

THE RELATION OF JEALOUSY AND VARIOUS FORMS OF VIOLENT BEHAVIOR IN THE RELATIONSHIPS OF ADOLESCENT

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Objective - To examine gender differences in the attitudes of boys and girls in a hypothetical situation of emotional and sexual infidelity and the predictive contribution of hypothetical jealousy for various forms of violent behavior in boys and girls.

Method - The study included 140 high school students (58 boys and 82 girls). The Conflict in Adolescent Dating Relationships Inventory (CADRI) used examines the incidence of dating violence. In order to determine the intensity of jealousy, sensitivity to sexual and emotional infidelity of the partner was also examined.

Results - The most common form of abuse in adolescent relationships is emotional and verbal abuse to which boys (52.16%) and girls (48.41%) are exposed. Young men more frequently sexually abuse their partners ($F(1,140)=43.58$; $p=0.000$), as compared to girls, and are more often exposed to emotional and verbal abuse by their female partner ($F(1,140)=3.09$; $p=0.080$). In comparison with girls, boys are more sensitive to hypothetical sexual infidelity ($F(1,140)=10.08$; $p<0.000$). The sensitivity of boys to hypothetical sexual infidelity was a significant predictor of physical ($\beta=-0.27$) and sexual abuse ($\beta=0.26$), while the sensitivity to hypothetical emotional infidelity was a predictor of emotional and verbal abuse ($\beta=0.23$).

Conclusion - Boys are more sensitive to sexual and girls to the emotional infidelity of their partners. The adolescent men more frequently use sexual forms of abuse while girls are more often exposed to emotional and verbal abuse. Jealousy of adolescent men towards hypothetical sexual infidelity was a significant predictor of sexual abuse, while jealousy of adolescent girls towards hypothetical sexual and emotional infidelity is not a predictor of any form of violent behavior.

Key words - Jealousy ▪ Dating violence ▪ Gender differences ▪ Evolutionary psychology

Introduction

Until the 1980s, very little attention in the world was dedicated towards the study of violent behavior in adolescent relationships. Studies of violence in intimate relationships were mainly focused on violence against children and adult family members (1, 2). However, studies of violence in intimate relationships have shown that this is not a phenomenon that only affects adults, in fact, many adolescents are exposed to various forms of violence in emotional relationships (3). Adolescence is a period in life in which young people generally begin creating and developing relationships. For most adolescents, this is a positive experience. However, 12% of high school students and 36% of university students are exposed to physical, sexual or psychological violence in early heterosexual relationships (4).

There are major differences in definitions of violence in adolescent relationships because of variabilities in the form, function, frequency and manifestations of violence. Most commonly it is defined in the context of a stable emotional relationship, as a threat or actual use of physical, sexual or verbal abuse by one member of an unmarried couple towards the other, and in the context of a romantic relationship (5). However, a growing number of authors say that the relationship does not necessarily have to be stable and that violence can occur even during a one off date. (6). What is common in almost all definitions of violence in adolescent relationships is that there are different forms of violence - psychological, physical and sexual violence. Difficulties in defining violence in adolescent relationships have an impact on the assessment of violence in youth relationships and determination of the frequency of violent behavior. In studies which have investigated different forms of aggressive behavior, a higher incidence of violence was established than in research that examined only one form of violent behavior (7, 8).

Using more stringent definitions of aggressive behavior, including physically and / or sexually violent behavior that results in injury, it was established that 10% to 20% of adolescents were exposed to abuse from their partners (9). When using a broader definition of violent behavior that includes emotional violence as well, the prevalence of violent behavior in youth relationships rises up to 50% (9).

Physical violence, which refers to actions that cause pain and injury with reference to different behaviors, such as spanking, shoving, punching with hands, feet and objects, throwing objects at the partner, hair pulling and biting (10, 11) occurs in approximately 20 - 37% of young relationships (12-15). It is believed that physical violence in young relationships is preceded by psychological abuse (16-19), which may include insulting, criticizing, or threatening to terminate the relationship. This type of conduct is aimed at making the partner feel guilty or inferior and saying things that may upset or hurt the partner (20). Female victims of violence in adolescent relationships often report that psychological abuse is more stressful and that it leaves more serious consequences than physical violence (21, 22). The frequency of psychological abuse is on average higher than physical violence during high school education and studying. Neufeld and associates (23) found that over 90% of female students experienced psychological abuse by their partners at some point in their lives, while 60% reported that they were victims of psychological abuse in at least five separate occasions. These results have been confirmed in other studies which have been conducted so far (24, 25).

Sexual assault includes unwanted and unpleasant behaviour of a sexual nature, involving coercion or persuasion of partners to participate in unwanted sexual intercourse or other sexual activity (26, 27). The incidence of sexual abuse in adolescent relationships is generally lower than the frequency of

physical and psychological violence in the period of high school and young adulthood. Silverman and associates (13) state that 18% of girls were sexually abused by their partners during high school. Ozer and associates reported in their study (28) the extent of sexual abuse, which shows 2.7% to 14.8%.

In addition to research into the prevalence of violence in youth relationships, researchers also studied and examined gender differences in exposure to violent behavior. The results of some studies (7, 29 - 31) indicate that there is no difference in aggressive behavior between boys and girls. In contrast to these results, some authors claim that girls initiate violence more often than young men (32-35). Sharpe and Taylor (36) state that boys were more frequently exposed to physical violence by their partners, and girls also stated that they were more frequently aggressive towards their partners in a relationship. Similar to these quotes, Magdol and associates (37) established that 21% of boys and 37% of girls are the abusers in their relationships. Although the findings show that girls manifest physical violence against their partners more often than boys, physical violence by girls is in general of a lower intensity and has milder consequences. Violent behavior by boys more often entails more serious forms of violent behavior (e.g. strangling), therefore the consequences for their partners are much more severe than compared to abuse initiated by girls (38).

In relation to sexual abuse, the survey results consistently show that boys are consistently more sexually violent towards their partners than girls (13, 32, 39). However, little research has been devoted to examining and explaining the mechanisms underlying these gender differences.

Due to the high prevalence of violence in emotional relationships and distinctly negative physical and psychological consequences, numerous studies have been conducted to

determine predictors of violent behavior. Several proximal predictors have been identified, such as a family history of aggressiveness, unemployment and alcoholism (40 - 42).

However, little research has been devoted to examining predictors of violence within the framework of evolutionary psychology. Over the past few decades, the social sciences have recognized the importance of an evolutionary perspective because it seeks to explain the adaptive function of behavior, and thus to anticipate situations in which that behavior would happen. From this we can conclude that jealousy could be a predictor of various forms of violence. Jealousy is defined as an emotional state caused by a perceived threat to the current relationship, which motivates a range of actions whose aim is to remove these threats (43). The above mentioned behaviors relate to spending more time with the partner, threatening the partner and/or a potential lover, expressing love towards a partner, and violent behavior (44). From the perspective of evolutionary psychology, different psychological adaptations have evolved, whose function is to solve the problems that our human ancestors encountered (45). One of them is the problem of keeping a partner in order to facilitate survival and reproduction (46). It is believed that jealousy is one of the psychological adaptations by which this problem can be solved.

Theories of evolutionary psychology predict differences in jealousy between boys and girls, from which gender differences in violent behavior towards a partner may arise. Boys and girls do not differ in intensity or frequency of jealousy, however they differ in reaction and sensitivity to different types of infidelity, because they have not faced identical problems before when it comes to keeping a partner (47). All this is in connection with the fact that fertilization takes place in a woman's body, which is why a man can never be completely sure that he is the father of the

baby. When a woman has intercourse with another man than this becomes even more problematic and leads to the greater sensitivity of males to signs of sexual infidelity. Women, on the other hand, are the gender, which invests more in reproduction and offspring for several reasons. First of all, the female sex cells are larger and mere creation of them requires more energy. Furthermore, fertilization in a woman's body requires effort and energy during the gestation period, birth and lactation. There are also potential risks to which a woman is exposed if there are complications in any of the specified periods. During pregnancy, a woman cannot be impregnated once again, which reduces her reproductive potential and its value in terms of the number of offsprings. Due to her higher involvement in offspring creation, a woman will be more selective when choosing partners and will have intercourse with a man who shows signs of willingness and ability to invest in her and their offspring (48). Therefore, during evolutionary history, women have faced the problem of losing their partner's involvement. Since it is more likely that a man will be more involved in a woman he is in a relationship with, females have increased sensitivity to signs of emotional infidelity. These differences in sensitivity to emotional and sexual infidelity between men and women have been confirmed in numerous studies and in various eastern and western cultures (49 - 55).

When it comes to the relationship between jealousy and violence in intimate relationships, the expectation is that young males are more likely to sexually abuse their partners. In fact, cheated young men have less chance of reproduction and violent sexual intercourse can increase his likelihood of gene transfer (56). On the other hand, because of the greater sensitivity towards emotional infidelity, jealous girls might be more prone to emotionally abuse partners. Although

jealousy is an emotion that has an adaptive function, very intense jealousy can lead to very severe forms of violence (57).

Due to a lack of research into the relationship between sensitivity towards emotional and sexual jealousy and various forms of violence in early adolescent emotional relationships, the aim of this study is to examine gender differences in the attitudes of boys and girls in a hypothetical situation of emotional and sexual infidelity, and the predictive contribution of hypothetical jealousy for various forms of violent behavior in boys and girls.

Subjects and method

A survey was conducted of all fourth-grade students from a high school in Siroki Brijeg. The study involved 220 students - 126 girls and 92 boys. All respondents agreed to participate in the study. 80 participants were excluded from the analysis due to omission of gender data (2 participants), and incomplete responses to questions related to violent behavior. Therefore, 140 adolescents were processed, including 58 boys and 82 girls, aged 16 to 18 years ($M=17.22$, $SD=0.43$).

Preceding the survey, the respondents consented to participate in the research, approval was granted by the authors of the questionnaire used in the study, the expert opinion of the Ethics Committee of the Faculty of Philosophy in Mostar and the approval of the Ministry of Education and Sports of the West County were obtained to conduct research.

In order to test exposure to various forms of violence in adolescent relationships, we used The Conflict in Adolescent Dating Relationships Inventory (CADRI) (58). CADRI is a questionnaire for self-assessment of exposure to various forms of violent behavior that can occur between partners in adolescent relationships. The authors of CADRI gave us

their permission to use their questionnaire in our study. For the purposes of this research, the questionnaire was translated into Croatian in accordance with the recommended standards for translating psychological instruments. The questionnaire was translated from English into Croatian and vice versa. The second translation indicated some minor mistakes so we made the necessary corrections to the Croatian language version of the questionnaire. Assessing the responses on a scale of 0 to 3, depending on how the respondent was involved in a situation of violence (“never” = 0, “rarely” = 1, “sometimes” = 2 or “often” = 3), each question was asked twice. In the first part of the questionnaire respondents evaluated their own behavior towards their partner, and in the second part they evaluated the behavior of their partners towards themselves. The questionnaire consists of 35 items grouped into five subscales: Threatening behavior (4 items), Relational abuse (3 items), Physical abuse (4 items), Sexual abuse (4 items), and Verbal / emotional abuse (10 items). Ten statements describe a positive approach to conflict resolution in order to ensure balance. Subscales were formed on the model of confirmatory factor analysis (58). Reliability of the studied sample subscales was checked by the internally consistent Cronbach alpha coefficient. It was established that the reliability of the four subscales was satisfying (Threatening behavior $\alpha = 0.59$; Physical abuse $\alpha = 0.67$; Sexual abuse of $\alpha = 0.50$ and Verbal / emotional abuse, $\alpha = 0.80$) and in accordance with the reliability subscales of the original questionnaire. The relational abuse subscale showed a low coefficient of internal consistency ($\alpha = 0.19$), and was excluded from further analysis.

In order to test jealousy, the modified Busse method was used (49), which included the assessment of the jealousy intensity or attitudes of boys and girls in the hypothetical situation of emotional and sexual infidelity. Participants were instructed to imagine that

the person whom they are in relationship with, was interested in another person. On a scale of seven degrees, where “0” meant not jealous, and “6” completely jealous, participants were asked to evaluate the degree of jealousy in a situation where the person they were in a relationship had sexual intercourse with another person, without achieving a deep emotional relationship (the situation of sexual infidelity) and in a situation of deep emotional attachment to another person, without actual sexual intercourse (the situation of emotional infidelity). This method of testing jealousy was the most common in previous studies of evolutionary psychology (47).

Statistical analysis

Scores on all CADRI subscales were formed as a simple linear combination. Since CADRI subscales do not contain the same number of items, for subsequent analysis the average values on each subscale were used. In order to test whether the results have a normal distribution on all CADRI subscales and items to test intensity of jealousy, the coefficients of asymmetry (SI) and flattening (KI) were determined. According to Kline’s criteria (58), the distribution of the results of the items to examine the intensity of jealousy showed satisfactory symmetry and flattening (SI <3.00; KI <8.00). Distribution of the results on the CADRI subscales also satisfied this criteria, except on the subscales for physical abuse. In order to improve the normality of the result distribution, on all CADRI questionnaire subscales and regarding the results obtained from the items to examine attitudes of boys and girls in the hypothetical situation of sexual and/or emotional infidelity and jealousy, logarithmic transformation was made with a scale with a range of scores from 0 to 1. After this transformation, the distribution of all the results showed satisfactory symmetry and flattening

(SI <3.00; KI <8.00), and there was a reasonable use of parametric statistical methods. Gender differences in the intensity of jealousy and sexual differences in the frequency of experiencing different forms of violence in adolescent relationships were tested with t-tests. Predictors of various types of violence were determined using multiple regression analyses, using the enter method. This analysis was used in order to test which of the independent variables were related to the dependent, and what the nature of that relationship was. It allowed the maximum correlation coefficient calculation (R, multiple correlation coefficient) between all predictor variables and the criterion variable. In this study, various forms of violence in adolescent relationships were taken into account: physical assault, threatening behavior, sexual abuse and emotional and verbal abuse were all used as criteria variables. Regarding the size of the sample, one of the conditions was at least ten participants per predictor when using multiple regression (60). This criteria was satisfied, and the analysis was done separately for boys (N = 58) and girls (N = 83). Statistical analysis was done using the computer program: StatSoft, Inc.. (2004). STATISTICA (data analysis software system), version 7th www.statsoft.com

Results

Based on the result analysis, it was established that 200 respondents (90.91%) indicated that at the time of the study they were in a relationship with a person of the opposite sex. At the time of the survey 58% of the survey participants said they had an emotional relationship with a person of the opposite sex.

Emotional and verbal abuse is the most common form of abuse to which boys and girls are exposed in adolescent relationships. This is also the most common way of abusing a partner in the relationship for both boys and girls. (Table 1 and Table 2). At the same time, physical abuse was the form of abuse to which the subjects of both sexes were least exposed.

Table 3 presents the average scores and standard deviation of the results obtained from the intensity of jealousy that participants experienced in hypothetical situations of sexual and emotional infidelity, while further statistical analysis was carried out on the logarithms of the results. The t-test results showed that boys are more jealous compared with girls in a hypothetical situation of sexual infidelity by their partner ($t=4.35$, $df=138$, $p=0.000$). Gender diffe-

Table 1 The percentage of boys and girls who have been exposed to some form of violent behavior in a relationship

Form of violent behavior	Boys (n; %)	Girls (n; %)
Physical abuse	9 (9.78)	5 (3.96)
Threatening behavior	10 (10.87)	8 (6.31)
Sexual abuse	26 (28.26)	24 (19.05)
Emotional and verbal abuse	48 (52.16)	61 (48.41)

Table 2 The percentage of boys and girls who were violent towards their partners in a relationship

Form of violent behavior	Boys (n; %)	Girls (n; %)
Physical abuse	4 (4.35)	9 (7.14)
Threatening behavior	6 (6.52)	14 (11.1)
Sexual abuse	26 (28.26)	19 (15.08)
Emotional and verbal abuse	48 (52.17)	61 (48.41)

Table 3 The intensity of jealousy on sexual and emotional infidelity regarding to the gender of participants

Types of infidelity	The intensity of jealousy (modified Buss method)		p
	Boys ($\bar{x} \pm SD$)	Girls ($\bar{x} \pm SD$)	
Sexual	4.67 \pm 2.24	3.07 \pm 2.31	0.000
Emocional	4.03 \pm 2.18	3.71 \pm 2.42	0.165

Table 4 The incidence of various forms of violent behavior with regards to gender of participants

Form of violent behavior	Gender	$\bar{x} \pm SD$	t – test (df=138)	p
Physical abuse	Boys	4.74 \pm 1.57	0.98	0.329
	Girls	5.06 \pm 1.72		
Threatening behavior	Boys	4.97 \pm 1.2	1.19	0.235
	Girls	5.39 \pm 2.15		
Sexual abuse	Boys	6.94 \pm 1.71	6.63	0.000
	Girls	5.26 \pm 1.50		
Emocional and verbal abuse	Boys	17.17 \pm 5.04	1.76	0.080
	Girls	19.02 \pm 5.84		

rences in jealousy in a hypothetical situation of emotional infidelity were not obtained ($t=1.39$, $df=138$, $p=0.165$).

When it comes to intra-gender differences, the t-test results showed that the boys were more jealous in hypothetical sexual rather than emotional infidelity, ($t=2.17$, $df=57$, $p=0.034$). On the contrary, girls demonstrated an increased intensity of jealousy in the case of hypothetical emotional infidelity by their partner ($t=2.89$, $df=81$, $p=0.005$).

The average scores and standard deviation of the prevalence of violence in boys and girls is presented in Table 4. Further statistical analysis were done on the logarithms of the results. Variance T-tests found that boys frequently sexually abused their partner, while girls used emotional and verbal abuse more frequently. When it comes to physical abuse and threatening behavior, we did not find any gender differences.

In order to assess the predictive contribution to various forms of violence, we conducted multiple regression analyses, separately for boys and girls. Analyses were carried

out in that the criteria variables in all models were a particular form of violence, and the predictor variables were other forms of violence and jealousy in hypothetical sexual and emotional infidelity. The variance inflation factor (variance inflation factor, VIF) for each predictor in each model was less than 10, which established that there was no multicollinearity among the predictors. The criteria of Myers (61), the prerequisite of the absence of multicollinearity before conducting regression analysis, was satisfied.

Significant regression predictor models of violent behavior of adolescent men and women are shown in Table 5. When it comes to the violent behavior of adolescent men, threatening behavior, sexual abuse and jealousy in hypothetical sexual infidelity, almost 50% of the variance of physical abuse was explained. An interesting and unexpected result was the predictive contribution of jealousy in hypothetical sexual infidelity in the above model. Specifically, the negative beta ponder indicates that a lower intensity of jealousy in hypothetical sexual infidelity predic-

Table 5 Multiple regression coefficients for predictors of violence in adolescent relationships

Criterion variable	Boys		Predictors	β	Girls		Predictors	β
	R	R ²			R	R ²		
Physical abuse	0.704	0.495	Threatening behavior	0.561**	0.622	0.387	Threatening behavior	0.600**
			Sexual abuse	0.251*				
			Jealousy on the sexual infidelity	-0.266*				
Threatening behavior	0.671	0.450	Physical abuse	0.611**	0.763	0.582	Physical abuse	0.408**
			Emocional and verbal abuse	0.234*			Emocional and verbal abuse	0.500**
Sexual abuse	0.548	0.300	Physical abuse	0.349*				
			Emocional and verbal abuse	0.379**				
			Jealousy on the sexual infidelity	0.255†				
Emocional and verbal abuse	0.531	0.282	Threatening behavior	0.305*	0.699	0.409	Threatening behavior	0.612**
			Sexual abuse	0.389**				
			Jealousy on the sexual infidelity	0.234†				

†p<0.10 *p<0.05 **p<0.01

ted more frequent physical abuse. Furthermore, physical, emotional and verbal abuse were identified as significant predictors of threatening behavior. Furthermore, when it comes to sexual abuse, significant predictors were: physical, emotional and verbal abuse and jealousy in hypothetical sexual infidelity. Jealousy in hypothetical emotional infidelity was found as a significant predictor of emotional and verbal abuse, with threatening behavior and sexual abuse.

Threatening behaviour was found as a significant predictor of physical abuse in girls. Like the boys, predictors of threatening behavior are physical, emotional and verbal abuse, which together explained almost 60% of the variance. Furthermore, threatening behavior is a significant predictor of emotional and verbal abuse. Jealousy in hypothetical sexual and emotional infidelity was not found as a significant predictor of any of the violent behavior of girls. In a model in which the sexual abuse was a variable criteria, the

contribution of any of the tested predictors was not significant.

Discussion

The results of this study show that young men are vulnerable to hypothetical sexual infidelity and that girls are vulnerable to the hypothetical emotional infidelity of their partners. In addition, young men more frequently sexually abused their partners, while girls more frequently emotionally and verbally abused their partners. The boys' jealousy in hypothetical sexual infidelity was a statistically significant predictor of sexual abuse, while the girls' jealousy in hypothetical sexual and emotional infidelity was not a predictor of any of the forms of violent behavior.

Evolutionary psychologists advocate the standpoint according to which men show a greater intensity of jealousy towards the sexual infidelity of their partners, while women show a greater intensity of jealousy

sy towards the emotional infidelity of their partners (47, 48). This study confirms these assumptions of the greater jealousy of boys in hypothetical sexual infidelity and the women's in cases of hypothetical emotional infidelity by their partners. The results are consistent with numerous studies conducted so far (49, 51, 62 - 63).

Furthermore, jealousy as a complex emotion motivates behavior whose aim is to retain their partners and remove potential threats to the current relationship. One of these behaviors includes various forms of violent behavior. Taking into account the obtained gender differences in jealousy in a hypothetical situation of infidelity, we could also expect differences in the violent behavior of boys and girls. The results of this study confirm this assumption and show that young men more frequently sexually abuse their partners, which is also in line with the studies conducted so far (13, 32, 39). At the same time, girls more frequently emotionally and verbally abuse their partners. Gender differences in physical abuse and threatening behaviors were not found in this study. Previous research into violence in adolescent relationships did not pay attention to the adaptive mechanisms of keeping a partner which might be found in the underlying gender differences in violent behavior.

When it comes to violence against women, the studies of adult violent behavior in intimate relationships indicate that sexual abuse by a man can be related to his suspicion of his partner's sexual infidelity. Violent sexual intercourse is more likely to occur shortly after the break up when a man suspects their partner's infidelity the most. Also, previous studies confirmed the positive correlation between men's jealousy, sexual infidelity and sexual abuse (64). If a man suspects that his partner had sex with another man, he might increase the probability of reproduction with violent sexual intercourse, and reduce

the possibility of raising a child with whom he is not in a genetic relationship. The greater tendency towards sexual abuse by men is consistent with the assumption of sperm competitiveness, according to which men increase the amount of sperm due to possible competition with a potential rival (45). The results of the regression analysis which we obtained in this study partly confirm these assumptions. The model in which the variable criteria was sexual abuse shows that the boys' jealousy towards sexual infidelity is a significant predictor, together with physical and emotional and verbal abuse. However, it is noteworthy that the predictor variables explained only 30% of the variance, and that the contribution of jealousy in hypothetical sexual infidelity is significant only at the borderline of significance of 10%.

According to the results of this study, based on the lower intensity of the boys' jealousy, it may be predicted that they will have a greater tendency to physically abuse their partners. These results are consistent with the results of research carried out so far (49-55). From the perspective of evolutionary psychology, it can be assumed that physical abuse after suspicion of a partner's infidelity is not adaptive because it further reduces the possibility of reproduction and increases the probability of losing their partner completely. It is important to emphasize that in this study, physical abuse was a significant predictor of sexual abuse and vice versa. This result is also in line with previously obtained studies which showed that when physical abuse is already present in a relationship then there is greater probability of sexual harassment (65). Jealousy in hypothetical sexual infidelity proved to be an equally strong predictor of both types of violent behavior, but in the opposite direction. While greater intensity of jealousy predicts more frequent sexual abuse, it also predicts a lower affinity towards physical abuse. So in situations where jealousy is present,

the probability of sexual abuse increases and reduces the likelihood of physical abuse. Although the connection between sexual and physical abuse is already proven, it is possible that jealousy in hypothetical sexual infidelity explains one part of the variance that is not shared by two kinds of abuse.

Boys' jealousy in hypothetical emotional infidelity was a significant predictor of emotional and verbal abuse, with threatening behavior and sexual abuse. The contribution of jealousy was significant at the level of only 10%, while the whole model explains slightly less than 30% of the total variance. However, the predictive contribution of jealousy towards emotional infidelity is expected, when explaining emotional and verbal abuse. Emotional blackmail and creating a sense of guilt in the female partner can be one of the mechanisms to keep the partner, if her emotional fidelity comes into question.

When it comes to violence toward boys, girls show the greatest tendency to emotional and verbal abuse, which is consistent with some previous studies in which it was shown that women are more prone to verbal aggression and physical abuse (66, 67). When it comes to the connection between jealousy and violence in girls, the results obtained by regression analyses show that hypothetical jealousy over emotional and sexual infidelity is not a significant predictor of any of the forms of violent behavior. Therefore, based on the intensity of jealousy in a hypothetical situation of a partner's infidelity, among girls, it is not possible to predict their tendency to violent behavior. This leads us to question the adaptive function of girls' violent behavior if they suspect their partner's fidelity. As mentioned, jealousy will motivate a range of actions aimed at retaining their partner. So, if the young man committed emotional infidelity, towards which women are particularly sensitive, the violent behavior of girls in this situation may not be adaptive. It is

more likely that in this case they will actually lose their male partners. Research also shows that there is little probability that the girl will be prone to aggressive behavior, even when confronted with her partner's infidelity (68), and that she will in this situation strive to improve her physical appearance (69). Buss (67) developed the taxonomy of the most common forms of behavior in order to retain partners, namely: control over a partner, a partner's threats of punishment, expressing love and care, the public display of "ownership" of the partner, and the direct threat to potential rivals. Therefore, in future studies it is necessary to take into account a wider range of possible behavior in cases of jealousy.

The results of this study could provide guidance for further studies of gender differences in various forms of violent behavior, as well as the complex emotions of jealousy, which can lead to them. Jealousy is a universal emotion which came into existence throughout evolution with a clear function, which gives importance to the study of consequences that such an emotional state can cause.

In the same way, it is also important to emphasize the need to examine the relationship of jealousy and violence in youthful relationships, because adolescence can be a critical period during which risk factors of violent behavior are becoming the typical pattern of behavior in a relationships. Many students believe that jealousy is a major cause of violence in adolescent relationships. Jealousy is based on insecurity, but young people often mistakenly interpret it as an expression of love.

Violent young people are jealous because they are insecure and have fears that they will not be loved. The relationship starts out as romantic, but it becomes a "prison" of isolation and control, and the intensity of violence increases over time. The bully discovers

that his jealousy gives him an excuse to control the person he loves and the fact that he holds her in fear and dependant on him alone (56). Young people themselves cannot be responsible for the prevention of violence in their relationships. Significant adults, schools, the public health care system, the media and other important members of a community should contribute to the welfare and safety of youngsters by providing appropriate educational programs, appropriate models of healthy behavior in relationships and challenge the social norms that contribute to violence. The proliferation and complexity of violence in adolescent relationships requires creative and complex solutions that involve all members of the community – young people, parents, friends, teachers, doctors and other decision makers (2).

In our research, there are several methodological limitations that could affect the results. Our sample is not representative of all adolescents in Bosnia and Herzegovina. Specifically, data was collected from a convenience sample of adolescents from a high school in Siroki Brijeg. In order to enrol in classical high school, students have to complete various tests and have good school grades, therefore most classical high schools, such as the one used in our study, have students with excellent pass rates and only a small number of students with a very good pass rate. The sample was therefore biased in the sense that it consisted mostly of selected participants. The fact is that 36% of adolescents did not

provide complete answers, which clearly indicates a selection bias in the definition of the sample. Possible attempts to hide violence or lack of emotional and sexual involvement in the respondents, cannot be reliably determined in this study. However, it should be noted that it may be concluded that it is likely to be influenced by the characteristics of the results obtained by this selection of subjects.

Conclusion

The obtained results showed greater jealousy in boys in a hypothetical situation of sexual infidelity, and greater jealousy in girls in a hypothetical situation of the emotional infidelity of their male partners, which is consistent with the principles of evolutionary psychology. Also, young men more frequently sexually abused their partners, while girls were more often emotionally and verbally abusive towards their partners. Jealousy of boys towards sexual infidelity was a significant predictor of sexual abuse, while jealousy of girls towards sexual and emotional infidelity are not predictors of any of the forms of violent behavior.

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References

1. Browne A, Finkelhor D. Impact of child sexual abuse: A review of the research. *Psychol Bull.* 1986;99:66-77.
2. Ajduković M, Ručević S. Nasilje u vezama mladih. *Medicus.* 2009;18(2):217-25.
3. Carlson BE. Dating violence: A research review and comparison with spousal abuse. *Social Casework. The Journal of Contemporary Social Work.* 1987;68:16-23.
4. Busby DM, Holman TB, Walker E. Pathways to relationship aggression between adult partners. *Fam Relat.* 2008;57(1):72-83.
5. O'Keefe, M. (2005). Teen Dating Violence: A Review of Risk Factors and Prevention Efforts.

- National Eletronic Network on Violence Against Women (Online). Available: www.vawnet.org/DomesticViolence/Research/VAWnetDocs/AR_TeenDatingViolence.pdf
6. Burke PJ, Stets JE, Pirog-Good, MA. Gender Identity, Self Esteem, and Physical and Sexual Abuse in Dating Relationships. *Soc Psych Quart.* 1988;51:272-85.
 7. Lo AW, Sporakowski MJ. The continuation of violent dating relationships among college students. *J Coll Student Dev.* 1989;30:432-39.
 8. Wolfe DA, Wekerle C, Scott K, Straatman AL, Grasley C, Reitzel-Jaffe D. Dating violence prevention with at-risk youth: A controlled outcome evaluation. *J Consult Clin Psych.* 2003;71:279-91.
 9. Eaton DK, Davis K, Barrios L, Brener N, Noonan R. Associations of dating violence victimization with lifetime participation, cooccurrence, and early initiation of risk behaviors among U.S. high school students. *J Interpers Violence.* 2007;22:585-602.
 10. Halpern CT, Oslak SG, Young ML, Martin SL, Kupper LL. Partner violence among adolescents in opposite-sex romantic relationships: Findings from the National Longitudinal Study of Adolescent Health. *Am J Public Health.* 2001;91:1679-85.
 11. Bell KM, Naugle AE. Effects of social desirability on students' self-reporting of partner abuse perpetration and victimization. *Viol Vict.* 2007;22:243-56.
 12. Sears HA, Byers ES, Price EL. The co-occurrence of adolescent boys' and girls' use of psychologically, physically, and sexually abusive behaviors in their dating relationships. *J Adolescence.* 2007;30:487-504.
 13. Silverman JG, Raj A, Mucci LA, Hathway JE. Dating violence against adolescent girls and associated substance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality. *J Am Med Assoc.* 2001;266(5):572-9.
 14. White JW, Koss MP. Courtship violence: Incidence in a national sample of higher education students. *Viol Vict.* 1991;6:247-56.
 15. Hamby SL, Sugarman DB. Acts of Psychological Aggression Against a Partner and their Relation to Physical Assault and Gender. *J Marriage Fam.* 1999;61:959-70.
 16. Harper F, Austin A, Cercone J, Arias I. The role of shame, anger and affect regulation in Men's perpetration of psychological abuse in dating relationships. *J Interpers Violence.* 2005;20(12):1648-62.
 17. Jackson SM. Issues in the dating violence research: A review of the literature. *Aggress Violent Beh.* 1999;4(2):233-47.
 18. Murphy CM, O'Leary KD. Psychological aggression predicts physical aggression in early marriage. *J Consult Clin Psych.* 1989;57:579-82.
 19. Cyr M, McDuff P, Wright J. Prevalence and Predictors of dating Violence among Adolescent Female Victims of Child Sexual Abuse. *J Interpers Violence.* 2006; 21(8):1000-17.
 20. Follingstad DR, Rutledge LL, Berg BJ, Hause ES, Polek DS. The role of emotional abuse in physically abusive relationships. *J Fam Violence.* 1990;5:107-20.
 21. Vitanza S, Vogel LCM, Marshall LL. Distress and symptoms of posttraumatic stress disorder in abused women. *Viol Vict.* 1995;10(1):23-34.
 22. Neufeld J, McNamara JR, Ertl M. Incidence and prevalence of dating partner abuse and its relationship to dating practices. *J Interpers Violence.* 1999;14:125-37.
 23. Banyard VL, Arnold S, Smith J. Childhood sexual abuse and dating experiences of undergraduate women. *Child Maltreatment.* 2000;5:39-48.
 24. Dekeseredy WS, Schwartz MD, Tait K. Sexual assault and stranger aggression on a Canadian university campus. *Sex Roles.* 1993;28:263-77.
 25. Cornelius TL, Resseguie N. Primary and secondary prevention programs for dating violence: A review of literature. *Aggress Violent Beh.* 2007;12:364-75.
 26. Smith D, Donnelly J. Adolescent dating violence: A multi-systemic approach of enhancing awareness in educators, parents, and society. *J Prev Interv Community.* 2001;21(1):53-64.
 27. Ozer EJ, Tschann JM, Pash LA, Flores E. Violence perpetration across peer and partner relationships: Co-occurrence and longitudinal patterns among adolescents. *J Adolesc Health.* 2004;34(1):64-71.
 28. Riggs DS, O'Leary KD, Breslin FC. Multiple correlates of physical aggression in dating couples. *J Interpers Violence.* 1990;5:61-73.
 29. Follette VM, Alexander PC. Dating violence: Current and historical correlates. *J Behav Assessment.* 1992;14:39-52.

30. Roscoe B, Kelsey T. Dating violence among high school students. *Psychology*. 1986; 23:53-9.
31. Foshee V. Gender differences in adolescent dating abuse prevalence, types, and injuries. *Health Educ Res*. 1996;11(3):275-86.
32. Hettrich EL, O'Leary KD. Females' reasons for their physical aggression in dating relationships. *J Interpers Violence*. 2007;22:1131-43.
33. Lane KE, Gwartney-Gibbs, PA. Violence in the context of dating and sex. *J Fam Issues*. 1985;6:45-59.
34. Jezl DR, Molidor CE, Wright TL. Physical, sexual and psychological abuse in high school dating relationships: Prevalence rates and self-esteem issues. *Child Adolesc Social Work J*. 1996;13(1):69-87.
35. Sharpe D, Taylor JK. An examination of variables from a social-developmental model to explain physical and psychological dating violence. *Can J Behav Sci*. 1999;31(3):165-75.
36. Magdol L, Moffitt TE, Caspi A, Newman DL, Fagan J, Silva PA. Gender differences in partner violence in a birth cohort of 21-years-olds: Bridging the gap between clinical and epidemiological approaches. *J Consult Clin Psychol*. 1997;65:68-78.
37. Archer J. Sex differences in physically aggressive acts between heterosexual partners: A meta-analytic review. *Aggress Violent Behav*. 2002;7:313-51.
38. Wolfe DA, Wekerle C, Reitzel-Jaffe D, Lefebvre L. Factors associated with abusive relationships among maltreated and non-maltreated youth. *Dev Psychopathol*. 1998;10:61-86.
39. Pavela I, Šimić N. Spolne razlike u reagiranju na emocionalnu i seksualnu nevjera. *Socijalna psihijatrija*. 2010;38(4):245-54.
40. Campbell J, Sharps PW, Sachs C, Yam ML. Medical lethality assessment and safety planning in domestic violence cases. *Clinics in Family Practice*. 2003;5(1):101-12.
41. Klostermann KC, Fals-Stewart W. Intimate partner violence and alcohol use: Exploring the role of drinking in partner violence and its implications for intervention. *Aggress Violent Beh*. 2006;11(6):587-97.
42. Bell K, Cornelisu T, Shorey RC. Emotional dysregulation and perpetration of intimate partner violence. Presented at the 42nd annual convention of the Association for Behavioral and Cognitive Therapies, Orlando, FL; 2008.
43. Daly M, Wilson MI, Weghorst SJ. Male sexual jealousy. *Ethol Sociobiol*. 1982;3:11-27.
44. Kaighobadi F, Shackelford TK. Evolutionary psychological perspectives on men's partner-directed violence. In: DeLisi M, Beaver K, editors. *Criminological Theory: A Life-Course Approach*. Boston: Jones and Bartlett; 2011. p. 257-266.
45. Kardum I. *Evolucija i ljudsko ponašanje*. Zagreb: Naklada Jesenski i Turk; 2003.
46. Buss DM, Haselton M. The evolution of jealousy. *TRENDS Cogn Sci*. 2005;9(11):506-7.
47. Michalski RL, Shackelford TK. Evolutionary personality psychology: Reconciling human nature and individual differences. *Pers Individ Differ*. 2010;48:509-16.
48. Buss DM, Larsen R, Westen D, Semmelroth J. Sex differences in jealousy: Evolution, physiology, and psychology. *Psychol Sci*. 1992;3(4):251-5.
49. Pavela I, Šimić N. Razlike u ljubomori između muškaraca i žena: provjera evolucionjske hipoteze i hipoteze uvjerenja. *Psihologijske teme*. 2012;21(1):105-20.
50. Shackelford TK, Buss DM, Bennett K. Forgiveness or breakup: Sex differences in responses to a partner's infidelity. *Cognition and Emotion*. 2002;16(2):299-307.
51. Brase G, Caprar D, Voracek M. Sex differences in responses to relation threats in England and Romania. *J Soc Pers Relat*. 2004;21(6):763-78.
52. Buss DM, Shackelford TK, Kirkpatrick LA, Choe J, Hasegawa M, Hasegawa T, et al. Jealousy and the nature of beliefs about infidelity: tests of competing hypotheses about sex differences in the United States, Korea, and Japan. *Pers Relationships*. 1999;6:125-50.
53. Buunk BP, Angleitner A, Oubaid V, Buss DM. Sex differences in jealousy in evolutionary and cultural perspective: tests from the Netherlands, Germany, and the United States. *Psychol Sci*. 1996; 7(6):359-63.
54. Geary DC, Rumsey M, Bow-Thomas CC, Hoard MK. Sexual jealousy as a facultative trait: evidence from the pattern of sex differences in adults from China and the United States. *Ethol Sociobiol*. 1995;16(29):355-83.

55. Kaighobadi F, Shackelford TK. Vigilance, violence, and murder in mateships. In: DeLisi M, Conis P, editors. *Violent offenders: Theory, research, policy, and practice*. Boston: Jones and Bartlett; 2012. p. 125-42.
56. Derusha TL. A comprehensive study and critical analysis of literature related to violence in teen dating relationships. Menomonie: The University of Wisconsin-Stout; 2007.
57. Wolfe DA, Scott K, Reitzel-Jaffe D, Wekerle C, Grasley C, Straatman A. Development and validation of the Conflict in Adolescent Dating Relationships Inventory. *Psychol Assessment*. 2001;13:277-93.
58. Kline RB. *Principles and practice of structural equation modeling*, Third edition. New York: Guilford Press; 2011.
59. Field A. *Discovering statistics using SPSS*. London: Sage Publications, Ltd.; 2009.
60. Myers R. *Classical and modern regression with applications*, Second ed. Boston, MA:Duxbury; 1990.
61. Kuhle BX, Smedley KD, Schmitt DP. Sex differences in the motivation and mitigation of jealousy-induced interrogations. *Pers Indiv Differ*. 2009; 46:499-502.
62. Schützwohl A. Sex differences in jealousy: Information search and cognitive preoccupation. *Pers Indiv Differ*, 2006;40:285-92.
63. Starratt VG, Goetz AT, Shackelford TK, Stewart-Williams S. Men's partner-directed insults and sexual coercion in intimate relationships. *J Fam Violence*. 2008; 23:315-23.
64. Shackelford TK, Goetz AT. Men's sexual coercion in intimate relationships: development and initial validation of the Sexual coercion in intimate relationships scale. *Violence Vict*. 2004;19:541-56.
65. Bookwala J, Frieze IH, Smith C, Ryan K. Predictors of dating violence: a multivariate analysis. *Violence Vict*. 1992;7(4):297-311.
66. Harned MS. Abused women or abused men? An examination of the context and outcomes of dating violence. *Violence Vict*. 2001;16(3):269-85.
67. Buss DM. *The dangerous passion*. New York: Free. 2000.
68. Buss DM. From vigilance to violence: tactics of mate retention in American undergraduates. *Ethol Sociobiol*. 1988;9:291-317.

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