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Original Article

PEER VIOLENCE AS PREDICTOR OF CYBERBULLYING AMONG ADOLESCENTS

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Abstract. *The aim of this cross-sectional study was to examine individual, familial and peer variables as predictors of cyberbullying in early adolescence. The research included (N = 226) male students from Valjevo, aged 15.56 (SD = 0.68). The following measuring instruments were used: Socio-demographic Questionnaire, Violence Among School Children Questionnaire, Parent Behavior Questionnaire. The internal consistency of the questionnaire was examined using Cronbach's alpha coefficient. The results of correlation analysis have shown minute and statistically significant correlation between the scores of applied variables. Hierarchical regression model has explained 36% of the variance of traditional peer violence and 10% of cyberbullying. All the examined variables have proven to be statistically significant predictors of traditional peer violence, but not cyberbullying. Seeing that the predictor variables of traditional peer violence partly explain cyberbullying, it is necessary to examine other potential determinants such as frequency of use of electronic media, electronic victimization and others, which would contribute to the prediction of the examined criterion. The applied questionnaires are of optimal use in everyday practice in Serbia and can provide relevant information in evaluating traditional peer violence and cyberbullying among preadolescents.*

Key words: *violence, individual variables, parent behavior, peer variables*.

Introduction

Traditional peer violence most often occurs in real world (in school or school environment). It includes various forms of violent behavior which an enforcer inflicts on a victim. Even with the fact that this phenomenon is often explored [1–3], its content and scope are still insufficiently explored. Depending on the method of introducing violence among peers, the students discern three categories: a) bullies – students who enforce violence exclusively on peers, b) victims – students who only experience violent behavior, and c) provocative victims – students who both enforce and experience violent behavior. Direct violence – teasing, hitting or intimidating, and indirect violence – exclusion, gossiping or scheming, represent the basic forms of traditional peer violence [4,5]. Besides, there is a distinction between physical and verbal violence, relational or emotional/mental, or sexual and economic violence [6].

In the last decade of the XXI century there has been a rise in *cyberbullying*, which is realized in the unreal world: the Internet, mobile phones [7,8,9]. It is enforced via electronic communication, for example e-mail, SMS and social networks (Facebook, Twitter, internet forums and such), where the bully can remain anonymous and hide behind temporary internet addresses, nicks or unknown mobile phone number [10,11]. Unlike traditional peer violence which is usually enforced within one class or school, cyber-bullying among peers can involve significant number of children: from other towns and countries [12–14]. In addition, it includes written, visual message which remains permanently on the Internet and can harass victim over and over again on the daily basis, whereas traditional peer violence (verbal abuse and teasing) comes and goes, often without eyewitnesses [15].

Therefore, cyberbullying is filled with fear since the characteristic personality traits of the bully are hidden, and violence can be enforced any time and any place [16]. Also, statistically significant correlation between enforcing traditional violence and cyberbullying has been found, and large number of traditional bullies enforce cyberbullying as well, that is to say the same student bully in various circumstances.

Peer violence is conditioned by the methods and conception of measuring violence among children [17–19]. The studies [20] have shown that the prevalence of traditional violence among school population is minimal for bullies and victims if it is required of a preadolescent to name a peer, while it is identical in self-determining the frequency of violent behavior among peers. Foreign studies on traditional peer violence among children between ages 10 to 15 indicate 10-30% of victimization, and 3-26% of violence [21]. The research on traditional violence and cyberbullying among peers include one latent dimension (peer violence), which in its basis has the same individual,

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familial and peer predictors. The study on *individual factors* – gender and age [22], points to the fact that boys, more so than girls, are physically and verbally more violent. On the other hand, in exploring cyber-bullying [23] there were no statistically significant gender differences to be found, while the research has revealed that in all forms of traditional violence and cyber-bullying the bullies were usually older students. The research has shown that, apart from gender and age, modest school success is a risk determinant of traditional violent and aggressive behavior among preadolescents, where bullies follow school's house rules, have bad communication with teachers, bad grades, and a large number of unexcused absences [24].

Familial factors have dominant function in developing traditional violence, where the respectful parenting style has proven to be a dominant determinant of traditional peer violence [25]. The deficiency of parental love, especially during childhood, probably generates future violent behavior [26]. Violent children are most often the ones who live with parents who are emotionally cold, distant and depressed [27]. Preadolescents – traditional bullies live in families where parents often punish them, threaten and use force in order to discipline [28]. It these types of families, children learn that violence is an appropriate method of conflict resolution with peers. Statistically significant predictors of aggressive and violent behavior among children are: authoritarian parenting style, lack of parental control, strict discipline, unprincipled methods of upbringing, parental differences and parents' insufficient involvement in child's life. Exposing oneself to danger is manifested when parents are not competent enough to define the implicit scope of violent behavior towards peers, siblings and adults, meaning when they are too complaisant towards aggressive behavior [29]. Cyberbullies grow up in families with no parental control and love, where strict discipline and punishment is enforced, which proves that authoritarian parental style is a significant predictor of cyberbullying.

Peer factors (number of friends and peer acceptance) represent consequential predictors of traditional peer violence [30]. The children who use force are not socially isolated, they have friends of the same number and behavior which they imitate. Peer unacceptance is the quality determinant of traditional peer violence [31], where students who feel rejected draw attention to themselves in order to acquire certain position within the peer group. The same tendency is found in cyberbullying, where peer rejection represents a reliable factor of cyberbullying [32].

Current studies precisely define the traditional victimization as the quality predictor of traditional peer violence [28] and cyberbullying [33]. When it comes to traditional violence in the older age groups, victims of violence find themselves in the position where they are no longer the weakest and where they have an opportunity to demonstrate their superiority over younger students and thus relieve themselves of stress over the experienced violence. For preadolescents who cannot demonstrate their superiority in school, electronic – unreal world, where they can be shielded from danger, becomes a parallel world where they can be superior and use violence.

The main *aim of this research* was to examine the perceived contribution of individual (age, gender and school success), familial (parental punishment, parental love, parental control and parental tolerance) and peer predictors (number of friends, peer acceptance, earlier traditional victimization) in explaining cyberbullying among adolescents. Keeping in mind that cyberbullying is a form of peer violence, the *presupposition* is that the examined individual, familial and peer variable will statistically significantly predict traditional violence and cyberbullying in early adolescence.

The Method

Participants and procedure

This transversal research was conducted in September 2017 on the participant sample (N = 226) of VIII grade elementary school students of "Vladika Nikolaj Velimirović", "Desanka Maksimović" and "Milovan Glišić" in Valjevo. The average age of participants was 15.56 (SD = 0.68).

The research was conducted in accordance with the Declaration of Helsinki, where the school principals and parents gave formal consent to students' participation in the research. The empirical data was obtained anonymously and voluntarily during regular classes. The size of the group varied from 20 to 30 participants. At the start of the examination, the students were told that the results would be used exclusively for research purposes. Using pen and paper, they were shown the example of the solved task, after which they were asked to cooperate and answer truthfully. They could have quit the testing any time they wished, without any consequences. It took them approximately 40 minutes to complete the task.

Predictor of socio-demographic variables

Before beginning the testing on the questionnaire specially designed for the needs of this research, demographic data on participants' age, gender and school success were collected and it formed the basis for answer distribution of arithmetic mean of all six scores (grade point average, mother tongue grade and mathematics grade at the end of the first semester and at the end of the previous school year). The reliability of internal consistency (*Cronbach's alpha*) of school success in this research is high and it was (α = 0.86). Besides, data on peer acceptance (two items on a three-point Likert scale (1 – never, 2 – sometimes, 3 – often)) were collected using special form, where a participant self-evaluated personal feelings about peer acceptance or rejection, as well as the number of his/her best friends.

Violence Among School Children Questionnaire [34]. It examines the frequency of committed violent acts in school and victimization, and it consists of two scales, Violence among children scale and Victimization scale, with 19 items each:

- *Violence among children scale* – it measures the frequency of violent acts committed against peers (it includes two subscales: physical violence and verbal violence, which represents traditional peer violence and cyber-bullying),
- *Victimization scale* – it measures the frequency of violence experienced in school, and it includes two subscales: physical victimization and verbal victimization, which link traditional and cyber-victimization. The participant is tasked with making an "X" next to the frequency of each individual perceived form of violence on a 5-point Likert scale (1 = never, 2 = rarely-few times a year, 3 = sometimes-once a month, 4 = often-few times a month and 5 = always-almost daily).

The results for every subscale are represented as mean value of answers on the measured subscales, where the higher score means more frequent act or experience of violence. Based on self-evaluation, the participants are classified in four categories: traditional bullies, cyberbullies, victims of violence and provocative victims.

Traditional bully is a participant who, at least on the one item of verbal or physical violence (traditional violence) subscale, circled that he/she displayed the described behavior "always (almost daily)" or "often (few times a month)". The category *cyberbully* consists of participants who at least once circled, on the items of cyberbullying subscale, that they experience the described behavior "always (almost daily)" or "often (few times a month)". The category *victims of violence* consists of participants who at least on the one item of the given scale marked that they experience the described behavior "always" or "often". The category *provocative victims* consists of participants who at least on the one item of the given violence and victimization subscales, marked that they experience the described behavior "always (almost daily)" or "often (few times a month)". The reliability of internal consistency is high [35]: for Violence among children scale and its subscales it is from .75 to .88, and for Victimization scale and its subscales it is from 0.73 to 0.90.

Parent Behavior Questionnaire (URP-29 [36]). It examines behavior of parents towards their child and it consists of seven scales (29 items). Four scales (16 items) were used in this research: parental warmth (4 items), control (4 items), leniency (3 items) and punishment (5 items). The participant had the task to evaluate the two identical questionnaires (one pertains to mother, the other to father) on a 4-point Likert scale, to which extent the described behaviors relate to characteristic behavior of their mother and father (1 = completely untrue, 2 = not exactly true, 3 = quite true, 4 = completely true). The result for each subscale is shown as mean value of the answers to all items of subscale (subscale refers which pertains mother and subscale that pertains father, or subscale of the results from both subscales combined). The reliability of internal consistency (Cronbach alpha) is from 0.84 to 0.90.

Data processing

Statistical data analysis contained many methods of descriptive statistics (sample minimum, sample maximum, arithmetic mean, measures of variability – standard deviation, asymmetric distribution coefficient – skewness and skewness coefficient – heavy-tailed or light-tailed data – kurtosis), Pearson correlation coefficient and hierarchical regression analysis. The level of statistical significance was $p < .05$. Statistical data processing was conducted using SPSS software (*Statistical Package for the Social Science*), version 17.0.

Results

Table 1 shows the presence of two forms of violence: traditional violence and cyberbullying. It is clear that in this sample of adolescents there are significantly more students who self-evaluated that they belong more in the group of problems with traditional violence than cyberbullying.

Table 2 shows descriptive indicators of participants for individual item variables of scales and subscale, Violence among school children questionnaire and subscale, Parent behavior questionnaire, as well as the indicators of normal distribution of skewness and kurtosis. The obtained measures of distribution of asymmetric coefficient range from ±3, distribution of homogeneity ±10, which is proven by Gaussian law of normal distribution, or justified by use of parametric process of statistical data processing [37].

Table 3 shows the value of parametric Pearson correlation coefficient of the examined variables, which examines the level of linear correlation between traditional violence and cyber-bullying.

The results of correlation analysis point to minor to statistically significant correlations between the examined variables from r=.01 to .52, which, from the statistical viewpoint, enables the conducting of hierarchical linear regression analysis [38].

Table 1 Representation of various forms of violence

Function in violence	Traditional violence		Cyberbullying	
	f	%	*f*	%
Bystanders	113	50.00	203	89.82
Victims	75	33.18	11	4.86
Provocative victims	26	11.50	2	.88
Bullies	12	5.30	10	4.42

Table 2 Score distribution of the variables traditional violence and cyberbullying

Variable	Min	Max	AM	SD	Sk	Ku
Traditional violence	1.00	3.90	1.38	.43	.52	.19
Cyber-bullying	1	3.45	.99	.17	.71	1.06
School success	1.22	4.94	3.81	.95	.55	-98
Parental punishment	1	4	2.06	.58	.91	.27
Parental warmth	1	4	3.62	.47	.33	.45
Parental control	1	4	3.23	.59	.26	1.05
Parental leniency	1	4	2.37	.70	.44	.83
Number of friends	0	19	4.26	3.46	.61	.54
Peer acceptance	.95	2.96	2.55	.52	.88	.37
Peer victimization	1	4.42	1.77	.60	.57	.69

Annotation: AM = arithmetic mean, SD = standard deviation, Min = sample minimum, Max = sample maximum, Sk = skewness, Ku = kurtosis, the value of standard error of Sk is .09,and of Ku is .15.

With the aim of examining individual contribution of nine predictor variables in predicting the criterion – traditional peer violence and cyber-bullying, two hierarchical regression analyses were applied through two steps (Table 4 and Table 5).

Three predictors (age, gender and school success) introduced in the first regression model reveal individual characteristics of adolescents and directly influence their actions. In the second model, there are four predictors (parental punishment, parental warmth, parental control and parental leniency) which show direct familial environment of participants. The third regression model three predictor variables (number of friends, peer acceptance and traditional peer violence) were introduced, and they imply peer correlation.

The intensity of all three input predictors on the criterion traditional peer violence is the following: male *gender* (β=.19; $p<.05$), *age* (β=.17; $p<.05$), modest *school success* (β=-.13; $p=.05$), while these three individual predictor variables have no statistically relevant predictive contribution.

The prediction of cyberbullying based on the group of predictors of four familial variables is most intensely represented by *parental punishment* (β=.18; $p<.05$) and *parental leniency* (β=.14; $p<.05$), while all familial variables statistically significantly predict traditional peer violence (from β=.13 to β=.32). It is interesting that the values of standardized beta coefficient of both variables

Table 4 The results of hierarchical regression analysis for predicting traditional peer violence

Predictors	1. step (model)	β	2. step (model)	β	3. step (model)	β
Age	.17*		.15*		.14*	
Gender	.19*		.17*		.15	
School success	.05		-.14*		-.13*	
Parental punishment			.24**		.19*	
Parental warmth			-.08		.13*	
Parental control			.29**		.32**	
Parental leniency			.14*		.16*	
Number of friends					.13*	
Peer acceptance					-.23*	
Early traditional peer victimization					.53*	
R	.22		.41		.60	
R^2	.03		.20		.36	
ΔF	10.20**		21.45**		40.62**	

Legend. β =The value of standardized regression coefficient; *R*=multiple correlation coefficient; R^2=coefficient of determination (total contribution of predictors to explained variance); Δ*F*=the change of F relations after certain groups of predictors have been introduced. *$p<.05$, **$p<.01$.

Table 5 The results of hierarchical regression analyses of predicting cyberbullying

Predictors	1. step (model)	β	2. step (model)	β	3. step (model)	β
Age	.03		.01		.08	
Gender	-01		.04			
School success	-.05		-.02		-.07	
Parental punishment			.14*		.18*	
Parental warmth			-.03		-.06	
Parental control			-.08		-.04	
Parental leniency			.09		.14*	
Number of friends					.13*	
Peer acceptance					.15*	
Early traditional peer victimization					.30**	
R	.10		.19		.28	
R^2	.03		.05		.10	
ΔF	3.12		10.84**		12.66**	

Legend. *β*=The value of standardized regression coefficient; *R*=multiple correlation coefficient; R^2= coefficient of determination (total contribution of predictors to explained variance); Δ*F*=the change of F relations after certain groups of predictors have been introduced; *$p<.05$, **$p<.01$.

Table 3 Intercorrelations between traditional violence and cyberbullying

Variables	$_v1$	$_v2$	$_v3$	$_v4$	$_v5$	$_v6$	$_v7$	$_v8$	$_v9$	$_v10$
Traditional peer violence ($_v1$)	-	.52	-.09	.20	.15	.27**	.14*	-.03	-.05	.53**
Cyber-bullying ($_v2$)		-	-.02	-.19*	-.08	.17*	.14*	.16*	-.01	.30**
School success ($_v3$)			-	-.17*	.20*	.19*	-.15*	.14*	.20**	.17*
Parental punishment ($_v4$)				-	.16*	.09	.04	-.01	.18*	-.24**
Parental warmth ($_v5$)					-	.48**	.16*	-.01	.20**	-.24**
Parental control ($_v6$)						-	-.01	-.07	.03	.20**
Parental leniency ($_v7$)							-	*.14**	*.02*	*.06*
Number of friends ($_v8$)								-	*.09*	*.01*
Peer acceptance ($_v9$)									-	*-.50*
Peer victimization ($_v10$)										-

*$p < .05$; **$p < .01$

of peer relations have shown statistical significance in explaining traditional peer violence and cyberbullying, where lower peer acceptance and number of friends more clearly determine both forms of violence. The best determinant of both forms of peer violence is earlier traditional victimization of adolescents.

Lastly, the final regression equation shows the entire model, all three analyzed groups of predictor variables, which accounted for 36% of the total criterion variance of traditional peer violence, and 10% of total variance on the scale of cyber-bullying. With that, the obtained significant beta coefficients of individual characteristics of students, their family environment and peer relations possess relatively good predictive validity, but clearly there are other unexplored factors which could be useful in acquiring more exact predictions of criterion variables.

Discussion and Conclusion

This study examines the partial contribution of individual, family and peer predictive variables in explaining traditional violence and cyberbullying during adolescence. Research results [19,39–42] have revealed statistical significance of individual variables in predicting traditional peer violence, while research results [39,43] have indicated that older male adolescents with modest school success are more prone to traditional peer violence, whereas individual characteristics of students were found to be statistically insignificant in predicting cyberbullying. Despite the fact that current research [44] has determined that unlike female adolescents, male adolescents are more often cyberbullies, the study has not proven these gender differences. This is likely because some items which were used to examine cyberbullying are more identical to verbal violence which is the part of traditional violence [45], and for which gender differentiation has not been determined in previous researches [46]. At the same time, the study [14,17,47] has revealed that older adolescents are more often prone to cyber-bullying, where that form of violence culminates at the end of elementary and start of high school. It is assumed that the aforementioned study did not include the highest domain of cyberbullying, since the participants were elementary school students. Even though the findings of the current study [48] revealed that preadolescents who are cyberbullying have moderate school success and more unexcused absences, it was not exactly determined whether that includes only the students, provocative victims or only victims. Bullies most often have many school absences [49–51]. The authors state that, based on their personality dimensions, cyberbullies are similar to relational bullies who possess sophisticated manipulation skills and therefore are not less intelligent or bad at school.

The anticipated family variables (more punishment, less parental warmth, less parental control and more parental leniency) revealed statistically significant predictability of traditional peer violence [48]. Also, it has been proven that only the variables (parental punishment and leniency) are statistically significant determinants of cyberbullying. The authors [52] have determined that strict discipline and punishment correlate with the frequency of cyberbullying. If the child cannot manifest its frustration in the objective environment because it fears parents' or teachers' punishment, and because of its bad status within a peer group where it doesn't have the option of being violent, that child will transfer its dissatisfaction to the unreal world, where it can get power and sense of security due to the anonymity of electronic means and thus be safe from punishment. Also, parental freedom proved to be a significant predictor of cyberbullying. In the research [53], it has been found that students who regularly cyberbully often have parents who do not know how to set the comprehensive rules of conduct. In both real and unreal world, such parents do not know how to set precise limits and rules, so their children do not perceive the consequences of bullying in the real world. That is why they do not have set rules on bullying in unreal world. Besides, parental control and warmth were not considered relevant for predicting cyberbullying [19]. It is possible that the variable of parental control, which includes precise information about how and where the child spends time, does not represent quality control which is fundamental for online activities which are directly related to the Internet or some social network. When it comes to cyberbullying, parental control should be directed towards child's time spent in front of the screen, meaning mobile phone and the Internet, as well as the content and activities which children partake in the unreal world, which this variable did not examine. Despite the fact that the study [30] determined that the deficiency of warmth and correlation with parents generates cyberbullying, this study did not confirm that. Perhaps, that could be explained by the minimum number of students who cyberbully in this research, as well as by the minimum variance which made this variable statistically insignificant. Seeing how this research did not include the highest level of cyberbullying (age and the most violent group of adolescents were not statistically significant determinants in the research), there is a possibility that this group of participants lacks parental warmth, which is very important in predicting cyberbullying.

The study [54] has pointed out that peer variables are significant for predicting traditional violence and cyberbullying, ant that significant determinants for both forms of violence were greater number of friends and the lack of peer acceptance. It is interesting that in the research [55] significant correlation between variables number of friends and cyberbullying has not been determined, which has been determined in this research. Greater number of friends a child spends time with and partakes in activities contribute its behavior. Violent students have friends who are also violent and who support violent behavior, so it is expected that they support cyberbullying as well [56]. Students feel the need to be part of a peer group and experience a sense of belonging, especially during the period of preadolescence. However, when that feeling is disrupted, there is a possibility that during preadolescence

a student will try in a violent manner to gain a satisfactory position within the peer group in order to be accepted [13]. If the student is unable to gain such position in the real world, for example in class, there is a possibility to transfer into the unreal world, and using cyberbullying create the desired unreal position, which then could be easily transferred into the real world – the classroom. Early recognition of the victim of traditional violence, victimized on purpose or not, represents a dominant predictor of traditional peer violence and cyberbullying, where in the unreal world adolescents have the opportunity to relieve the accumulated stress over bullying in school [11,44]. In the real world, for example in school, preadolescents who experience violence are more likely to become provocative victims, meaning the victims who act violently in order to banish the feeling of helplessness and accumulated dissatisfaction [1,57].

This research has shown that traditional violence can be interpreted better with individual, familial and peer predictor variables, while cyberbullying has smaller number of statistically significant predictors and relatively small percentage of the explained variability. The obtained findings suggest that cyberbullying should not be analyzed simply as another form of peer violence, but that it is necessary to examine the forms of cyberbullying and additional presupposed predictor variables which are most likely characteristic of this form of violence (for example the frequency of using mass media, electronic victimization, number of online friends, parental control over the use of internet and so on). It is most interesting to compare the number of friends a student has in the real world (for example in the classroom or sports club) and in the unreal world (active online friends), as well as the differentiated support adolescents get from friends in the real world and those with whom they communicate online, and their contribution in explaining peer violence.

While analyzing the obtained results of this research, it is important to keep in mind some of its methodological shortcomings. The participants of this research were elementary school seniors (VIII grade) who are the group of preadolescents who are expected to be on the highest level of bullying and being bullied, which limits generalization of other age groups. Also, the data was collected only using the method of self-evaluation. Besides, only the predictors of the two most present forms of traditional peer violence (verbal and physical) were used, and not other forms such as relational, economic and sexual violence, where some of them are statistically significant for predicting electronic violence. However, despite the aforementioned limitations, the obtained research data are a quality basis for new empirical research of traditional violence and cyberbullying during early adolescence.

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