

DEPRESSIVE SYMPTOMS, EXPOSURE TO AGGRESSION AND DELINQUENCY PRONENESS IN ADOLESCENCE: IMPACT OF TWO DECADES OF WAR AND POLITICAL VIOLENCE ON ADOLESCENT MENTAL HEALTH

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Abstract - Traumatic experiences in Serbia in the last two decades have caused significant psychological consequences in children and adolescents. The aim of this study was to investigate the relationship between depressive symptoms, exposure to aggression and delinquency proneness among high school and elementary school students in Belgrade, Serbia. The participants were 899 students (51.8% were female) with no prior treatment for psychological problems, with a mean age of 16.70±1.95. All used instruments were taken from the modified Social and Health Assessment (SAHA). Our findings show that delinquent behavior or exposure to delinquency was significantly related to depressive symptoms. The strongest predictors of depression were variables concerning legal consequences, affiliation with delinquent peers, victimization by community violence and peer victimization. This study confirmed a strong correlation between depression and exposure to violence. Identifying adolescents with depressive symptoms is important for prevention of serious mental health consequences.

Key words: Adolescence, depression, violence, community

INTRODUCTION

Clinical experience and research indicate that a growing number of adolescents have psychological problems, or manifest clear psychopathology (Goodyer et al., 2010), especially if they are growing up in times of socio-economic instability due to social transition, poverty or the universal crisis of moral values.

Depression is a serious problem that affects every aspect of an adolescent's life. If left unrecognized, it can lead to problems at home and school, drug abuse, even to an irreversible tragedy such as homicidal vio-

lence or suicide, and it is associated with long-term maladjustment and interpersonal problems (Fombonne et al., 2001). Although stress exists at every stage of human development, adolescence can be especially stressful due to the biological and social changes in this period of life. Changes in the brain – specifically in the hippocampus and prefrontal cortex, make adolescents particularly susceptible to depression if exposed to stress (Andersen and Teicher, 2008; Horwitz et al., 2011). Adolescents with depression do not necessarily appear sad; neither do they always withdraw from others. Symptoms of irritability, aggression, and rage are usually more prominent.

Adolescents are exposed to community violence at alarming rates (Lambert et al., 2008; Vermeiren et al., 2002). Previous studies have demonstrated that exposure to violence is related to internalizing (depression and anxiety), and externalizing behaviors (aggression, delinquency, hyperactivity). Adolescents are exposed to violence through witnessing violent acts, personal victimization and learning about violence in the community (Chen, 2010; Lambert et al., 2008). Witnessing violence is associated with higher rates of posttraumatic stress disorder (PTSD), depression, aggression and behavioral disturbances, and major findings across studies indicate that males, ethnic minorities, and urban residents are at increased risk for witnessing violence (Buka et al., 2001; Lambert et al., 2008). Mrug and Windle (2010) showed that witnessing violence could have the following consequences: at school it predicted anxiety and depression, at home it was related to anxiety and aggression and in the community it predicted delinquency.

Victimization by community violence is associated with a higher risk for depression and suicide – students who were cut, stabbed or shot displayed these psychopathological manifestations more often than students who were not exposed (Nickerson and Slater, 2009). Peer victimization has been associated with internalizing problems: loneliness, anxiety, depression, suicidal behavior or ideation, and low self-esteem. Children and adolescents with internalizing problems have also been found to be at greater risk of becoming victims in the first place (Woods et al., 2009). Victims of bullying are frequently reported as unpopular, having fewer friends, and finding it difficult to make new friends. Those of them with poor social relationships are at greater risk of developing depression (Kaltiala-Heino et al., 2010). Researchers have shown that bullies, and not just victims, are at higher risk of depression, suicide ideation and attempts, and that the most disturbed group are bully-victims (Brunstein Klomek et al., 2007).

Studies of depression for both youth and adults have documented a significant association between environmental hazards – violence, poverty, social isolation – and depressive symptomatology (Du-

Rant et al., 2000). The highly traumatic experiences of the last twenty years in Serbia have caused acute and chronic stress with significant psychological consequences, predominantly expressed in vulnerable segments of the population such as children and adolescents (Lecic-Tosevski et al., 2007). In the previous two decades, Serbia, a country that is currently undergoing social transition, experienced four wars in the region, hyperinflation, 3.5 years of UN sanctions, NATO bombing that lasted for 11 weeks, a financial crisis and a high rate of unemployment (Lecic-Tosevski et al., 2003).

A recent study performed in Kosovo, the region of Serbia where the 1999 war took place followed by NATO bombing, showed that 41.7% of respondents living in post-war Kosovo had symptoms of mild or moderate depression (Wenzel et al., 2009). Another study performed in the former Yugoslav republic of Bosnia and Herzegovina, where the war took place from 1992-1995 showed that seven years after 51,6% of children manifested posttraumatic stress disorder and 22.6% manifested depression (Hasanovic et al., 2006). Similar numbers were found when observing research results in other war-affected parts of the world. A study performed in Afghanistan showed that 22.2% of children met the criteria for a probable psychiatric disorder, and trauma exposure as a risk factor was present across all applied measures of child mental health (Panter-Brick et al., 2009). A similar study among adolescents in Uganda showed that 57% of students had clinically significant levels of posttraumatic stress symptoms four years after the end of war and a strong correlation between post-traumatic stress symptoms and internalizing symptoms was found (McMullen et al., 2011). Another study assessing group intervention for children and adolescents exposed to war in Lebanon, found that 16.8% of children exhibited major depressive disorders 12 months post-war and that intervention had no significant treatment effect on the participating children (Karam et al., 2008). In Sri Lanka, a study that aimed to assess posttraumatic stress disorder in children affected by both war and severe natural disaster (tsunami), found that 19.6% of the children met the criteria for the diagnosis of Major Depres-

sive Disorder based on DSM-IV criteria; 22.6% of the children reported past periods of suicidality and 17.2% of the sample was diagnosed with current suicidal ideation (Catani et al., 2008).

As a consequence of past traumatic experiences and current political insecurity in Serbia, there is a growing number of adolescents with psychological problems that manifest certain age-specific psychopathology (aggressive behavior, violence, increase of suicide rate, abuse and neglect, substance abuse and delinquent behavior) (Pejovic et al., 2009).

The aim of this study was to investigate the relationship between depressive symptoms, exposure to aggression and delinquency proneness among urban high school and elementary school students in Belgrade, Serbia.

MATERIALS AND METHODS

Participants were 899 high and elementary school students who voluntarily took part in the study. None of them had been treated for psychological problems. Prior to the survey, a parent permission form and an informed consent were obtained from all participants. The mean age of the participants was 16.70 ± 1.95 (ranging from 13 to 20 years), and 51.8% of them were female. The study was conducted during the school year 2009/2010 and approved by the Ethical Committee of the Institute of Mental Health, Belgrade.

All administered instruments were taken from the Social and Health Assessment (SAHA), originally developed by Weissberg et al. (1991) and later modified by Schwab-Stone et al. (1995; 1999). The SAHA represents a large-scale project on risk and protective factors for problem behaviors among inner-city youth. In the past several years, this instrument has been substantially modified by the SAHA Research Evaluation Team (Ruchkin et al., 2004) and only a small number of the scales originally used in the instrument have remained.

Prior to self-survey administration, students were read a detailed assent form outlining their par-

ticipation with assurances of confidentiality and then asked for their signature to indicate consent. Surveys were group-administered to students in their classes by trained personnel. One administrator read the surveys aloud to students while the students followed. A second administrator was available for answering the students' questions. Teachers remained in the classroom, but did not assist with the administration in order to protect the privacy of responses. The entire administration procedure typically lasted approximately one hour. Surveys were administered in Serbian, as appropriate, and a makeup administration day was scheduled for each school within one month of the initial introduction.

Depressive Symptoms were assessed by a modified Center for Epidemiological Studies Depression Scale (Radloff, 1977). The final version consisted of 15 items; respondents reported on the presence of depressive symptoms during the past month on a three-point scale ("Not true"; "Somewhat true"; or "Certainly true"). The scale had a good internal consistency, with a Cronbach α of 0.80 in the US study (0.83 without recoded items).

Affiliation with Delinquent Peers was assessed by a 9-item scale developed by the SAHA Research Evaluation Team (Ruchkin et al., 2004). In this scale, respondents are asked how many of their close friends are involved in different types of risk-taking behavior ("None"; "A few"; "Some"; or "Most or all"). The Cronbach alphas were 0.76 (B), 0.76 (R), and 0.77 (US).

Exposure to Violence Scales include two scales assessing victimization by and witnessing of community violence. *Victimization by Community Violence* is 7-item scale and represents an adaptation of a scale developed by Martinez and Richters (1993). A 5-point response scale ranges from "None" (0 times), to "Ten or more times" (4), and the 7 items are added, resulting in a possible range of scores from 0 to 28. The internal consistency of the scale in the US study was good ($\alpha = 0.78$). *Witnessing Community Violence* assessed whether students had seen someone being victimized by the same 7 types of violence over

a one-year period analyzed in the *Victimization by Community Violence Scale*. A 5-point response option is given, ranging from “None” (0 times) to “Ten or more times” (4), and the 7 items were summed, resulting in a possible range of scores from 0 to 28 ($\alpha = 0.89$).

Prosocial Beliefs were measured by the ten-item scale, with seven items derived from the *Disapproval of Deviancy Scale* from the School Health Study (Jessor et al., 1989) and three items (“hurting someone badly”; “being a look-out for a drug dealer”; and “carrying a gun”) added by the developers of the SAHA (Weissberg et al., 1991). Respondents were asked to rate how wrong it is to be involved in various antisocial activities on a four-point Likert-type scale (ranging from “Not wrong” to “Very wrong”), which made a sum total that can range from 10 to 40. Greater scores corresponded to the greater levels of approval of antisocial behavior. The coefficients alpha for this scale was 0.88 (US); 0.83 (R) and 0.85 (B).

Antisocial Behavior Scales (Schwab-Stone et al., 1999) include three subscales assessing behavior problems of different severity and identified on the basis of a factor analysis with the US data. The *Conduct Problem Scale* includes six items describing relatively mild behavior problems. The scale provides a total sum score that can range from 0 to 24, and had a good internal consistency of 0.78 in the US study. *Less Severe Delinquency* scale consists of five items describing non-violent antisocial behavior, such as stealing a motorcycle or a car and pickpocketing. The scale provides a total sum score that can range from 0 to 20, and had good internal consistency of 0.75 in the US study. The *Severe Antisocial Behavior* scale consists of five items pertaining to relatively serious aggressive and antisocial behaviors (starting a fistfight, participating in a gang fight, carrying blade or knife to school). The scale provides a total sum score that can range from 0 to 20. The coefficient alpha for this scale was 0.78. *Legal consequences* from antisocial involvement include 3 items about school suspension, arrest and juvenile court, and is also part of the Antisocial Behavior Scales. The Cronbach alpha for the scale was 0.62.

Beliefs Legitimizing Aggression is a five-item measure from the National Adolescent Student Health Survey (American School Health Association et al., 1990) used to index beliefs that physical aggression is a legitimate response to provocation. Items are rated on a four-point Likert-type scale (1=“No”; 2=“Probably no”; 3=“Probably yes”; 4=“Yes”), providing a possible range of 5 to 20 for the sum score. Greater scores correspond to higher levels of the belief that one should fight when provoked, i.e., that aggression is a legitimate form of interpersonal behavior. The coefficient alpha in the US study was 0.78.

Peer Victimization Scale was adapted from the *Multidimensional Peer-Victimization Scale* (Schwab-Stone et al., 1999). The scale combined two items corresponding to each type of victimization (e.g. “Punched me” and “Kicked me” were combined into a single item “Punched or kicked me”). The coefficient alpha in the US study was 0.82.

For reliability, we used Cronbach’s alpha coefficient, descriptive statistics, t-test, Pearson’s coefficient of correlation, linear regression analyses. We partialized out gender from other measures using residual scores from linear regression analyses.

RESULTS

Depressive symptoms had an almost normal distribution in our sample of healthy students. The minimum score shows that none of the participants disagreed with all items (minimum possible score was 15). Our findings have shown a good reliability of this scale (Cronbach’s Alpha=0.761)

The number of depressive symptoms was significantly higher in girls. As for the variables related to exposure to aggression and delinquency proneness, we have found significant differences between boys and girls in all administered measures (Table 1).

Analyzing the structure of the correlation between depressive symptoms and delinquency indicated that delinquent behavior or the exposure to

Table 1. Descriptive statistics and gender differences of depressive symptoms and scales of exposure to aggression and delinquency

| | Mean-female | SD-female | Mean-male | SD-male | t | p |
|-------------------------------------|-------------|-----------|-----------|---------|--------|------|
| Depressive symptoms | 28.4044 | 5.29143 | 26.1980 | 4.63952 | 7.225 | .000 |
| Affiliation with delinquent peers | 17.8470 | 5.47494 | 16.3665 | 4.95785 | 4.709 | .000 |
| Witnessing community violence | 6.0869 | 8.77192 | 4.2586 | 6.38016 | 3.973 | .000 |
| Victimization by community violence | 8.7189 | 2.53936 | 7.2679 | 1.05066 | 12.284 | .000 |
| Prosocial beliefs | 21.0925 | 6.63689 | 18.5253 | 5.08565 | 7.184 | .000 |
| Conduct problems | 6.1349 | 5.63313 | 5.4618 | 4.85315 | 2.151 | .032 |
| Less severe delinquency | .6667 | 2.70801 | .2642 | 1.06412 | 3.222 | .001 |
| Severe antisocial behavior | 1.5701 | 3.42786 | .3371 | .99684 | 8.010 | .000 |
| Legal consequences | 1.4914 | 2.11402 | .0339 | .26561 | 15.783 | .000 |
| Beliefs legitimizing aggression | 14.0111 | 3.79074 | 11.6802 | 3.63671 | 10.568 | .000 |
| Peer victimizing scale | 12.3552 | 4.40012 | 11.8221 | 3.67414 | 2.203 | .028 |

delinquency are significantly related to depressive symptoms (Table 2).

Since depressive symptoms and variables related to exposure to aggression and delinquency were significantly correlated to gender, we assume that the relation between depressive symptoms and aggressive or delinquent behavior is not an artifact of gender differences. Using residual scores from linear regression analyses, we partialized out the variable of gender from variable depressive symptoms and all variables (scales) related to aggression and delinquent behavior. A relationship between depressive symptoms and exposure to aggression and delinquency still exists in significant numbers ($R=0.598$; $R^2=0.357$; $R^2_{(adjusted)}=0.350$; $F_{(10,863)}=47.970$; $p<0.000$).

Analyzing the structure of B ponders, it could be seen that almost all variables can predict depressive symptoms except witnessing community violence and beliefs legitimizing aggression. The highest positive B scores were attributed to the variables Legal Consequences and Affiliation with Delinquent Peers. Positive B ponders in the prediction of Depressive Symptoms were also victimization by community violence and Peer Victimizing Scales variables. The variables Less Severe Delinquency and Severe Antisocial Behavior had negative B ponders, which could be because, along with the variables Conduct Problems and Legal Consequences, they compose a

scale Antisocial behavior (which highly correlate and share the huge spectrum of variance). All four subscales were highly correlated and consequently artificially negative B ponders appear (Table 3).

DISCUSSION

The findings of our study indicate that in our sample of urban school adolescents, delinquent behavior or exposure to delinquency is significantly related to depression. The level of depression was significantly higher in girls, while boys had significantly higher scores on variables related to aggression and delinquency. The strongest predictors of depression were variables concerning legal consequences, affiliation with delinquent peers, victimization by community violence and peer victimization. A strong correlation between depression and exposure to violence and delinquency was also found in other studies (DuRant et al., 2000; Moller Leimkuhler et al., 2007; Ritakallio et al., 2005).

Our findings that depressive symptoms are higher in girls are in accordance with other studies (Conley and Rudolph, 2009; Foster et al., 2004; Ge et al., 2001; Rose and Rudolph, 2006; Teunissen et al., 2010). This could be explained by society imposing stereotypes of empathy and care upon girls, which may lead to girls internalizing their problems, and boys externalizing them (Foster et al., 2004). Another possi-

Table 2. Inter-correlations between depressive symptoms and scales of exposure to aggression and delinquency.

| | DS | ADP | WCV | VCV | PVS | PSB | CP | LSD | SAB | LC | BLA |
|-----|------------------|------------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------|
| ADP | .231(**) .000 | 1 . | | | | | | | | | |
| WCV | .153(**) .002 | .394(**) .000 | 1 . | | | | | | | | |
| VCV | .159(**) .001 | .256(**) .000 | .659(**) .000 | 1 . | | | | | | | |
| PVS | .271(**) .000 | .095(*).037 | .216(**).000 | .270(**).000 | 1 . | | | | | | |
| PB | .135(**) .005 | .409(**).000 | .344(**).000 | .276(**).000 | .126(**).006 | 1 . | | | | | |
| CP | .142(**) .003 | .473(**).000 | .457(**).000 | .347(**).000 | .201(**).000 | .637(**).000 | 1 . | | | | |
| LSD | .150(**) .002 | .394(**).000 | .478(**).000 | .605(**).000 | .194(**).000 | .388(**).000 | .511(**).000 | 1 . | | | |
| SAB | .107(*).027 | .318(**).000 | .493(**).000 | .609(**).000 | .190(**).000 | .426(**).000 | .568(**).000 | .780(**).000 | 1 . | | |
| LC | .159(**).001 | .262(**).000 | .392(**).000 | .614(**).000 | .269(**).000 | .317(**).000 | .462(**).000 | .822(**).000 | .848(**).000 | 1 . | |
| BLA | -.003 .953 | .144(**).002 | .269(**).000 | .185(**).000 | .100(*).027 | .360(**).000 | .319(**).000 | .069 .128 | .169(**).000 | .054 .234 | 1 . |

DS – Depressive symptoms

ADP – Affiliation with delinquent peers

WCV – Witnessing community violence

VCV – Victimization by community violence

PVS – Peer victimization scale

PSB – Prosocial beliefs

CP – Conduct problems

LSD – Less severe delinquency

SAB – Severe antisocial behavior

LC – Legal consequences

BLA – Beliefs legitimizing aggression

**Correlations are significant at the 0.01 level

*Correlations are significant at the 0.05 level

ble explanation could be the more mature pubertal status in girls than in boys – especially high rates of depressive symptoms occur in early-maturing girls, and early pubertal development is associated with disapproval among peers, increased social isolation, peer victimization and negative reputation among peers. In addition to this, girls demonstrate a stronger depressive response to peer and interpersonal stress due to stronger leaning towards interpersonal

care, connection-oriented goals and concerns about peer evaluation (Conley and Rudolph, 2009; Ge et al., 2001; Rose and Rudolph, 2006; Teunissen et al., 2010). The strongest predictors of a higher number of depressive symptoms were variables concerning legal consequences, affiliation with delinquent peers, victimization by community violence and peer victimization.

Table 3. Linear regression analyses with partialized out scores of gender from depressive symptoms as a criteria and from scores of aggression and exposure to delinquency as predictors.

| Residual scores of predictors | Standardized coefficients Beta | T | Sig. | Correlations | | |
|-------------------------------------|-----------------------------------|--------|------|--------------|---------|-------|
| | | | | Zero-order | Partial | Part |
| Affiliation with delinquent peers | .257 | 7.869 | .000 | .372 | .259 | .215 |
| Witnessing community violence | -.015 | -.446 | .656 | .022 | -.015 | -.012 |
| Victimization by community violence | .123 | 3.774 | .000 | .289 | .127 | .103 |
| Prosocial beliefs | -.045 | -1.325 | .186 | .068 | -.045 | -.036 |
| Conduct problems | .080 | 2.126 | .034 | .095 | .072 | .058 |
| Less severe delinquency | -.193 | -5.388 | .000 | -.005 | -.180 | -.147 |
| Severe antisocial behavior | -.223 | -6.009 | .000 | -.097 | -.200 | -.164 |
| Legal consequences | .445 | 12.553 | .000 | .429 | .393 | .343 |
| Beliefs legitimizing aggression | -.031 | -1.012 | .312 | -.100 | -.034 | -.028 |
| Peer victimizing scale | .102 | 3.631 | .000 | .051 | .123 | .099 |

The boys in our sample had significantly higher scores on variables related to aggression and delinquency, which is also in accordance with other studies that report that boys are more likely than girls to be victimized by community violence, be mugged, shot or beaten, carry a weapon and as a result be seriously injured (Salzinger et al., 2002; Voisin and Neilands, 2010).

The limitations of our study include relying on self-reports only, which is not sufficient for diagnosing depression. Furthermore, depressive symptoms may be associated with overestimation of victimization (De Los and Prinstein, 2004). In addition, data concerning adolescent sexual victimization, locations at which adolescents were victimized, and their relationship to perpetrators or the victims were not obtained through our questionnaires. Moreover, a cross-sectional study such as this did find an association between depressive symptoms and exposure to violence, but could not confirm the causality. These factors may be roughly divided into individual characteristics (self-acceptance, coping skills, academic performance), peer influences (peer health-related behaviors, friends' support, friends' positive activities), family relationships (parent-child relationship, family support, family conflicts), and community characteristics (level of crime, social support, drug

availability in the community, availability of after-school activities). Studies have shown that parental support (mother support, father involvement in school and social activities, parental and school connectedness), prosocial activities, church attendance and peer support had a compensatory effect on the risk factors associated with adolescent behavior problems (Ostaszewski and Zimmerman, 2006; Vaughan et al., 2010).

The implications of our study are that delinquent behavior or exposure to delinquency is significantly related to depression, with a higher level of depression in girls and higher scores on variables related to aggression and delinquency in boys. Legal consequences, affiliation with delinquent peers, victimization by community violence and peer victimization were the strongest predictors of depression.

There are numerous approaches to violence prevention and treating depression in youth. The effectiveness of the majority of these approaches is yet to be determined. Some evaluation results indicate the positive effects of cognitive-behavioral and family interventions, school climate projects that include parental involvement and interventions that reduce exposure to media violence (Dahlberg, 1998). Intervention efforts should try to reduce youth exposure to

community violence, to identify and treat youth with malleable individual characteristics that can predict community violence (in this case depression), and to develop prevention strategies for dealing with community violence exposure (Brdic and Lecic Tosevski, 2010). Neighborhood and societal level interventions are needed to address the high rates of violence perpetration and consequent youth exposure to violence. Identifying and treating youths with depressive symptoms may be an effective strategy for dealing with exposure to violence (Lambert et al., 2008). Strategies for dealing with community violence are particularly important for youths living in dangerous environments, economic deprivation and social transition.

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