Early Adolescence and Suicidal Ideations in Croatia

Sociodemographic, Behavioral, and Psychometric Correlates

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Abstract. *Background/Aims:* Suicidal ideations (SI) indicate and predict psychological distress. We examined the prevalence of SI among early adolescents and its association with parental war participation, personal, behavioral, and sociodemographic characteristics. *Methods:* We performed a cross-sectional questionnaire study on 803 12-year-old adolescents. Data were collected using a sociodemographic questionnaire, the Junior Eysenck Personality Questionnaire and Children Depression Inventory. Unintentional injuries, physical fighting, and involvement in bullying behavior were assessed using questions from the World Health Organization (WHO) survey Health Behavior in School-aged Children. Suicidal ideations were assessed with three dichotomous items. *Results:* There were no gender differences in SI prevalence. SI in males were associated with lower maternal education, crowded families, birth order, parental war participation, physical fighting, being bullied, and substance use. In females, we found associations with lower parental educational level, number of brothers, lower perception of the relationship with parents, parental relationship, family cohesion and parental control, negative attitude toward school, rare church attendance, fighting, and being bully or bullied. Depressive symptoms and SI were associated in both genders. *Conclusions:* SI showed gender-specific associations that may partially be explained with parental war involvement. These findings may have potentially important clinical and preventive implications.

Keywords: adolescents, gender, suicidal ideations, war, Croatia

Introduction

Suicidal ideations (SI) are part of a suicidal continuum ranging from thoughts of death, passive or active ideation with planning the suicide attempts, to suicide completion (Pfeffer, 2002). The published findings about the prevalence of SI during adolescence are to date inconsistent, something that might be due to the significant methodological diversity in SI definition, informants, and capturing time (Burless & De Leo, 2001; De Leo, Burgis, Bertolote, Kerkhof, & Bille-Brahe, 2006). The prevalence of SI in adolescents aged 14 to 19 years was found to be up to 50% (Groleger, Tomori, & Kocmur, 2003). By defining SI as having thoughts only about suicide ("Have you ever thought about suicide?"), the prevalence in adolescents between age 11 and 15 lies at around 30% (Zemaitiene & Zaborskis, 2005). These data suggest that SI are a relatively common experience among a nonclinical population of adolescents. In addition, some authors hypothesize that this phenomenon may represent a normative and transient adolescent developmental phase (Lieberman, 1993). Although many adolescents with SI grow up without apparent signs of psychological disturbances, some findings demonstrate SI as indicators and/or predictors of future psychosocial distress. Besides strong predictions of suicide completion (Brent, Baugher, Bridge, Chen, & Chiappetta, 1999; Fergusson, Woodward, & Horwood, 2000), SI are also found to be indicators of long-term, ongoing difficulties (Sourander, Helstela, Haavisto, & Bergroth, 2001) or concurrent psychiatric disorders like depression (Fergusson, Horwood, Ridder, & Beautrais, 2005; Gould et al., 1998; Pfeffer, 2001) and conduct/oppositional disorder (Fergusson & Lynskey, 1995). Also, SI have been found to be related

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with poor health-related quality of life and psychosocial distress (Goldney, Fisher, Wilson, & Cheok, 2001; Groleger, Tomori, & Kocmur, 2003). Longitudinal studies showed that SI have a significant longitudinal predictive value for lower level of psychological and social functioning (Beautrais, 2005; Kovacs, Goldston, & Gatsonis, 1993; Reinherz, Tanner, Berger, Beardslee, & Fitzmaurice, 2006; Steinhausen, Bosiger, & Metzke, 2006; Steinhausen & Metzke, 2004).

As part of suicidal behavior SI result from an interaction between sociocultural, developmental, psychiatric, psychological, and family-environmental factors, the alteration of which could affect SI prevalence. A wide range of possible risks, protective and correlated factors for SI have been assessed worldwide, and there are numerous comprehensive reviews on this topic (Bridge, Goldstein, & Brent, 2006; Evans, Hawton, & Rodham, 2004; King & Merchant, 2008; Pfeffer, 2001).

Major social changes and catastrophic events can affect such factors possibly associated with SI. Croatian society underwent major social changes and catastrophic events during the 1991–1995 Homeland War, during which time more than 300,000 people were in active military service. Reports estimate that at least 1,000,000 people were exposed to direct war stress, and even more were secondarily traumatized (Kozaric-Kovacic, Kocijan-Hercigonja, & Jambrosic, 2002).

We are not aware of any investigations of suicidal ideations and associated factors in children or adolescents in Croatia. To date, the vast majority of the research about SI has also been conducted on individuals aged 14 years and older, and mainly on no homogeneous samples regarding gender (Afifi, Cox, & Katz, 2007; Beautrais, 2002; Dervic et al., 2007; Fergusson et al., 2000; Gmitrowicz, Szymczak, Kropiwnicki, & Rabe-Jablonska, 2003; Groleger, Tomori, & Kocmur, 2003; Wunderlich, Bronisch, Wittchen, & Carter, 2001). When we conducted the study, there were few large-scale investigations about suicidal ideations in early adolescence, such as an older US study that found the prevalence of SI to be 8.7% in females and 4.0% in males aged 12–14 years (Garrison, Jackson, Addy, McKeown, & Waller, 1991).

The first goal of this study was to establish the prevalence of suicidal ideations in early adolescents and to examine their association with personality characteristics, depressive symptoms, and risk behaviors. The other goal was to determine whether there is an association between parental participation in the war and increased risk of SI.

Our hypothesis was that risk behaviors would be more prevalent among adolescents with SI compared to adolescents without them, and that children of war veterans express a greater level of psychological disturbance and experience more prevalent SI.

Methods

Sample

The targeted population of this study were early adolescents aged 11 years and more in an urban conglomeration of Split County during the 2005–06 academic year. According to the 2001 census, the county had 241,808 inhabitants with 15,252 adolescents in the age range of 10–14 years (CROSTAT, 2001). Elementary school education is free and mandatory in Croatia. The first four grades are named "lower classes" with fewer academic subjects and predominantly one teacher for all subjects. The grades five and above are called the "higher classes," with more academic pressure, more subjects, and one teacher for each subject. The lowest end of the targeted age group corresponds with the fifth grade of the elementary school, which might contribute to an increased stress of students due to its transitional position. To avoid introducing biases resulting from those environmental factors, the study population included only sixth-grade students. According to the data of the Split County Direction for Education, in the 2005–2006 academic year there were 3172 sixth-grade students in 42 elementary schools. Initially, we invited all schools to participate; however, in the end we included only the 14 schools that responded in a timely manner regarding study time frame.

Of the sixth-grade students in Split County, 26% (840 students) participated in the study. Students who did not answer the questions about suicidality and all items on the personality questionnaire were also excluded from the analysis. The observed "suicidal" group was compared with a group of adolescents who had no positive answers on any of items regarding suicidal ideations.

Design and Procedures

The study was conducted 3 months after the beginning of the academic year. We selected this time frame in order to minimize the effect of academic pressure that builds up during the 3 weeks prior the end of the school year. The study protocol was approved by the Split School of Medicine Ethics Committee, and school authorities gave their permissions and participants' parents signed informed consent documents. The questionnaires were administered in classroom settings (up to 25 students) in the presence of at least one member of the study investigational team and one member of the school staff, usually a psychologist. The estimated time of completion was 60 minutes. The general aims and nature of procedures were explained at the beginning of the session, and appropriate questionnaire instruction manuals were provided prior to each section. The students were asked to complete the questions individually and were assured that the survey was anonymous. After the entire class completed the questionnaires, the questionnaires were collected and analyzed.

Measures

Suicidal Ideations

Suicidal ideations were assessed with three dichotomous (i.e., yes/no) items: "I often think about death," "I wish I were dead," and "I often think about suicide."

Sociodemographic Questionnaire

A sociodemographic, self-report questionnaire was designed for the purpose of this study assessing the following variables or groups of variables: age, gender, family educational and socioeconomic characteristics (father's education, mother's education, father's employment, mother's employment, home ownership, perceived family standard, person per bedroom), family structure (family status, number of children in family, birth order, number of sisters, number of brothers), perceived family relationships, cohesion and control rated on 5-point Likert scales (relationship with mother, relationship with father, perceived relationship between parents, cohesion with family, perceived parental control) and parental participation in the war. If not otherwise stated, 1 on the scale means *the best* and 5 means *the worst*.

Behavioral Characteristics

This group of questions included students' attitudes toward school (school motivation, last-year school grades), religion (declarative denomination and frequency of ceremonial attendances), and risky behaviors. Four types of risk behaviors were assessed using questions from the WHO survey Health Behavior in School-Aged Children (Currie, Hurrelmann, Settertobulte, Smith, & Todd, 2000), which assesses for unintentional medically attended injury over the past 12 months, physical fighting over the past 12 months, involvement in bullying behavior as victim or bully (participants were provided with a standard definition of bullying and asked to report how frequently they had been bullied at school or how frequently they had bullied others over the past 6 months). The perceived frequent alcohol use, perceived excessive alcohol use, and drug use were assessed on three dichotomous items: "I often drink alcohol," "I drink excessively," and "I used drugs."

Personality Characteristics

Personality characteristics were tested using the Croatian version of the Junior Eysenck Personality Questionnaire (JEPQ), which is a self-reported personality scale (Eysenck & Eysenck, 1975, 1994). The JEPQ contains 81 dichotomous (i.e., yes/no) items that can be allocated to three broad dimensions of personality: Neuroticism (N), Extraversion-Introversion (Ex-I), and Psychoticism (P). JEPQ also contains the Lie Scale (L) which represents a social desirability response and serves as a control instrument. A lower score assumed greater interpretability of data. There were also attempts of constructing a criminality (C) scale consisting of 40 JEPQ items which highly correlated with antisocial behaviors (Eysenck & Eysenck, 1975).

Depressive Symptoms

Depressive symptoms were assessed with the Children's Depression Inventory for children aged 7–17, a self-rating scale developed on the basis of the Beck Depression Inventory. It consists of 27 items scored on a 3-point scale (0 = *absent*; 1 = *moderate*; 2 = *severe*), reflecting a growing severity of symptoms with the total scores ranging from 0 to 54 (Kovacs, 1985, 1992). The scores can also be interpreted by dividing responses into five categories of negative mood, interpersonal problems, ineffectiveness, anhedonia, and negative self-esteem (Kovacs, 1985, 1992). Several studies carried out in North America and Europe, including Croatia, investigated the psychometric characteristics of the scale, and found good reliability and validity (Fundudis et al., 1991; Knight, Hensley, & Waters, 1988; Kovacs, 1985; Samm et al., 2008; Zivcic, 1993).

Statistical Analysis

The Statistica 7.1 software package (StatSoft, Inc.,Tulsa, USA) was used to perform statistical analysis of the data. Differences between categorical variables (sociodemographic, personal, and behavioral characteristics) were estimated by a χ^2 test, whereas differences between two samples on continuous variables (JEPQ and CDI scores) were estimated by a *t*-test for independent samples. The comparison was done for each gender separately because of pronounced gender differences in prevalence rates suicidal risk behaviors and SI (e.g., depression, substance use, social and interpersonal factors) (King & Merchant, 2008) and personality characteristics (Eysenck & Eysenck, 1975). Interpretation of multivariate effects was performed by a forward stepwise model of logistic regression. Only those categorical variables found to be associated with suicidal ideations in explorative univariate analyses were included in the logistic regression. All psychometric variables (JEPQ and CDI scores) were included. Statistical values were considered significant at $p < .05$.

Results

The final number of study participants was 803 (402 males and 401 females); 17 students (2.02%) were excluded be-

Table 1. Suicidal ideations regarding gender (402 males and 401 females)

	Males *N* (%)	Females *N* (%)	χ^2; *p*
I often think about death	51 (12.7)	52 (13)	0.01; 0.495
I wish I were dead	33 (8.2)	36 (9)	0.15; 0.396
I often think about killing myself	36 (9)	35 (8.7)	0.01; 0.504

Note. *$p < .05$.

cause they did not complete the suicidal items or JEPQ. In addition, 20 students (2.4%) were absent at the time of survey. The mean age of participants was 12.2 years (± 0.33). 141 (17.6%) students gave positive answers on at least one question regarding suicidal ideation. Among them, 38 (4.73%) responded positive to two, and 32 (3.99%) answered all three positive suicidal ideation items. There were no significant gender differences in suicidal ideations ($\chi^2 = 0.2$; $df = 1$; $p = .655$) and on each specific suicidal item (Table 1). When suicidal answers were summed on composite measure (1 = 1 positive answer; 2 = 2 positive answers; 3 = 3 positive answers), gender differences were not found ($\chi^2 = 3.9$, $df = 2$; $p = .145$).

Differences Between Suicidal and Nonsuicidal Adolescents

Sociodemographic differences (variables found to be significant in at least one gender) are displayed in Table 2. SI in male adolescents were associated with a mother's lower educational level ($\chi^2 = 8$, $df = 2$, $p = .019$), a higher number

Table 2. Predictors of suicidal ideations among adolescents – sociodemographic categorical variables (totals, percentages, and univariate odds ratios)

	Males						Females					
	Nonsuicidal		Suicidal				Nonsuicidal		Suicidal			
	N	%	*N*	%	OR	(95%CI)	*N*	%	*N*	%	OR	(95%CI)
Father's education												
8 years	16	69.6	7	30.4	1		13	56.5	10	43.5	1	
8–12 years	165	83.8	32	16.2	0.44	(0.17–0.16)	184	83.6	36	16.4	0.25*	(0.1–0.63)
> 12 years	121	80.1	30	19.9	0.57	(0.21–1.50)	108	87.1	16	12.9	0.19*	(0.07–0.51)
Mother's education												
8 years	18	64.3	10	35.7	1		19	63.3	11	36.7	1	
8–12 years	151	79.9	38	20.1	0.45	(0.19–1.06)	189	85.9	31	14.1	0.28*	(0.12–0.65)
> 12 years	141	86.0	23	14.0	0.29*	(0.12–0.72)	107	82.9	22	17.1	0.36	(1.15–0.85)
Number of children in family												
1	26	86.7	4	13.3	1		28	87.5	4	12.5	1	
2	171	88.6	22	11.4	0.84	(0.27–2.62)	143	87.2	21	12.8	1.03	(0.33–3.23)
3 or more	132	73.7	47	26.3	2.31*	(0.77–6.98)	162	79	43	21	1.86	(0.62–5.58)
Birth order												
First	127	85.2	22	14.8	1		121	83.4	24	16.6	1	
Second	141	85.5	24	14.5	0.98	(0.53–1.84)	141	86.5	22	13.5	0.79	(0.42–1.47)
Third or later	58	68.2	27	31.8	2.69*	(1.41–5.11)	71	76.3	22	23.7	1.56	(0.82–2.99)
Number of brothers												
None	139	88	19	12	1		131	83.4	26	16.6	1	
One	138	80.7	33	19.3	1.75	(0.95–3.23)	160	87	24	13	0.76	(0.41–1.38)
2 or more	52	71.2	21	28.8	2.95*	(1.47–5.94)	42	70	18	30	2.16*	(1.08–4.32)
Relationship with mother[1]												
1	284	83.3	57	16.7	1		276	86.3	44	13.8	1	
2	41	77.4	12	22.6	1.46	(0.72–2.95)	46	71.9	18	28.1	2.46*	(1.31–4.61)

	Males						Females					
	Nonsuicidal		Suicidal				Nonsuicidal		Suicidal			
	N	%	*N*	%	OR	(95%CI)	*N*	%	*N*	%	OR	(95%CI)
≥ 3	1	33.3	2	66.7	–[2]		8	61.5	5	38.5	–[2]	
Relationship with father[1]												
1	259	82.5	55	17.5	1		263	88.9	33	11.1	1	
2	46	80.7	11	19.3	1.13	(0.55–2.31)	51	72.9	19	27.1	2.97*	(1.57–5.63)
≥ 3	8	66.7	4	33.3	–[2]		11	55	9	45	–[2]	
Parental relationship[1]												
1	245	84.5	45	15.5	1		236	86.4	37	13.6	1	
2	57	76	18	24	1.72	(0.93–3.19)	66	76.7	20	23.3	1.93	(1.05–3.55)
≥ 3	18	75	6	25	1.82	(0.68–4.82)	24	68.6	11	31.4	2.92*	(1.32–6.46)
Cohesion with family[1]												
1	216	83.4	43	16.6	1		231	87.5	33	12.5	1	
2	83	78.3	23	21.7	1.39	(0.79–2.45)	87	80.6	21	19.4	1.69	(0.93–3.08)
≥ 3	25	78.1	7	21.9	1.41	(0.57–3.46)	14	50	14	50	7*	(3.07–15.99)
Parental control[3]												
1	2	40	3	60	–[2]		3	75	1	25	–[2]	
2	133	77.3	39	22.7	1		129	80.6	31	19.4	1	
3	181	87.4	26	12.6	0.49*	(0.28–0.84)	200	87	30	13	0.62	(0.36–1.08)
4	6	60	4	40	–[2]		1	20	4	80	–[2]	
Father's participation in war												
Yes	194	77.6	56	22.4	1		181	82.3	39	17.7	1	
No	123	87.9	17	12.1	0.48*	(0.27–0.86)	135	83.9	26	16.1	0.89	(0.52–1.54)
Mother's participation in war												
Yes	17	65.4	9	34.6	1		19	76	6	24	1	
No	272	82.9	56	17.1	0.39*	(0.17–0.92)	279	83.8	54	16.2	0.61	(0.23–1.61)

Notes. [1]Five-point Likert scale from 1 (*the best*) to 5 (*the worst*). Because of small frequencies categories 3 and above were grouped. [2]OR was not calculated because expected frequencies were less than 5. [3](1) "They forbid everything that interests me." (2) "They always want to know what I am doing and forbid what they don't like." (3) "They want to know what I am doing but without prohibitions." (4) "They are not interested in what I am doing." *$p < .05$.

of children in the family ($\chi^2 = 14.3$, $df = 2$, $p = .001$), a higher number of brothers ($\chi^2 = 9.7$, $df = 2$, $p = .008$), birth order ($\chi^2 = 13.1$, $df = 2$, $p = .001$), lower perceived parental control ($\chi^2 = 6.8$, $df = 1$, $p = .009$), and parental war participation ($\chi^2 = 6.2$, $df = 1$, $p = .013$ fathers; $\chi^2 = 4.9$, $df = 1$, $p = .026$ mothers). In addition, SI in male adolescents were found to be associated with physical fighting (χ^2 1 = 3.2, $df = 2$, $p = .001$), being bullied ($\chi^2 = 9.7$, $df = 2$, $p = .008$), frequent alcohol use ($\chi^2 = 22.7$, $df = 1$, $p = .000$), excessive alcohol use ($\chi^2 = 27.2$, $df = 1$, $p = .000$), and drug use ($\chi^2 = 19.6$; $df = 1$; $p = .000$).

In female adolescents, SI were associated with the lower educational level of both parents ($\chi^2 = 13$, df = 2, $p = .001$ fathers; $\chi^2 = 9.6$, $df = 2$, $p = .008$ mothers, a higher number of brothers ($\chi^2 = 9.3$, $df = 2$, $p = .010$), a lower perception of relationship with parents ($\chi^2 = 24.4$, $df = 2$, $p = .000$ fathers; $\chi^2 = 12.3$, $df = 2$, $p = .002$ mothers), parental relationship ($\chi^2 = 9.7$, $df = 2$, $p = .008$), and cohesion with the family ($\chi^2 = 25.9$, $df = 2$, $p = .000$). In addition, school motivation ($\chi^2 = 7.2$, $df = 1$, $p = .007$) and frequency of church attendance ($\chi^2 = 6.9$, $df = 2$, $p = .031$) had negative associations. The association between SI and physical fighting ($\chi^2 = 15.6$, $df = 2$, $p = .000$), being bullied ($\chi^2 = 7.2$, $df = 2$, $p = .028$), and being a bully ($\chi^2 = 14.6$, $df = 2$, $p = .01$) were found in female adolescents as well (Table 3).

Table 3. Predictors of suicidal ideations among adolescents – behavioral categorical variables (totals, percentages, and univariate odds ratios)

	Males						Females					
	Nonsuicidal		Suicidal				Nonsuicidal		Suicidal			
	N	%	*N*	%	OR	(95%CI)	*N*	%	*N*	%	OR	(95%CI)
School motivation[1]												
1	247	83.7	48	16.3	1		283	85.5	48	14.5	1	
2	80	67.2	25	23.8	1.61	(0.93–2.77)	46	71.9	18	28.1	2.31*	(1.24–4.31)
Religious attendance												
Very often	122	81.9	27	18.1	1		154	88	21	12	1	
Often	142	84.5	26	15.5	0.83	(0.46–1.49)	130	81.8	29	18.2	1.64	(0.89–3.01)
Rare	64	77.1	19	22.9	1.34	(0.69–2.6)	49	74.2	17	25.8	2.54*	(1.24–5.21)
Fighting in past year												
Never	108	89.3	13	10.7	1		223	87.5	32	12.5	1	
1–2 times	124	84.4	23	15.6	1.54	(0.75–3.19)	68	81.9	15	18.1	1.54	(0.79–3.01)
3 times or more	97	72.4	37	27.6	3.17*	(1.59–6.31)	42	66.7	21	33.3	3.48*	(1.83–6.62)
Bullying in past 6 months												
Never	192	83.8	37	16.2	1		249	85.9	41	14.1	1	
1–2 times	120	81.6	27	18.4	1.17	(0.68–2.02)	74	80.4	18	19.6	1.48	(0.80–2.72)
2–3 times monthly	17	65.4	9	34.6	2.75	(1.14–6.63)	10	52.6	9	47.4	5.47*	(2.09–14.26)
Target of bullying												
Never	185	84.5	34	15.5	1		229	86.4	36	13.6	1	
1–2 times	108	83.7	21	16.3	1.06	(0.58–1.92)	70	74.5	24	25.5	2.18*	(1.22–3.9)
2–3 times monthly	36	66.7	18	33.3	2.72*	(1.39–5.34)	34	81	8	19	1.5	(0.64–3.49)
Frequent alcohol use												
No	320	84	61	16	1		332	83.2	67	16.8	–[2]	
Yes	9	42.9	12	57.1	6.99*	(2.83–17.32)	1	50	1	50		
Excessive alcohol use												
No	322	84.1	61	15.9	1		332	83.2	67	16.8	–[2]	
Yes	7	36.8	12	63.2	9.05*	(3.43–23.91)	1	50	1	50		
Drug use												
No	325	83.3	65	16.7	1		333	83.5	66	16.5	–[2]	
Yes	4	33.3	8	66.7	10*	(2.93–34.19)	0	0	2	100		

Notes. [1]Originally there were 4 categories (*want to be the best* and *want to be among the good students* coded as 1; *neither good or bad* and *don't care* coded as 2). [2]OR not calculated due to small frequencies. *$p < .05$.

The parental employment status, home ownership, perceived family standard, the number of people per bedroom, family completeness, and the number of sisters were not found to be dissimilar between the groups.

Depression

A comparison of CDI scores between suicidal and nonsuicidal adolescents is shown in Table 4. Both male and female adolescents in the suicidal group scored significantly higher on subscales of neuroticism, psychoticism, and a scale of criminal behavior compared to their nonsuicidal peers ($p < .000$ for each scale and both genders). On the extroversion-introversion scale there was no difference between "suicidal" and nonsuicidal male ($p = .070$) and female ($p = .406$) students. In addition, suicidal males and female students scored lower on the Lie scale ($p < .000$). Categorical variables were found to be statistically significant in univariate analysis. All psychometric variables (CDI and JEPQ scores) were investigated for multivariate effects. The forward stepwise logistic regression model was applied to estimate independent contribution of those variables (Table 5), separately for each gender. The CDI negative self-esteem subscale was positively associated with suicidality in female students, while the Lie scale was negatively associated with suicidal ideation in the female group. A higher CDI total score was positively associated with three or more children in the family and neuroticism, while two children in the family and a higher score on the Extroversion-Introversion scale was negatively associated with SI in the male students.

Table 4. Comparison of CDI scores between suicidal and nonsuicidal population

		Nonsuicidal	Suicidal				95% C.I.	
CDI score	Gender	Mean (*SD*)	Mean (*SD*)	Mean diff	S. E.	*p*	lower	upper
Total	males	6.7 (6.82)	18.37 (9.8)	11.672	0.968	.000*	9.77	13.57
	females	5.99 (6.23)	17.72 (12.02)	11.730	0.996	.000*	9.77	13.69
Negative mood	males	1.54 (1.84)	4.07 (2.44)	2.532	0.260	.000*	2.02	3.04
	females	1.55 (1.8)	4.32 (3.05)	2.769	0.268	.000*	2.24	3.29
Interpersonal problems	males	1.04 (1.46)	2.67 (2.21)	1.629	0.188	.000*	1.26	1.99
	females	0.69 (1.06)	2.1 (1.96)	1.410	0.193	.000*	1.03	1.79
Ineffectiveness	males	1.21 (1.74)	3 (1.92)	1.793	0.204	.000*	1.39	2.19
	females	1 (1.39)	2.65 (1.98)	1.647	0.209	.000*	1.26	2.06
Anhedonia	males	2.12 (2.35)	5.49 (3.54)	3.377	0.336	.000*	2.72	4.04
	females	2.01 (2.28)	4.97 (3.8)	2.959	0.346	.000*	2.28	3.64
Negative self-esteem	males	0.80 (1.34)	3.14 (2.32)	2.341	0.210	.000*	1.93	2.75
	females	0.73 (1.18)	3.68 (3.14)	2.945	0.216	.000*	2.52	3.37

Note. *$p < .05$.

Table 5. Independent predictors associated with suicidal ideation in adolescents: a logistic regression model (forward stepwise)

		B	*SE*	Wald	*df*	*p*	Exp(B)	95% CI	
	Predictor variable						OR	lower	upper
Males[1]	Number of children in family								
	1			19.125	2	.000	1		
	2	–.773	.866	.795	1	.372	0.46	0.09	2.52
	3 or more	1.276	.819	2.428	1	.119	3.58	0.72	17.85
	CDI total	.111	.023	22.412	1	.000	1.12	1.07	1.17
	Neuroticism	.255	.061	17.273	1	.000	1.29	1.14	1.46
	Extroversion-introversion	–.143	.063	5.126	1	.024	0.87	0.77	0.98
Females[2]	JEPQ Lie scale	–.150	.046	10.818	1	.001	0.86	0.79	0.94
	CDI negative self-esteem	.634	.1	40.004	1	.000	1.89	1.55	2.3

Notes. [1]χ^2 for the final model = 116.82, $df = 5$, $p < .000$; Nagelkerke $R^2 = .515$. [2]χ^2 for the final model = 73.6, $df = 2$, $p < .000$; Nagelkerke $R^2 = .371$.

Discussion

This study suggests a relatively high prevalence of SI in the sample of early adolescents in Croatia without any obvious gender differences. At the more "lethal end" of the suicidal spectrum (I wish I were dead; I often think about killing myself; or results of 2 or 3 on a composite measure), the prevalence of SI was 9%. No association was found between the perceived family economic status and suicidal ideations. More objective measurements of socioeconomic status, such as bedroom per person were identical (0.72) for both the suicidal and the nonsuicidal group. Interestingly, 45% of adolescents perceived their living standard as above average, which is contrary to the literature (Evans et al., 2004). The positive association of SI with the parental lower education level is an interesting finding of this study. This might suggest that the number of parents who did not complete mandatory and free elementary education reflects an adverse socioeconomic environment or individual psychopathology. These circumstances could have an indirect influence on the appearance of suicidal ideations in their offspring. There are several reports of the association between lower educational status and suicidal ideation, but they are reported to be mainly in the fathers of adolescents (Andrews & Lewinsohn, 1992; Dubow & Tisak, 1989).

Male suicidal adolescents are more likely to live in a family with three or more children and have a greater chance of being the third or later child in the family. Similar findings were found in one study, but only in female adolescents (Reinherz et al., 1995). The other studies of association between suicidal phenomena and number of siblings, birth position, and/or birth order failed to show such associations (Andrews & Lewinsohn, 1992; Juon, Nam, & Ensminger, 1994; Reinherz et al., 1995). Our study reports that more crowded families are associated with SI, albeit only for male students. This might be the result of more complex and demanding interpersonal relationships, since it was found that boys have higher mean scores on the CDI

subscale of interpersonal problems than girls, in both suicidal and nonsuicidal groups. All this represents a challenge for suicidal adolescents who already tend to perceive their families as less engaged, affectionate, and confiding than nonsuicidal adolescents (King, Segal, Naylor, & Evans, 1993). Family completeness (living with one or both parent) did not show a statistical importance, which is consistent with the published literature (Evans et al., 2004).

This study shows that female suicidal adolescents reported a poorer perception of their relationship with their parents, the relationship between parents, and the perceived cohesion with the family. These are interesting findings, since adolescent girls in general tend to report more satisfaction with the support they receive (King & Merchant, 2008). Several other studies indicated a significant relationship between suicidal phenomena and communication with family members (Evans et al., 2004; Kerr, Preuss, & King, 2006; King et al., 2001). Our findings were consistent with observed findings and showed that good communication with family members was associated with a lower prevalence of suicidal thoughts. Several other studies have reported that suicidal adolescents view their families' level of functioning differently than their families or nonsuicidal peers (Kashani, Suarez, Luchene, & Reid, 1998), and this could be source of bias in interpreting causal relations.

Perhaps the most interesting finding in the present study is the lack of gender differences in the expression of suicidal ideation. There were inconsistencies in previous studies regarding gender differences. Some studies suggested that females more often express SI, even in early adolescence. Large-scale studies found the male/female prevalence rate of 4.6%/8.4% for Canadian adolescents aged 12–13 years, and 4.0%/8.7% for the U.S. population aged 12–14. These studies used one or two dichotomous items similar to our study (Afifi, Cox, & Katz, 2007; Fotti, Katz, Afifi, & Cox, 2006; Garrison, Jackson, Addy, McKeown, & Waller, 1991).

Conversely, studies in Lithuania failed to find differences in suicidal ideations in early male and female adolescents aged 11 and 13 (Zemaitiene & Zaborskis, 2005) and in Estonia (Samm et al., 2010).

The lack of observed gender difference may be explained by the same rate of depressive symptoms in both genders and the relationship between depression and suicidality, as shown in our study (Table 4) as well as in other studies (Fergusson et al., 2005; Gould et al., 1998; Pfeffer, 2001). Interestingly, other studies of SI in early adolescence did find a higher prevalence of depression in early female adolescents, although depressive symptoms usually emerged after the age of 13 or 14 (Angold & Costello, 2006; Angold & Worthman, 1993; Angold, Costello, & Worthman, 1998; Wade, Cairney, & Pevalin, 2002). It is also possible that some other factors not investigated in this study contribute to the lack of gender differences.

Interestingly, we found that male suicidal adolescents are more likely to have parents who were active participants in the Homeland war, majority of them also being males. We did not find this association with female suicidal adolescents. Active war participation is known to cause a wide range of psychological and psychosocial difficulties in veterans and have an indirect effect on their children. Parents, especially fathers, who participated in the war could have their own psychological distress disrupting their social and emotional functioning then being transferred to male offspring and expressed as SI. The mechanism of transfer could be some form of identification, psychological absence with less willingness of traumatized fathers to interact with children, or secondary traumatization (Franciskovic at al., 2007). In fact, there are some indications that psychopathological disturbances in war veterans, such as posttraumatic stress disorder (PTSD) inhibits behaviors associated with effective parenting (Davidson & Mellor, 2001; Ruscio, Weathers, King, & King, 2002). We did not collect data about any distinct psychiatric disorders in the parents, but there may be such cases in our population. It is also possible that the nonspecific, more subliminal psychological consequences of war could have such an impact on parenting, albeit probably in a less intense manner. We plan to explore possible direct or mediated association (by factors like Neuroticism or Extroversion-Introversion) between parental war involvement as dependent variables and suicidal ideations in our future studies. In addition to the Homeland War, Croatia is still undergoing major social and political transitions on its way to joining the European Union. These changes create high demands, especially to the male population, who are more sensitive to such changes typical for societies in transition (Varnik et al., 2009). These demands could influence male adolescents directly or indirectly through their fathers. Support for this notion may be found in the quoted studies without gender differences in suicidal ideations coming from other transitional countries like Lithuania (Zemaitiene & Zaborskis, 2005) or Estonia (Samm et al., 2010). Paradoxically, the lower perceived family relationships in suicidal females might be interpreted as a resilience factor for this kind of war or transitional trauma transfer. Also, suicidal ideations are negatively associated with the Lie scale in logistic regression in females. This might lead to the conclusion that there are more nonreported cases of SI in females than males, who deserve a gender-sensitive assessment of suicidal ideations.

The majority of the studies found that having a negative attitude toward school and school work was associated with an increased prevalence of suicidal phenomena (Evans et al., 2004). The present study demonstrated a similar association, but only for female students. Adolescents from a suicidal group have a more negative or ambivalent attitude toward school, but without significant association with a previous year's grade average.

According to our results, female students without suicidal ideation more frequently attended religious ceremonies then their suicidal peers. We have no data about the exact denominations of participants, but according to statistical reports the majority of Croatian citizens belong to Christian churches (Roman Catholic or Orthodox) (CROSTAT,

2001). Both denominations have negative and disapproving attitudes about suicidal behaviors. This could make religious beliefs a possible resilience factor in females. Attending church could be the indicator of a stronger social network, which enhances social support and facilitate social control through commitment to community values and norms (Thorlindsson & Bernburg, 2009). The role of religion in the evolution of SI is unclear, and the majority of the studies indicated no association with a decreased risk for suicidal thoughts and behaviors (Evans et al., 2004). Interestingly, there is one report of an association of religious beliefs and increased prevalence of suicidal ideation (Stewart, Lam, Betson, & Chung, 1999).

Physical fighting is positively associated with suicidal ideations in both sexes (King et al., 2001; Miotto et al., 2003), which is consistent with significantly higher scores on the C scale of antisocial tendencies on the JEPQ questionnaire. This study showed well-known positive associations between SI and being a target of bullying over the past 6 months (Kim, Koh, & Leventhal, 2005; Kim, Leventhal, Koh, Hubbard, & Boyce, 2006). Our findings demonstrating that suicidal female adolescents are more often perpetrators than male adolescents are only partially consistent with findings published by Kim and colleagues, who found similar associations for both genders, but stronger in females (Kim et al., 2005).

Regarding previous findings of a positive association of alcohol use and SI in both sexes (Evans et al., 2004; Light, Grube, Madden, & Gover, 2003), we found that excessive and frequent alcohol consumption to be more prevalent in male adolescents with SI; we do not have sufficient data for females.

Except for Extroversion-Introversion, our results of personality characteristics are in concordance with the published literature findings, which suggest that Neuroticism, Psychoticism, and Extroversion are significantly associated with suicidal phenomena in both genders (Evans et al., 2004). The results on the Lie scale are generally low for both adolescents with suicidal ideations and their nonsuicidal peers. The suicidal group has a statistically significant lower result, and their data are even more reliable. Higher scores on the Lie scale in nonsuicidal adolescents may suggest that there are even more unrecognized cases of SI, especially among female adolescents.

Although some significant findings from univariate analysis disappeared in multivariate analysis, gender-specific patterns still remained. Boys have some SI-associated factors that could be the source of external influence, such as the number of children in the family, resulting in a greater level of interpersonal problems. Other factors like Neuroticism and Extroversion-Introversion are personality traits that are more reactive to environmental stimuli (Eysenck & Eysenck, 1975). These "externalizing" factors show no association in logistic regression for females. We propose that suicidal ideations in girls are more "endogenous" and stable than in males, where they tend to be more influenced by an environment strongly disturbed by the recent war and the resulting socioeconomic changes.

When psychopathology occurs during adolescence, it is expressed differently in boys and girls. Since girls are encouraged to be more dependent and self-depreciating (factors associated with internalizing disorders) and boys are encouraged to be more assertive and aggressive (factors more closely related to externalizing disorders), it is not surprising that girls are more prone to develop internalizing disorders (Cohen et al., 1993; Kashani, Orvaschel, Rosenberg, & Reid, 1989), whereas boys are more likely to exhibit externalizing behaviors (Kuperman, Schlosser, Lidral, & Reich, 1999). Moreover, research has suggested that family distress and dysfunction may be more strongly related to internalizing disorders for girls and to externalizing disorders for boys (Crawford, Cohen, Midlarsky, & Brook, 2001).

The strength of this study is its age homogeneity, which is quite important in the fast and changeable developmental processes found in adolescence. The mean age of respondents is one of the lowest available in investigations of SI. An investigation in this age category offers the opportunity to understand the beginnings of suicidal behaviors and to facilitate early interventions. In addition, our study investigates the association between parental war participation and suicidal ideations in adolescents, where we believe the data to be scarce. In addition, the Lie scale from the JEPQ was used as a control instrument for interpretability of data. We are not aware of other studies using such a control instrument during investigations of suicidal phenomena.

The current study has several limitations. As mentioned, the sample was selected by convenience. The study was based solely on a cross-sectional sample without being able to determine causal relations. In the future, this could be assessed with appropriately designed prospective follow-up studies. In addition, data were based solely on adolescent self-reports and were not proofed by using other sources. Strict privacy and confidentiality may have helped the accuracy of the collected data. Finally, although the current research investigated numerous variables and their association with suicidal ideations, an exhaustive list of possible contributors to such behaviors was not included here.

Conclusions

This study revealed significant gender-specific patterns in early adolescents with suicidal ideations, regardless of the fact that there are no gender differences in the overall frequency of SI. This might be associated in part with the consequences of war in general and/or with parental participation in war, although further research is needed. Many of the psychosocial and behavioral factors associated with SI and identified in this study may be readily apparent and, in some cases, more easily identified than SI. On the other hand, suicidal ideation could be used as a nonspecific, but sensitive key marker, of psychological distress in adolescents. We believe these findings may have potentially important clinical and preventive implications.

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