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## Effect of Gender, Socioeconomic Status and Family Structure on Depression in Adolescents in Bosnia-Herzegovina

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To the Graduate Council:

I am submitting herewith a thesis written by Lada Mujkic entitled "Effect of Gender, Socioeconomic Status and Family Structure on Depression in Adolescents in Bosnia-Herzegovina." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Psychology.

Jenny Macfie, Major Professor

We have read this thesis and recommend its acceptance:

Derek Hopko

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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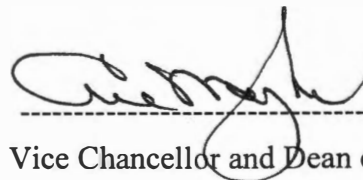


Jenny Macfie, Major Professor

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and recommend its acceptance:



Accepted for the Council:



Vice Chancellor and Dean of  
Graduate Studies

Effect of Gender, Socioeconomic Status and Family Structure on Depression in  
Adolescents in Bosnia-Herzegovina

A Thesis

Presented for the

Master of Arts

Degree

The University of Tennessee, Knoxville

Lada Mujkic

August 2004

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## ABSTRACT

The relationship between self-reported depressive symptomatology among adolescents in Bosnia-Herzegovina, who experienced the chronic stress during four year war, and risk factors such as gender, socioeconomic status, and family structure were investigated in the current study. The present study tested the hypothesis that each one of above mentioned risk factors individually impact depressive mood. Also, interactions between gender and socioeconomic status and gender and family structure were hypothesized. A nationally representative sample of high school teenagers was selected from two high schools in the capital city of Bosnia-Herzegovina, Sarajevo (N=559, 263 boys and 296 girls, mean age 15.34). Data from questionnaire done by Barber (1998), “Project: Youth and Family” were used. Demographic data (gender, age, socioeconomic status, and family structure) and The Children’s Depression Inventory (CDI, Kovacs, 1992), short version (10-items) were used in this study. Results revealed a significant effect for gender and socioeconomic status but not family structure on depressive mood in adolescents. Moreover, an interaction was found between gender and socioeconomic status and gender and family structure such that girls were more vulnerable to depression in the face of poverty than were boys, and boys were more susceptible to depression living only with their mother than were girls.

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## CHAPTER 1

### INTRODUCTION

What is the relationship of gender, socioeconomic status, family structure, and depression among Bosnian adolescents after the four year war? This question is very important for two reasons. The first reason is because there is a lack of empirical research on depression in this specific population. Thus, it is crucial to start empirically analyzing this important problem. Secondly, adolescence itself can be a turbulent developmental period for many adolescents and when depressive symptoms are added to the mix, school performance and peer relationships can suffer (Nolen-Hoeksema, Girgus, & Seligman, 1992). In some cases, more serious consequences such as suicide attempts can occur (Lewinsohn, Gotlib, & Seeley, 1995).

Because of various problems including poverty, disruptions in family life, such as destruction of homes, serious lack of food and water, loss of loved ones or family members, separation from family members, following the war, understanding their contribution to depression in adolescents in Bosnia-Herzegovina is one of the crucial issues for the development of a healthy society in the future. We would like to emphasize the need for development of prevention and intervention strategies that could offset mental health problems for this particular population: these adolescents are the future of Bosnia-Herzegovina.

According to the U.S. Department of State report on the human rights practices for the year 1996, 250,000 people were killed and 3 million were uprooted and dispersed

in Bosnia-Herzegovina during the war. The Bosnian War produced the greatest refugee crisis in Europe since World War II (Weine et al., 1995). Out of 250,000 people that were killed, 17,000 children were killed, 35,000 wounded, and over 1,800 permanently disabled. In that period 10,514 civilians, of which 1,598 were children, were killed in Sarajevo. Parallel to those statistics, 1,741 individuals with permanent disabilities were registered in the capital, of which 356 children, and 19,834 people were hospitalized, of which 3,381 were children.

Moreover, the population in Sarajevo lived under siege for more than three years, deprived of basic necessities and human rights, and abuses such as rape and torture were widespread throughout the country, especially affecting women and girls (Halsell, 1993; Gutman, 1993). The “Ethnic Cleansing” that happened in this war was described as extremely brutal, with atrocities, concentration camps, organized mass rapes, and neighbor murdering neighbor (Bell-Fialkott, 1993).

In one of the studies in the U.S. that had Bosnian refugees as subjects, it was found that, beside many other traumas, this population suffered destruction of their homes and belongings, forced evacuation from their towns, disappearance of family members without explanation, exposure to acts of violence or death, loss of loved ones or family members, and nearly all of the refugees emphasized the shock that came with the sudden occurrence of human betrayal by neighbors, associates, friends, and relatives. Thirty five percent of the sample met criteria for depressive disorder (Weine et al., 1995).

Furthermore, this war had a devastating impact on socioeconomic status and on family life following the war. The current study assessed the relationship of

socioeconomic status, family structure, gender, and depression in adolescents following the war.

### **Depression in Adolescence**

Although it was once thought that depression did not exist in adolescence, it is now recognized as more prevalent and problematic than depression in adults (Schraedley, Gotlib, & Hayward, 1999). Indeed, in the last two decades, depression among teenagers has emerged as a major mental health problem (Marcotte, Fortin, Potvin, & Papillon, 2002). Rutter, Tizard, and Whitmore (1970) reported in their Isle of Wight Study that 40% of adolescents in the U.S. experience some depressive symptoms. According to Cicchetti & Toth, 1998, the prevalence of major depressive disorder in the general population range from 0.4% to 7.3% for adolescents.

Results of other studies have revealed that depression in adolescence is prevalent, disabling, increasing in frequency, and often under-referred and under-treated (Reynolds & Johnston, 1994; Harrington, Fudge, Rutter, Pickles, & Hill, 1990; Beautrais, 2000; Simonoff et. al., 1997; Reynolds & Johnston, 1994; Kovacs & Gatsonis, 1994). Additionally, empirical findings have determined that depression in adolescence very often predicts subsequent depression in adulthood (Bahls & Bahls, 2003; Goodman, 1999) and there are cross-cultural data that support a continuity model of depression from adolescence to young adulthood (Canals, Domenech-Llaberia, Fernandez-Ballart, & Marti-Henneberg, 2002).

Jones (2002) investigated how adolescents' understanding of political violence impacts their well-being. She concluded that more depressed adolescents were more

engaged in searching for meaning, and that this search was associated with sensitivity to the political environment, and feelings of insecurity about the prospect of a future war. Reflecting on the essential risk of depressive symptomatology among the adolescent population and considering the traumatic experience Bosnian youth went through in their recent past may inform the creation of stable prevention and intervention programs.

### **Gender Differences in Depression Among Adolescents**

Puberty marks the beginning of an increased risk for depression in girls (Burt, & Stein, 2002). Gender differences in depression, where girls are more vulnerable than boys, first begins to emerge between the ages of 13 and 15, with the greatest gender difference evident between the ages 15 and 18 (Hankin, Abramson, Moffit, Silva, McGee, & Angell, 1998). Research has shown that girls have more risk factors for depression during adolescence and also are presented with more biological and social challenges during this life period (Nolen-Hoeksema & Girgus, 1994). Indeed, there is a dramatic increase in depression among girls in early adolescence but not among boys (Wichstrom, 1999). Nolen-Hoeksema & Girgus (1994) note that the personality characteristics, such as dependency and unassertiveness, which are linked to the feminine gender role are more depressogenic than those linked to the masculine gender role, which is even considered as a protective factor against depressive symptoms in adolescence (Allgood-Merten et al., 1990; Hart & Thompson, 1996).

Moreover, stress influences gender differences in depressive symptoms. There is evidence that boys and girls experience stress differently during adolescence. Adolescent girls are less likely to feel good about themselves and more likely to perceive their lives

as stressful than are adolescent boys (Canadian Institute of Child Health, 1994). Being female and having higher levels of perceived stressfulness of life events were correlated with higher frequencies of depressive symptoms. (Gil-Rivas, Greenberger, Chen, & Montero y Lopez-Lena, 2003). Females had higher scores on a level of depressed mood in relation to the exposure to negative life events because of greater exposure and greater reactivity to stressful events (Ge et al., 1994). In their study, Gore, Aseltine, & Colton (1992) revealed significant gender differences in aspects of stress exposure, with girls reporting higher levels of exposure to every measure of stress and strain.

There are other reasons why stressful life events (Hoffmann & Su, 1998) may negatively affect girls more than boys. Girls have different boundaries between self and others and are more vulnerable to internalizing disorders (Rosenfield, Vertefuille, & McAlpine, 2000). Girls also are more exposed to stressors (Elliot, 2001), use more emotion-focused coping strategies in response to stressful events in general, and use more ruminative strategies in response to a depressed mood (Sigmon, Hotovy, & Trask, 1996). In the current study, we assessed socioeconomic status and living in a single parent home (living only with mother) as measures of stress and their effect on depression in adolescent girls versus boys.

### **Impact of Socioeconomic Status and Family Structure on Depression**

Some studies examined family structure and socioeconomic status as possible risk factors for the level of depressed mood. Gore, Aseltine, and Colton (1992) concluded that family structure and socioeconomic status are risks that directly and indirectly

influence depressive symptoms (Gore, Aseltine, & Colton, 1992). Poverty and the absence of a parent might be associated with greater level of depression.

Goodman (1999) examined the impact of socioeconomic status in the United States on mental health. The study reported that socioeconomic indicators are significantly and consistently associated with depression among adolescents. Some European studies that investigated the relationship between social class and adolescent health suggested that there was a general pattern among children and adults characterized by an inverse relationship between socioeconomic status and mental health problems, while among adolescents this relationship was inconsistent. (West, Macintyre, Annadale, Hunt, 1990; Macintyre, West, 1991; Glendinning, Love, Hendry, Shucksmith, 1992; Power, 1991; Ostberg, Vagero, 1991). Kendler et al. (1992) suggested low social class to be significantly related to various forms of psychopathology, one of which was depression (Kessler, Avenevoli, & Merikangas, 2001). In the present study, we assessed the impact of socioeconomic status on adolescent depression.

Family structure, such as living in dual parent family or single parent family, influences adolescent wellbeing. Growing up in a single-parent household was found to be significantly related to various psychopathologies, one of which was depression (Kessler, Avenevoli, & Merikangas, 2001). Children in single-parent families had higher symptom levels of stress (Gore, Aseltine, & Colton, 1992). In the current study we compared the effect of single parent (living only with mother) versus dual parent families (living with both biological parents) on adolescent depression. Based on differential effects of stress on females discussed above, we expected girls to be more affected by the

stress of low socioeconomic status or single families and to show more depression than boys.

### **Evidence from Multiple Countries about Depression and Its Gender Differences**

Stewart, Betson, Lam, Chung, Ho, and Chung (1999) emphasized the role of culture in the prevalence of depressive symptoms. Different cultures affect their members in different ways by imposing different expectations, values, gender roles, and what constitutes social desirability. Their study revealed that adolescents from Hong Kong (a family oriented culture) reported higher levels of depression than Canadian adolescents (individualistic culture) and that stressors play a significant role in the development of a depressed mood. Furthermore, girls showed higher levels of depressive symptoms than boys. Moreover, they found that adolescents from single-parent homes showed more symptoms of depression than did those from two-parent households.

In studies of family oriented cultures, females reported more depressive symptoms than males. However, the differences usually were small to moderate in magnitude (Gil-Rivas, Greenberger, Chen, Monter, & Lena, 2002). For example, it has been found that gender differences in depressive symptoms were greater among American as compared with Chinese youth (Greenberger, Chen, Tally, & Dong, 2000). Additionally, Greenberger et al. (2000) indicated that family relationships, and levels of family harmony and connectedness, are more associated with depressive symptoms in the family oriented cultures, such is China. Because Bosnia is a family oriented culture, we therefore expected more depression in adolescents in single parent than in dual parent families.

## **The Current Study**

The present study investigated levels of self-reported depressive symptomatology among adolescents in the family-oriented Bosnia-Herzegovina culture who experienced the chronic stress associated with poverty and family disruptions following the four-year Bosnian War.

Prior research has found that in a normative sample of adolescents in the U.S., child gender, socioeconomic status, and family structure contribute significantly to depressive symptoms (Gore, Aseltine, & Colton, 1992). The present study tested susceptibility to depressive moods in Bosnia and Herzegovina among adolescents as a function of gender, socioeconomic status and family structure. Moreover, we examined interactions between child gender and socioeconomic status and between child gender and family structure. The goal was to use the data findings as supporting evidence for the necessity of prevention and intervention programs with emphasis on the most vulnerable segment of this population, as well as a baseline for future research.

## **Hypotheses**

Based on prior research we hypothesize significant variance in depression will be accounted for by child gender, socioeconomic status, and family structure. We expected that girls would show more depression than boys and we expected interactions between gender and socioeconomic status, and between gender and family structure such that girls from lower socioeconomic families and girls who live only with mother would be more vulnerable to depressogenic symptomatology.



## **CHAPTER 2**

### **METHODS**

#### **Participants**

A total of 578 secondary school students participated in this study: 304 girls and 274 boys. For our current study a subset of  $N = 559$ , 263 boys, and 296 girls was utilized, which is the number of participants who answered all questions related to each of the variables of interest in this study. The sample included adolescents between the ages of 13 and 19 whose average age was 15.34 years ( $SD = 1.44$ ).

#### **Measures**

Data for this study was obtained through the questionnaire “Project: Youth and Family” that was administered to secondary school students in Sarajevo by Barber (1998). The schools were randomly selected from the schools that participated in the overall study. A nationally representative sample of high school teenagers was selected from two high schools in the capital city of Bosnia-Herzegovina, Sarajevo. All measures were administered in Bosnian language, at a single sitting. At the beginning of the session, students were briefly informed of the goals of the study. The questionnaire was administered in classroom groups of 28-30 students and was completed anonymously. The following measures obtained through this questionnaire were singled out and used for this study:

(1) Demographic data included gender, age, socioeconomic status (SES), and family structure (FAM). SES was assessed through the subjective self-report by adolescents where they reported how well financially situated they feel in comparison to other individuals in their surrounding. They rated their situation on a 5-point scale. In the present study, by choosing one of 5 possible answers, we classified participants in two groups for SES:

- I. poor (1 = a lot poorer than most and a 2 = little poorer than most), N = 54
- II. not poor (3 = have about the same amount of money as most, 4 = a little richer than most, and 5 = a lot richer than most), N = 505

This self-report scale had been validated in a sample of adolescents in the U.S. in which actual poverty ratings correlated highly with the scale. The 13% poverty ratings in Utah, U.S., corresponded exactly to the poor group (Barber, personal communication May, 2004).

FAM also was determined by adolescents' self-report. They could choose one out of 9 possible options. For the purpose of our study we considered 2 options out of 9 that were offered. In accordance with their answer we organized participants in two groups for FAM.

Participants living:

- I. only with mother, N = 78
- II. with both biological parents, mother and father, N = 481.

(2) The Children's Depression Inventory (CDI): Short version (10-items) of the Children's Depression Inventory (CDI) was used for this study (Kovacs, 1992). The CDI

is a self-report instrument that measures level of depression in children and adolescents between the ages of 8 and 17.

The CDI normative sample (Kovacs, n.d.) included 1,266 public school students (592 boys, 674 girls), 23% of whom were African-American, American Indian or Hispanic in origin and 77% whites. The population was mostly middle class, and about 20% of the students were from single homes. The internal consistency, Cronbach's alpha coefficients range from .71 to .89 and the test-retest coefficients range from .74 to .83 (time interval two-three weeks).

In another normative sample (Muris, Merckelbach, & Schouten, 2001) the 27-item version of the CDI was administered to 968 secondary school students (496 boys and 472 girls) from South-Limburg region of The Netherlands. Mean age for this population was 14.2 years (SD = 1.4). The internal consistency, Cronbach's alpha coefficients in this study was 0.83. CDI mean score overall was 5.2, SD = 7.3; for boys the mean was 4.4, SD = 6.8, and for girls the mean was 6.0, SD = 7.8.

According to Maruish (1999), the long and short forms generally provide comparable results. Kovacs (1992) reported that the correlation between the CDI Total Score and CDI Short Form total score was  $r = 0.89$ . Therefore, in order to compare means of depression in the current sample to the means in Muris et al. (2001) study, we divided the Muris et al. means by 27 and then multiply them by 10. After doing this mean of depression in Muris et al. (2001) study is overall 1.93 compared with 1.35 in the current sample. See Table A-5 for a comparison of means and standard deviations overall and by adolescent gender. This suggests that depression was not elevated in our Bosnian sample overall (See Table A-5). Moreover, rates of depression appeared not to be high compared

with prevalence rates in the U.S. Out of 559 adolescents 2.5% answered “I am sad all the time.” Compared with a prevalence rate estimated at 0.4%--7.3% of depression for adolescents (Cicchetti & Toth, 1998), this again suggests there were not elevated rates of depression in this sample.

Carlson and Cantwell (1979) and Cantwell and Carlson (1981) examined the relationship between CDI scores and independent psychiatric diagnoses in 102 children aged 7 to 17 years who were undergoing inpatient or outpatient psychiatric treatment. Results indicated that patients with higher self-rated depression as measured by the CDI received higher global severity ratings of depression on the basis of a semi-structured interview administered without knowledge of patients' CDI results. The high-scoring patients also were more likely to receive a formal diagnosis of major depressive disorder.

The CDI asks the participant to rate how they have been feeling in the last two weeks. Each item is rated on a 3-point scale, with higher numbers reflecting more intense feelings. The total score, ranging from 0 to 20, for each participant is obtained by summing the ratings on each item. The CDI is a widely used inventory of depressive symptoms and is a reliable measure (Smucker, Craighead, Craighead, & Green, 1986) which was translated into Bosnian and then again into English for the purpose of checking on the validity of each item.

In order to assess CDI reliability for our study we found that Cronbach's alpha for our population is .75, which is in the range found in the Kovacs normative sample. We also tested distribution normality and found that skewness is 1.63 and kurtosis 3.34. Shapiro-Wilks' lambda is .85 ( $df = 559$ ;  $p = .000$ ). The item that assessed degree of “feeling sad,” on the CDI may best represent depression. Out of 559 adolescents 2.5%

answered "I am sad all the time." Compared with a prevalence rate estimated at 0.4%--7.3% of depression for adolescents, this again suggests there were not elevated rates of depression in this sample.

## CHAPTER 3

### RESULTS

#### Descriptive Statistics

Table A-1 shows sample sizes, means and standard deviations for each variable for the sample as a whole and by adolescent gender. Tables A-2 and A-3 display inter-correlations among variables in the sample as a whole and by adolescent gender respectively.

#### Predicting to Depressogenic Symptomatology

We tested the hypothesis that gender, FAM and SES would predict depressogenic symptomatology in adolescents with a hierarchical multiple regression analysis (see Table A-4). For current study, we will not center variables. Although continuous variables are centered before computing interaction terms, it is not necessary to center variables that are categorical (Aitken & West, 1991) Because the distribution of the CDI is skewed, we transformed the depression variable by taking its natural log before running the regression. The total amount of variance in the dependent variable, depressogenic symptomatology, accounted for in the model was 4.9% (4.1% adjusted),  $F(5,553) = 5.73, p=.0.000$ .

In Step 1, adolescent gender, SES, and FAM accounted for 2.9% (2.3% adjusted) of the variance in depressogenic symptomatology  $F(3, 555) = 5.47, p = 0.001$ . Results revealed a significant effect for gender such that being female makes one more

vulnerable to depressogenic symptomatology. SES also significantly predicted depression such that higher SES predicted fewer depressogenic symptoms. However, results for FAM revealed no significant effect on depressogenic symptomatology, contrary to our hypothesis.

In Step 2, the interactions between adolescent gender and SES and the interaction between gender and FAM accounted for a significant additional 2.0% (1.8% adjusted) of variance. Results revealed a significant interaction between adolescent gender and SES such that, as hypothesized, girls who were poor displayed higher depression but boys did not. See Figure A-1 for the interaction between adolescent gender and SES. Moreover, results also revealed a significant interaction between adolescent gender and FAM such that boys who lived only with mother had greater depression, but girls did not. Actually, being girl and living only with mother was associated with a lower level of depression contrary to our hypothesis. See Figure A-2 for the interaction between adolescent gender and FAM. Interestingly, when the interactions were added to the model, the main effect for SES was no longer significant.

Results thus supported hypotheses for a main effect for gender such that girls demonstrated more depression than did boys. Results also supported a hypothesized main effect for SES such that poorer adolescents were more depressed. However, results did not support a main effect for FAM on depression. Interactions supported the hypothesis that girls were more vulnerable to depression in the face of poverty than were boys, but boys and not girls as hypothesized, were more vulnerable to depression living only with mother than were girls.

## CHAPTER 4

### DISCUSSION

In the present study we assessed risk factors for the depressogenic symptomatology in Bosnian adolescents: gender, family structure, and socioeconomic structure. Both gender (girls) and being poor was associated with depression, but family structure was not. Furthermore, the interaction between gender and socioeconomic status was significant such that girls from the poor families were more vulnerable to depressive moods. Moreover, the interaction between gender and family structure also revealed significant result, indicating that boys living in a single parent family (living only with mother) were more susceptible to depressive moods than girls.

Bosnia is a family oriented culture. For Bosnian adolescents, closeness with the family members is very important as well as perceived parental warmth and acceptance. This belief is consistent with findings reported in previous studies from Mexico, a family oriented culture, that suggest that perceived parental warmth and acceptance contributed to lower levels of depressed mood among Mexican adolescents, and that family plays an important role in adolescent development (Roberts & Sobhan, 1992; Gil-Rivas, Greenberger, Chen, Montero, & Lena, 2003). However, single family status, or in our study living only with mother, only affected boys and not girls in terms of depression. The absence of their fathers living with them may contribute to their depression. However, further research needs to replicate and explore possible reasons for this finding.



Even though Bosnia is a developed country in many ways, gender roles are still rigid and traditional. Very often girls in family oriented cultures show characteristics such as unassertiveness, low self-esteem, and self blame, that might increase their tendency to be more prone to depression (Nolen-Hoeksema & Girgus, 1994). Due to this evidence we are not surprised that girls reported more depressive symptoms than boys. We found in our study that female gender is strongly associated with depressive moods and this finding was supported by previous research (Durakovic-Belko, Kulenovic, & Dapic, 2003). One of the assumptions why girls in poor families were more depressed but not boys might be because girls are more susceptible to stress and poverty is very stressful. Parents' experience of stressful life events contribute to adolescent distress (Compas & Wagner, 1991). Depression among parents is consistently related to depression among their adolescent children (Compas & Hammen, 1994; Weissman, 1990). There is a possibility that girls in Bosnia are more vulnerable to parent feeling of stress caused by poverty. Also, girls use more emotion-focused coping strategies in response to stressful events in general, and use more ruminative strategies in response to a depressed mood (Sigmon, Hotovy, & Trask, 1996).

### **Caveats and the Need for Future Research**

This adolescent population recently went through a very stressful period in their life. The Bosnian War may have had an effect on adolescents' depression. However, because we did not have data on pre and post war levels of depression we were not able to examine this relationship. Research has shown that stressful life events are associated with depressive symptoms (Ge & Conger, 2001; Eley & Stevenson, 2000; Abdullatif,

1995; Cheung, Leung, Chan & Ma, 1998). Moreover, the rapid developmental changes during adolescence may make adolescents more vulnerable to suffering greater consequences of being exposed to violence than younger children (Green, 1993). Major trauma correlated strongly with psychosocial and somatic symptoms and major depression was found in 25% of a randomly chosen population sample in Sri Lanka after the war (Somasundaram & Sivayokan, 1994).

However, Gruber (1996) examined the relationship between direct exposure to persistent armed conflict, such as war, and psychological health and found that war-exposed children did *not* show greater levels of depression than those who were not exposed. Durakovic-Belko, Kulenovic, and Dapic (2003) reported that even though individual and socioenvironmental factors are the strongest predictors of depression, dimensions of war traumas should not be denied and also are significantly correlated with depressive symptoms. Because we did not assess depression before or after the war, we were not able to assess the impact of war on depression. However, mean levels of depression found in the current study did not seem to be higher than those found in other samples using the same measure. War trauma may have led to more externalizing symptoms such as anxiety and depression. More research on the effect of war on depression is needed to clarify this relationship.

Another limitation of the study is that we did not further explore the complexities of family structure. For example, it would be useful to compare the effect of living with biological versus stepparents, mothers versus fathers. A third limitation is that although the sample was chosen randomly, this sample came from a population that lives in a big city and may be different from the population from smaller towns. Also, we do not have

information about personal loss each participant experienced during the war. We are not sure if they lived in Sarajevo before the war or if they came as refugees after the war. All these factors might affect depression.

Finally, the study did not assess the relationship between depression and other problems such as antisocial behavior, drug and alcohol addiction in Bosnia. Previous research noted that 33% to 70% of children and adolescents with depression have an additional disorder or disorders (Kovacs & Devlin, 1998; Lewinson et al., 1993). Therefore, it is important for future research to address this. We also would suggest investigating the importance of quality of relationships the adolescent has with family members, peers, and teachers and considering them as protective factors in buffering the effect of war on depression in adolescents. Also we would suggest adding exposure to trauma and loss (personal and property) as potential risk factors.

It is important, however, to note that only 5% of the variance in depression was accounted for by our model, which leaves 95% unaccounted for. We would speculate that relationship with family members and the stress of war may account for some of the remaining variance.

### **Prevention/Intervention**

Especially considering recent traumatic experience, the goal for the researchers and practitioners would be to pay special attention to this population of adolescents and think about the possible risks and buffers for their development of psychopathology. From a stress perspective, the prominent factors mediating the effects of social structural

and family background risks, which are hypothesized to influence adolescent mental health, include chronic and acute life events (Gore, Aseltine, & Colton, 1992).

Because of the political and economic situation in Bosnia, we believe that the problem of depression among adolescents has been neglected. An increase in antisocial behavior and drug and alcohol addictions among adolescent population should encourage us to put much more effort into the establishment of prevention and intervention programs.

Because of the specificity of the area and recent traumatic experience, it would be useful to organize more preventive programs in schools. Screening for depression would be essential and necessary in each school. Organizing interactive classes in schools that would help students develop their cognitive and behavioral abilities such as problem-solving, communication, and social skills. Such a program might help them develop better self-esteem and assertiveness.

Helping adolescents overcome stigma through such classes about mental illnesses and informing them about possible help also would be very important. We believe that involvement in monthly meetings in schools for parents would be of great importance as well. Furthermore, even though alcohol and drug addiction prevention programs started taking place recently, considering the magnitude of the problem, we believe more such programs, even offering them in curriculum would be helpful.

### **Conclusion**

The current study revealed that being female, especially a poorer female, or being a boy and living only with mother in Bosnia-Herzegovina make adolescents more

vulnerable to depressogenic symptomatology. We believe that the current study is of great importance for development of a healthier society in the future. Investigating more about possible risk factors and searching out the most vulnerable population for depression might help us accomplish this goal. These are the people that will be leaders and will determine in what kind of society we live. By caring about them we are improving the likelihood of success for ourselves and for future generations.

We were not able to assess the effect of war on adolescent population in Bosnia. Nevertheless, we found this study very important as a starting point in keeping the evidence of this psychopathology among adolescent population and as an alert for the researchers and practitioners in this field to understand the importance of further initiatives to gather such data and accordingly establish prevention and intervention programs to help this population. These findings provide the possibility of intervening with the most vulnerable segment of adolescent population for the treatment of depression and to provide necessary help and support.

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## **APPENDICES**



**Table A-1**

**Descriptive Statistics for the Whole Sample and by Adolescent Gender**

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Variables	N (girls, boys)	M (girls, boys)	SD (girls, boys)
Gender	559 (296, 263)		
FAM			
Single parent family	78 (40, 38)		
Dual parent family	481 (256, 225)		
SES			
Poor	54 (29, 25)		
Not Poor	505 (267, 238)		
Depression	559 (296, 263)	1.35 (1.38, 1.32)	0.28 (0.31, 0.24)

---

Note: FAM = family structure, SES = socioeconomic status

**Table A-2**

**Inter-correlations Among Variables in the Whole Sample**

---

Variables	CDI	Gender	SES	FAM
CDI	---	0.10*	-0.15**	-0.03
Gender	0.10*	---	0.01	0.01
SES	-0.15**	-0.01	---	0.11**
FAM	-0.03	0.01	0.11**	---

---

\*Correlation is significant at the 0.05 level (2-tailed).

\*Correlation is significant at the 0.01 level (2-tailed).

Note: CDI = Child Depression Inventory (depression), SES = socioeconomic status, FAM = family structure

**Table A-3**  
**Inter-correlations Among Variables by Adolescent Gender**

Variables	CDI	Gender	SES	FAM
CDI	---	a	-0.01	-0.12
Gender	a	---	a	a
SES	-0.24**	a	---	0.09
FAM	0.02	a	0.09**	---

\*Correlation is significant at the 0.05 level (2-tailed).

\*Correlation is significant at the 0.01 level (2-tailed).

a cannot be computed because at least one of the variables is constant

Note: Girls are below, and boys above the diagonal, CDI = Child Depression Inventory (depression), SES = socioeconomic status, FAM = family structure

**Table 4**  
**Hierarchical Multiple Regression Analyses Predicting Depression**

Step	Independent Variables	$\Delta R^2$	$\beta$	B	t	$R^2$ (adj.)	F	df
1	Gender		0.10	0.04	2.27*			
	SES		-0.14	-0.09	3.24**			
	FAM	0.03***	-0.02	-0.01	0.48	0.03 (0.02)	5.47**	3, 555
2	Gender		0.28	0.10	1.72			
	SES		-0.00	-0.00	0.05			
	FAM		-0.10	-0.06	1.72			
	Gender*SES		0.43	-0.16	3.03*			
	Gender*FAM	0.02*	0.24	0.10	1.99*	0.05 (0.04)	5.73***	5, 553

\*  $p \leq 0.05$ , \*\* $p = 0.001$ , \*\*\* $p < 0.001$

Note: adj. = adjusted  $R^2$ , SES = socioeconomic status, FAM = family structure

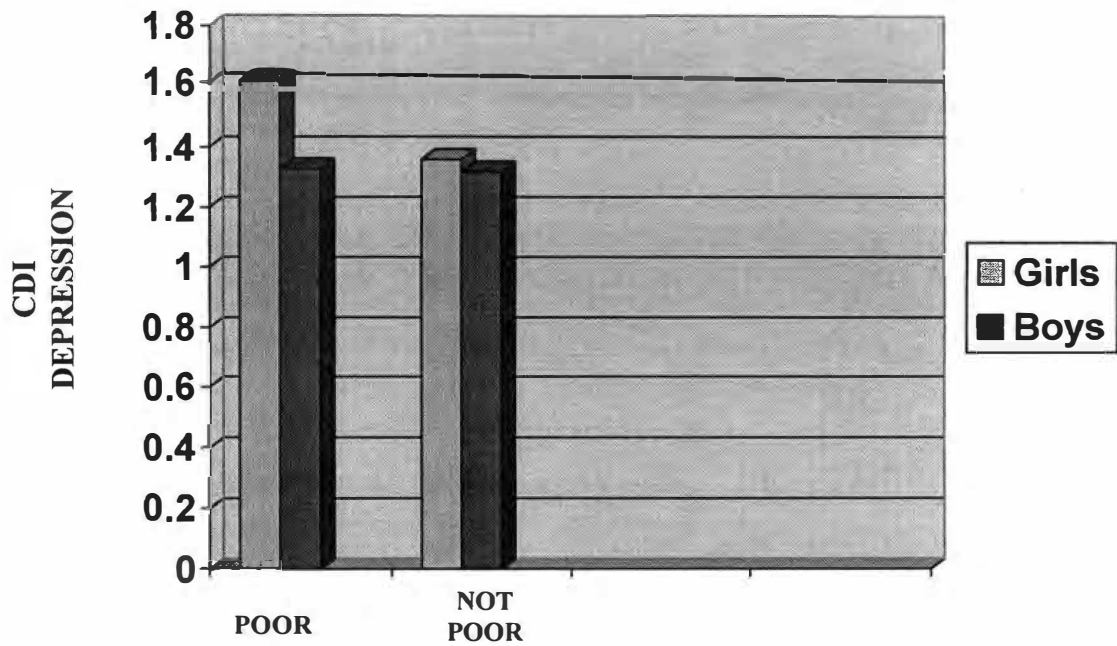
**Table A-5**

**Comparison of Means from Current Study and Muris et al. (2001) Study**

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Study	Mean		
	Total Group	Boys	Girls
CDI (Muris et al. (2001) Study)	1.93	1.63	2.22
CDI (Current Study)	1.35	1.32	1.38

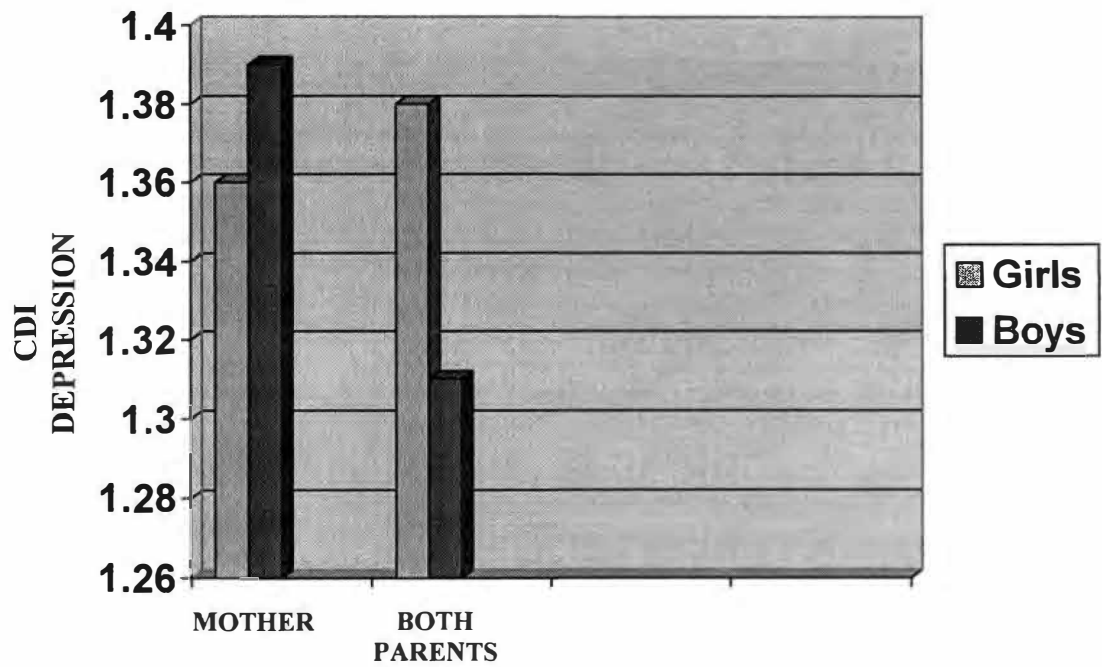
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**Figure A-1**

**Effect of Interaction between Adolescent Gender and Socioeconomic Status**

**On Self-Reported Depressogenic Symptomatology**



**Figure A-2**

**Effect of Interaction between Adolescent Gender and Family Structure  
on Self-Reported Depressogenic Symptomatology**

## VITA

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