spe-

cifically, factor analysis was applied for the cause of concept-mapping in complex relationships of sample survey responses gathered from the 3 study groups. In the case of children sample, two analyses were performed: one with questionnaire variables (index scales) and one with self-ratings from Ryan-Wenger SCSI (Part A). For the two other study groups, one analysis was performed for each, with indexes scales only as summative measures. In all analyses, the method of Principal Component Analysis was used with oblique rotation for factor extraction (direct oblimin) and Kaiser normalization (11).

For each study group, stepwise regression analysis was used to discern the minimum number of original survey responses that might be regarded as "best" indicators of the surveyed phenomena (12). This meant running a series of item-total regression analyses, where the scales were treated as dependent and their constituent items as independent variables. The dependent variables were continuous scales (e.g., scores 0-12). All independent variables were coded with ordinal scale values (0-1), hence they entered the regression equations as "dummy" variables reflecting the "absence" (=0) or the "presence" (=1) of a particular attribute in question (13). The following criteria were used in stepwise selection of variables: probability of-F-to-enter 0.50, and probability of-F-to-remove 0.10. The selection procedure was ended with the probability-to-enter reaching the limit of significance (PIN=0.05).

For each examined regression equation, we shall list only the first 4 stepwise selected questionnaire items interpreted as the statistically the "best" components of the common variance entailed in the particular scale measure. SPSS 8.0 was used in all statistical analyses (14).

Results

Children's Perceptions of Their Own Well-being

Descriptive statistical analysis of major study variables for this segment of the study sample is given in web Table 1. Taking the groups of children who indicated high levels of exposure to risks measured by particular scales, ie, the lowest (25%) or the highest (75%) quartiles, depending on the direction of scoring, the following list of attributes were found as "typical": 1) lived in a rather poor home environment, with only a few communication and material resources for own use; 2) typically met with peers on the street; 3) exposed to at least four risk factors in their close physical environment; 4) likely had less then 4 meals a day; 5) had two or more school-related problems; 6) coped with at least two "difficult" school subjects; 7) shared no organized after-school activity with peers on a regular basis (e.g., weekly); 8) had had at least 3 symptoms of ill health in the past 12 months; 9) had two resource persons at the most to confide in when in trouble; 10) lived in households with 5 or more other persons; and 11) likely felt unsafe at home, on the street, and/or in school, or the combination of these.

Factor analysis of scales resulted in the identification of 3 major groups of stressors (Table 1). The first extracted factor was clearly the function of differences among the children in cultural, material, and social resources at home and elsewhere. The second factor explained the cumulative function of their health and school-related problems, including both specific and general mental health issues. The extracted third factor was principally loaded with measures of household density (ie, number of persons living together) and indicators of social support resources (persons to confide in when in trouble).

Table 1. Factor structure of index scales drawn from children's survey database

Variables (index scales)	Factor 1 (cultural and social resources)	Factor 2 (school and health risks)	Factor 3 (family life and social support)
Cultural and material resources	*0.702*	0.000	-0.188
Places to meet friends	*0.642*	0.000	0.000
Environmental risk factors	0.442	*0.456*	0.000
Eating habits	*0.551*	-0.274	-0.157
School-related problems	0.167	*0.758*	0.000
Difficult school subjects	-0.191	*0.644*	0.240
Joint activity with friends	*0.689*	0.187	0.000
Health complaints	0.107	*0.698*	0.000
Perceived social support	0.495	0.000	*0.529*
Household density	-0.239	0.000	*0.827*
Felt psychological safety	-0.010	*0.651*	0.351
Variance explained (%)	23.5	17.0	10.5

[a]Coefficients in italics stand for principal factor loading (variable-factor correlations).

Table 2 shows the main results of the regression analysis of original questionnaire data on individual index scales. Taking for each scale only the first entering predictors (see variables in equation at the 1st step), we made a list of the following most salient risk factors that impacted children at the time being: 1) no children magazines at hand in the house; 2) no access to sports-halls as meeting place with friends; 3) seeing waste and garbage piling on streets and public places; 4) having no afternoon snack; 5) coping with at least two school-related problems attributed to "difficult" subjects; 6) having prime difficulties with learning foreign language taught in school; 7) rarely having opportunity for a drink or food with friends; 8) coping with sadness; 9) having no father at hand to confide in; 10) too many persons living under the same roof; and 11) feeling anxious on the streets. In broader interpretation, these 11 items might be regarded as the "most critical" life conditions that impacted children's health and well-being. The likelihood of exposure to these risk factors varied widely, from coping with sadness (12%) to living under overcrowded conditions (80%). The probability of exposure to at least one of the listed risk factors was very high (43 ± 25%).

Children's Major Coping Strategies

The frequency distributions of self-ratings in the 26 scale-items from the Part A of the Ryan-Wegner Scale are shown in Table 3. (Note: Due to the limited scope of this paper, the results obtained with the second part of this psychometric scale are not presented here, but they can be obtained from the author.)

The vast majority of children in stressful situations seemed to engage themselves in a wide range of sensory, physical, intellectual, and creative activities. These coping styles included watching TV or listening to music, drawing, reading, and writing. Only a relatively small proportion of children reported strong tendency towards uncontrolled outbursts of anger, such as beating or breaking things, and shouting. Tendencies toward over-control of emotional reactions in stressful situations, such as "popping fingers", talking to itself, or just staying alone, also showed low-rate occurrence. Thus we hypothesized that children's

Table 2. Summary results of stepwise multiple regression analysis of the children's index scales

Index scales (dependents)	Multiple R	F-test[a]	Variables in equation (up to the the 4th step of selection)	Regression estimates Beta	t-test[a]
Cultural and material resources at home	0.906	347.45	children magazines	0.35	12.37
			radio, Hi-Fi	0.35	12.31
			video games	0.30	11.79
			daily newspapers	0.29	10.05
Places to meet friends	0.841	246.00	sport halls	0.49	15.50
			playground	0.41	12.82
			street	0.36	11.33
			park	0.35	13.65
Environmental risks	0.821	156.84	waste and garbage on the streets	0.39	11.11
			air pollution	0.42	12.42
			ruins and destroyed houses	0.36	10.71
			danger from traffic	0.33	11.42
Eating habits	0.974	1,861.39	afternoon snack	0.42	30.83
			cooked meal for lunch	0.35	35.41
			morning snack	0.38	25.59
			regular breakfast	0.28	24.74
School-related problems	0.794	174.05	too difficult subjects	0.47	15.27
			too much schoolwork	0.48	15.37
			poor grades	0.34	10.99
			conflicts with classmates	0.30	9.83
Difficult school subjects	0.712	103.56	foreign language	0.44	10.43
			native tongue	0.38	9.99
			mathematics	0.36	10.49
			physics	0.34	9.27
Activities with friends	0.850	265.06	eating and drinking together	0.43	12.63
			going to movie	0.41	12.65
			bicycling	0.23	9.08
			playing in school	0.22	8.33
Health complaints	0.841	182.58	sadness	0.35	10.29
			headaches	0.36	11.48
			bellyaches	0.34	10.59
			fears	0.34	10.17
Perceived social support from	0.829	168.03	father	0.37	11.29
			head teacher	0.39	12.17
			uncle	0.40	12.23
			sibling(s)	0.32	9.90
Household density	0.967	1,085.17	siblings	0.56	37.97
			non-relatives	0.42	27.48
			relatives	0.39	25.47
			grandmother	0.28	19.32
Felt psychological safety	0.924	864.29	feeling unsafe on the streets	0.67	29.67
			feeling unsafe at home	0.51	22.24
			feeling unsafe in school	0.40	17.84

[a]$p < 0.001$ for all variables.

coping in stressful situations may be the function of at least two basic psychological factors (motives). One of them seemed to be an enhanced need for surplus information and communication (cognitive focusing), and the other might lay in the combination of various self-defeating coping strategies (emotional focusing).

To check this hypothesis, two factors were specified for extraction from the correlation matrix of 26-scale items. The first extracted factor was interpreted as the descriptive function of "active coping", whereas the second extracted factor provided statistical explanation for "passive coping" (Table 4). The most significant behavioral indicators of the first tendency were found in playing, creative art activities (drawing, reading, or writing), physical activities, and talking to someone. On the other hand, "passive coping" was found in either psychological or physical escapism (e.g., "thinking about", staying alone, and crying) or in acting out (e.g., quarreling with someone, getting angry). It is significant that in this particular children's sample the tendency towards active (creative) coping prevailed (variance explained: 16%), whereas the tendency towards passive (non-productive) coping remained as a second-order behavioral style (variance explained: 11%).

Parents' Perspectives

Descriptive statistics of major study variables for this group of the study sample is given in web Table 1. Taking the groups of parents who indicated high levels of exposure to risk factors on particular index scales, ie, the lowest (25%) or the highest (75%) quartiles, depending on the direction of scoring, the following attributes were found "typical": 1) overconcern with a school-related problems of the child; 2) fear of at least four different things that may impact the child's physical or mental health; 3) missing to provide guidance or support for the child's extracurricular activities; 4) overconcern with at least two school subjects; 5) reporting about at least 3 signs and symptoms of the child's ill health during the past 12 months; 6) missing shared activities with other par-

ents; 7) missing regular consultations with school teachers and/or other professional helpers; and 8) missing leisure-time activities for one's own sake.

Table 3. Frequency distribution of children's original responses in the Schoolagers Coping Strategy Inventory – Part A

Items[a] (copying behaviors)	Response frequencies never	sometimes	often	almost always	No.[b]
Eating, drinking	44	59	60	110	273
Watching TV, listening to music	35	53	83	104	275
Drawing, reading, writing	26	66	91	96	279
Apologizing or telling the truth	38	73	65	88	264
Playing	46	78	64	86	274
Walking, running, bicycling	42	89	60	79	270
Trying to relax and be calm	28	82	87	69	266
Talking to someone else	37	70	90	67	264
Working around the house	64	91	55	64	274
Thinking about it	45	93	72	51	261
Trying to forget it	55	104	60	46	265
Praying	99	81	40	41	261
Sleeping	66	102	58	35	261
Daydreaming	75	104	60	32	241
Embracing a pet or mascot	132	90	31	23	276
Doing something (unspecific)	116	80	42	22	260
Running away	120	98	27	19	264
Talking to oneself	176	52	19	16	263
Popping fingers	134	54	20	15	273
Quarreling with someone	85	140	29	14	268
Shouting	188	49	16	13	266
Staying alone (isolation)	119	134	16	10	279
Offending someone	146	93	21	9	269
Crying, feeling sad	99	140	27	8	274
Getting angry	117	118	30	7	272
Beating, breaking	220	32	12	1	265

[a]Scale items are ranked by decreasing frequencies in the "almost always" column. The original placement of items in the answer sheet was different.
[b]Missing data were excluded from the table.

Table 4. Structure matrix of children's responses to Ryan-Wegner Scale – Part A[a]

Items	Factor 1 (active coping, object-focused)	Factor 2 (passive coping, self-focused)
Watching TV, listening to music	*0.538*	0.160
Drawing, reading, writing	*0.679*	-0.132
Eating, drinking	*0.670*	0.001
Apologizing or telling the truth	*0.408*	0.001
Trying to relax and be calm	*0.464*	0.152
Talking to someone	*0.588*	-0.001
Playing	*0.700*	0.000
Walking, running, cycling	*0.622*	0.000
Thinking about it	0.118	0.602
Working around the house	*0.484*	-0.001
Trying to forget it	0.146	*0.229*
Sleeping	*0.564*	-0.001
Daydreaming	0.344	*0.362*
Praying	*0.376*	0.196
Quarrelling with someone	0.209	*0.530*
Doing something on one's own	0.000	*0.427*
Embracing pet or mascot	*0.264*	0.213
Crying, feeling sad	0.001	0.578
Running away	0.261	*0.368*
Getting angry	0.324	*0.579*
Being alone	0.001	*0.580*
Offending someone	0.001	*0.313*
Talking to oneself	-0.001	*0.317*
Popping fingers	-0.107	*0.382*
Shouting	-0.001	*0.442*
Beating, breaking	-0.178	*0.443*
Variance explained (%)	16.022	10.932

[a]Coefficients in italics stand for principal factor loading (factor-variable correlations).

Factor analysis of the scales resulted in the identification of two major sources of common variance (Table 5). The first extracted factor was interpreted as the cumulative function of personal worries and the second as the function of individual differences regarding social interests and activities, including involvement with children's extracurricular activities.

Table 6 displays the summary results of the stepwise regression analysis. The first entering predictors

Table 5. Factor structure of index scales drawn from the parents' survey database[a]

Variables (index measures)	Factor 1 (personal worries)	Factor 2 (social involvement)
Perceived school problems	*0.536*	-0.043
Fears and concerns for child's well-being	*0.725*	-0.200
Supporting child's activities after school	0.404	*0.561*
Concerned with school subjects	*0.511*	-0.205
Perceived child's health	*0.710*	-0.314
Socializing with other parents	0.144	*0.673*
Help-seeking and counseling	*0.608*	-0.075
Outdoor social activities	0.351	*0.620*
Variance explained (%)	28.2	16.8

[a]Coefficients in italics stand for principal factor loading (factor-variable correlations).

in particular regression equations (see variables in equation at the 1st step) made the following list of "most critical" indicators of parents' unhelpful, or possibly even stress-provoking, behavior at home or elsewhere: 1) worries about the amount of schoolwork; 2) fears of landmines and other explosive devices; 3) no active support for children's active sporting; 4) foreign language teaching seen as a serious problem in school; 5) worries about signs and symptoms of child's ill health, particularly bellyaches; 6) missing joint activities with other parents; 7) missing consultations with school teacher(s); and 8) missing leisure-time activities for one's own sake. The frequency of these unhelpful attitudes and behavior varied widely, from overconcern with foreign language taught in school (15%) to missing consultations with school teachers (80%). The likelihood of children being exposed at least to one of these unhelpful parenting behaviors was found nearly as high as the rates of risk factors reported by the children themselves (expected probability 42 ± 26%).

Teachers' Perspectives

Descriptive statistics of major study variables for this segment of the study sample are listed in web Table 1. Teachers who obtained the highest stress-scores on particular scales, ie, the lowest (25%) or the highest (75%) quartiles, depending on the direction of scoring, shared the following attributes: 1) worried about at least 3 school-related problems of pupils; 2) distressed by at least 5 "bad" work conditions in school; 3) worried about at least 4 health and/or behavioral problems they felt unable to manage; 4) missing cooperation with colleagues at work, parents, and helping services in the community; 5) missing active involvement with pupils' extracurricular education and activities.

Table 6. Summary results of stepwise multiple regression analysis of parent index scales

Index scales (dependents)	Multiple R	F-test[a]	Variables in equation (up to the 4th step of selection)	Regression estimates Beta	t-test[a]
Perceived school problems	0.764	96.13	too much schoolwork	0.43	11.04
			too difficult subjects	0.37	9.42
			not enough playtime	0.38	9.45
			poor grades	0.37	9.44
Fears and concerns for child's well-being	0.773	101.57	fear of landmines	0.42	10.95
			aggression in school	0.37	9.69
			aftermath of war	0.34	8.69
			not enough playtime	0.28	7.14
Supporting child's activities after school	0.979	1,622.87	active sporting	0.81	63.10
			attending drama group	0.60	48.70
			attending children clubs	0.60	47.26
			attending music school	0.34	27.40
Concerned with school subjects	0.734	80.47	foreign language	0.40	9.71
			mathematics	0.45	10.79
			history	0.42	10.03
			environment	0.35	8.34
Child's health problems	0.786	111.25	bellyaches	0.34	8.70
			sadness	0.29	7.32
			headaches	0.36	9.42
			fears	0.29	7.11
Socializing with other parents	0.881	238.43	school programs	0.54	19.10
			children's birthday parties	0.38	13.30
			parent's meetings	0.38	13.12
			visiting children's theaters	0.35	12.23
Help-seeking	0.910	330.12	counseling with teacher	0.55	22.02
			health services	0.53	21.18
			social work services	0.41	16.15
			counseling with psychologist	0.31	12.36
Leisure-time activities on one's own	0.936	482.19	going to theater or movie	0.41	18.18
			attending sports centers	0.41	18.48
			visiting public library	0.38	17.70
			visiting museums	0.31	13.95

[a]$p < 0.001$ for all variables.

Table 7. Factor structure of index scales drawn from the teachers' survey database[a]

Variables (index measures)	Factor 1 (school stressors)	Factor 2 (communications)
Perceived school problems of children	*0.784*	-0.414
Working conditions at school	*0.828*	-0.327
Children's health and behavioral problems	*0.782*	-0.155
Cooperation with colleagues and parents	0.530	*0.699*
Extracurricular activities	*0.665*	0.522
Variance explained (%)	52.8	21.3

[a]Coefficients in italics stand for principal factor loading (factor-variable correlations).

Two factors were identified in the correlation matrix of teachers' self-evaluation scales (Table 7). The first extracted factor was interpreted as the cumulative function of personal worries. The other factor provided explanation for differences among teachers regarding social interests and educational initiatives beyond plain classroom teaching.

Table 8 displays the summary results of the stepwise regression analysis. The first entering predictors in particular regression equations (see variables in equation at the 1st step) made the following list of "most critical" indicators of school teachers' unhelpful, or possibly stress-provoking, behaviors in the classroom, school, or towards parents in general: 1) overconcern with poor grades; 2) complaining about small salary; 3) overconcern with pupils health complains, particularly headaches; 4) missing communication and cooperation with the school principal; and 5) missing guidance and joint extracurricular activity with pupils.

The frequency of teachers' complaints and reported work stressors varied widely, from overconcern with poor grades (14%) to missing effective communication and cooperation with the school principal (64%). The likelihood of pupils and their parents to get exposed to at least one of school teachers' personal distresses and unhelpful behaviors came close to the estimated rates of unhelpful attitudes and behaviors on the side of parents towards children, teachers, or both (expected probability $39 \pm 21\%$).

Discussion

There are very few, if any, long-term studies on children victims of war in the area of former Yugoslavia. Most studies belong to the category of "one-shot" (parachuting) research adventures since most were initiated and led by foreign researchers, and financed on a short-term basis (15). In this respect, this study is an exception, along with a few others (16).

Three major issues emerged from this research. First, it became obvious that children's health and well-being in post-war conditions, such as in Sarajevo, should be analyzed and approached form a

Table 8. Summary results of stepwise multiple regression analysis of the teachers' index scales

Index scales (dependents)	Multiple R	F-test[a]	Variables in equation[a] (up to the 4th step of selection)	Regression estimates Beta	t-test[a]
Perceived school problems of children	0.771	55.17	poor grades	0.35	6.64
			quarreling with parents	0.37	7.00
			too difficult school subjects	0.38	7.29
			poor discipline at school	0.32	6.11
Working conditions in school	0.824	78.93	small salary	0.34	6.76
			aggression among children	0.36	7.71
			missing creativity in work	0.37	7.79
			too demanding syllabus	0.32	6.31
Children's health and behavioral problems	0.835	85.28	headaches	0.38	7.99
			telling lies	0.38	8.24
			hyperactivity	0.32	6.90
			stuttering	0.31	6.80
Co-operation with colleagues and parents	0.934	256.82	school principal	0.38	11.39
			parents	0.39	12.11
			other teachers	0.35	11.64
			school psychologist	0.33	10.65
Extracurricular activities with children	0.908	178.08	taking children to theater	0.49	14.35
			attending cultural events	0.35	9.85
			visiting public library	0.45	13.32
			visiting sports centers	0.38	10.83

[a]$p < 0.001$ for all variables.

wider perspective that would go far beyond the boundaries of trauma psychology as a discipline for acute crisis interventions. Second, this study demonstrated quite clearly that the vast majority of children and young people in Sarajevo, in spite of rather harsh living conditions, make an effective use of healthy (active) coping strategy when faced with stressful situations and life events. This is an important finding because it rules out many naive expectations and "guess-work" saying that children in given (post-war) conditions are "predestined" to adopt self-defeating coping tendencies, including aggression, depression, and later on, escapism to alcohol or other substance abuse. Third, the results revealed that both parents and teachers cope with many stressful life conditions on their own. However, many of their personal attitudes and patterns of behavior, such as too high expectations regarding school achievement, poor communication between themselves, and neglect for joint extracurricular activities with children, seem to be unhelpful or even stressful for children.

From a methodological point of view, the study made an attempt to advance the tools and techniques of public health research in communities after a war and/or other kinds of human-made or natural disasters. Specifically, it resulted in a series assessment scales, behavioral checklists, and fact-sheets for screening, which could be easily used "on the spot" and in a standardized way by local professionals as well as paraprofessional helpers. A battery of evaluation tools was constructed that focused more on environmental factors affecting children well-being in situations during and after a disaster, and less on psychopathology. Assessing psychopathology, such as posttraumatic stress disorder, grieving, and depression, should be in the focus of clinical research and practice, rather then the concern of large-scale public health models for screening, health promotion, and community development (17).

As far as the replicability of the research is concerned, including cross-validation of measuring instruments, it has been used on samples of Albanian children (18) and in a comparative survey of school-aged children (19). In the latter study (19), two groups of children in Hungary were investigated – one was a "client group" of children (n = 130) under treatment at a Center for Family Counseling in Siklós (Baranya County), and another one was a control (non-client) sample of children (n = 172) from 8 public schools in the region. The database from these samples was merged with self-reporting of their peers from Sarajevo and Kosovo, which resulted in a rather unique comparative sample design (N = 1,305). The analysis of merged databases revealed that children from these three rather distinct countries shared quite a sizable portion of common variance regarding the determinants of their health and well-being in school (total variance explained 52%). Another finding, a rather surprising one, was that both Hungarian study groups scored above the common average regarding health complaints as well as measures of school-related stressors. At the same time, both Hungarian samples, in particular the "client group" of children, have attained mean scores on the social support scale far below the average of their peers from Sarajevo and Prishtina. The theoretical significance of this finding belongs to the realms of theory and research of social support, suggesting that social support resources available in stressful life conditions may represent one of the key factors intervening into a rather complex relationship between stress and health, particularly in children who live under stressful life conditions.

Finally, a few limitations of the study should be pointed out. First, the external and predictive validity of the Sarajevo study remains questionable due to the fact that virtually all schools selected for the study were from highly urbanized settings (central parts of Sarajevo), and no rural schools were included in the pool. Second, all the survey instruments were administered in a written form (self-administered questionnaires and scales) and no repeated data collections

were ensured whatsoever. Hence, one may rightly suspect that the internal validity of many scale measures (e.g., checklists) may have been confounded by a host of uncontrolled factors, including biasing response, such as social desirability, acquiescence response, style, or else (20). Finally, the psychometric acceptability of many evaluation scales needs improvement and more elaborate statistical analysis. Specifically, the homogeneity of response variance in many scale measures was found far below any conventional standard (Cronbach's >0.65), indicating that they can hardly be regarded and treated as one-dimensional scales. Many scales apparently measured more then one source of response variance (e.g., school-related problems, reliability coefficient $=0.34$), and their dimensionality should be carefully estimated for the needs of further research.

Further research is needed in two main directions. One is more elaborate methodological study to improve the acceptability, general use, and the psychometric characteristics of screening instruments intended for large-scale public health research on children's well-being in stressful environment. The other is more theoretically founded research to discern both the common and culture-specific factors in children's coping behaviors and self-esteem and social support resources, on the one hand, and complex relation of these with pathogenic factors and harms they are exposed to in a given physical and social environment, on the other (21).

Acknowledgment

This report is based on research undertaken by The International Children's Institute (ICI) Building Bridges Program (Montréal, Canada) for Bosnia and Herzegovina, directed by Ms Madeline Ann Aksich. We are grateful for the financial support of the ICI. Special acknowledgment to children themselves, parents, teachers and research assistants in Sarajevo, and many individual experts for their contribution to this research. Thanks for helpful comments received from three anonymous referees. The responsibility for the views expressed in this article is the author's alone.

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Received: January 7, 2002
Accepted: February 4, 2002

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