

Jealousy and intimate partner violence in students of the University of Cuenca, Ecuador**Celos y violencia en parejas de estudiantes de la Universidad de Cuenca, Ecuador****Ciúmes e violência em casais de estudantes da Universidade de Cuenca, Equador**

*Ximena Guillén Verdesoto*¹ ORCID 0000-0003-0690-7941

*Juana Ochoa Balarezo*² ORCID 0000-0001-5683-6657

*Gustavo Delucchi*³ ORCID 0000-0003-2771-1980

*Elizabeth León Mayer*⁴ ORCID 0000-0003-1564-6448

*Jorge Folino*⁵ ORCID 0000-0001-5834-2212

^{1 2} *Universidad de Cuenca, Ecuador*

^{3 4 5} *Facultad de Ciencias Médicas, Universidad Nacional de La Plata, Argentina*

Abstract: This research work evaluates violence in couples of university students and focuses on their relationship with jealousy and other variables. Using a cross-sectional design, 186 students from the University of Cuenca, Ecuador, were surveyed. Instruments used were *Conflict in Adolescents Dating Relationships Inventory*, *Multidimensional Jealousy Scale*, and other ad hoc methods related to fidelity, substance use, and stress during dating relationship. Violence scores observed were low in general though disturbing in 5.4% of students surveyed. Noticeably, 60.2% of them reported to have committed at least one physical violent act during their index dating relationship. Violence subtypes measured showed similar distribution between men and women. Correlation between total violence committed and suffered was .77 ($p < .001$). A significant association was observed between the highest violence group and behavioral jealousy and stress during dating relationship.

Key Words: partner violence, university student, jealousy, fidelity, stress, substance use

Resumen: En esta investigación se dimensiona la violencia en parejas de estudiantes universitarios y se explora su relación con los celos y otros correlatos. Con un diseño de corte transversal se encuestaron 186 estudiantes de Universidad de Cuenca. Los instrumentos utilizados fueron el *Conflict in Adolescents Dating Relationships Inventory*, la *Multidimensional Jealousy Scale* e items ad hoc sobre fidelidad, consumo de sustancias y estrés durante la relación de pareja. Los puntajes de violencia fueron bajos en general, pero preocupantes en el 5.4% de los encuestados. El 60.2% informó haber cometido por lo menos un acto violento físico durante la relación de pareja index. Los subtipos de violencia medidos tuvieron distribución similar entre varones y mujeres. La correlación entre violencia total cometida y sufrida fue .77 ($p < .001$). Se verificó asociación significativa entre la pertenencia al grupo de mayor violencia y los celos comportamentales y el estrés padecido durante la pareja.

Palabras Clave: violencia de pareja, estudiante universitario, celos, fidelidad, estrés, consumo de sustancias



Resumo: Nesta pesquisa, dimensiona-se a violência em casais de estudantes universitários e explora-se sua relação com o ciúme e outros correlatos. Com um desenho transversal, foram estudados 186 alunos da Universidade de Cuenca. Os instrumentos utilizados foram o *Conflict in Adolescents Dating Relationships Inventory*, a *Multidimensional Jealousy Scale* e itens ad hoc sobre fidelidade, uso de substâncias e estresse no relacionamento. Os escores de violência foram baixos em geral, mas preocupantes em 5,4% dos participantes. 60,2% relataram ter cometido pelo menos um ato de violência física durante o relacionamento. Os subtipos de violência medidos tiveram distribuição semelhante entre homens e mulheres. A correlação entre o total de violência cometida e sofrida foi de .77 ($p < .001$). Houve associação significativa entre pertencimento ao grupo de maior violência, ciúme comportamental e estresse sofrido durante o relacionamento.

Palavras-chave: violência de casal, estudante universitário, ciúmes, fidelidade, estresse, uso de substâncias

Received: 03/23/2020

Accepted: 10/29/2020

How to cite:

Guillén Verdesoto, X., Ochoa Balarezo, J., Delucchi, G., León Mayer, E., & Folino, J. (2021). Jealousy and intimate partner violence in students of the University of Cuenca, Ecuador. *Ciencias Psicológicas*, 15(1), e-2353. doi: <https://doi.org/10.22235/cp.v15i1.2353>

Correspondence: Ximena Guillen. Coordinadora de Vinculación con la Sociedad de la Facultad de Jurisprudencia y Ciencias Políticas y Sociales de la Universidad de Cuenca, Ecuador. E-mail: ximena.guillen@ucuenca.edu.ec

Intimate partner violence is diversely externalized and shows different lethal levels (Organización Panamericana de la Salud, 2003). Late adolescence and early adulthood have been frequently defined as high risk age groups (Capaldi, Knoble, Shortt, & Kim, 2012). The present work focuses on intimate partner violence in university students (IPVUS) and assesses the actual significance of this phenomenon, the different ways in which it appears, and its relationship with jealousy and other co-variables within the context of an Ecuadorian institution.

Intimate Partner Violence

Several reports have shown that having suffered some kind of partner violence is quite common for various ethnic or social groups. In fact, Chan, Shen, and Takeuchi (2009) found that 10.2% women and 12% men out of a representative Asian-American population from USA reported to have suffered violence from their current intimate partner. A recent meta-analysis on a combined population of 329.212 military soldiers from Canada and USA showed prevalence of physical violence committed during the last year of 26% for men and 20% for women (Kwan et al., 2020). Other studies reported prevalence of intimate partner violence suffered along their lives of 24.3% for women and 13.8% for men (Black et al., 2010).

Concerning couple violence in adolescents, early reports informed a prevalence rate between 9% and 57% (Cascardi, Avery-Leaf, & O'Leary, 1994; Roscoe & Callahan, 1985). Later, the Center for Disease Control and Prevention reported that 12% secondary students had suffered physical violence during intimate partner relationship (Center for Disease Control and Prevention, 2000).

The high prevalence of violence among young students dating was also reported by an international study using samples from 22 countries (Chan, Straus, Brownridge, Tiwari, & Leung,

2008). Though this study did not include Ecuador, two Latin American countries were part of it (Mexico, Brazil). Results for the country in the median showed that 30% of students in the sample had committed physical violence against their partner during the previous 12 months (Chan et al., 2008).

Moreover, evidence on adolescent relationships shows concurrence between aggression and victimization (Chan et al., 2008; Malik, Sorenson, & Aneshensel, 1997; Straus & Ramirez, 2007; Taylor & Mumford, 2016).

Intimate partner violence may be expressed in different ways. Burk and Seiffge-Krenke (2015) grouped violent behavior into two categories: physical aggression and relational aggression. The first consists of the intentional use of force that can hurt the partner and includes mildly aggressive behavior -such as a shove or a scratch- and severely aggressive behavior –such as asphyxiation attempt, slap or attack with weapon. This second category includes insult, verbal attack, defamatory gossip, exclusion, flirting with somebody else with the purpose of provoking jealousy and breaking-up threat. This type of relational aggression is associated to poor psychological adjustment, depression, and dysfunctional relationship (Prinstein, Boegers, & Vernberg, 2001). When comparing between sexes, women show higher disapproval of these relational aggressions, feel higher impact of this behavior on their relationship, and spend more time thinking and talking about it (Salmivalli & Kaukiainen, 2004). When partner violence is mutual, it is frequently associated with less adaptive functioning, conflict, lack of relevant qualities such as confidence and support (Seiffge-Krenke & Burk, 2015).

Malik et al. (1997) reported that Los Angeles female adolescents showed higher probability of intimate partner violent behavior than men and that the risk factors favoring aggression were: previous exposure to violence, naturalization of the use of violence, and cannabis use. Capaldi et al. (2012) carried out a systematic review and among demographic risk factors found that dating violence risk decreases with age, reaching its highest level in late adolescence or early adulthood. Johnson, Giordano, Manning, and Longmore (2014) provided further support to this finding reporting that in men, dating violence increases from 13 to 20 years old and then decreases, and in women, though with a similar pattern, its highest level is observed between 21 and 24 years old.

Latin American research studies also showed high prevalence and symmetry of violence in dating relationships. The work performed with a sample of 963 students from the National University of Cordoba, Argentina, revealed 34% prevalence of physical aggression for women during the past 12 months and 22% for men; acceptance of having committed aggression increased significantly the probability of suffering similar or another kind of aggression (Arbach-Lucioni, Nguyen-Vo, & Bobbio, 2015). A recent Argentine study on 528 students from the Medicine School of the National University of La Plata reported an IPVUS mean of 0.35 ($SD= 0.27$; possible range 0-3); verbal emotional violence as prevailing type ($M= 0.85$; $SD= 0.5$); punctuations concentrated in lowest values but 3.2% with values higher than 1 in total violence committed; 50.2% of total, 19.1 % women and 20.6 % men informed to have committed at least one physical aggression during the index relationship (Delucchi, Leon-Mayer, & Folino, 2020).

Jealousy and Intimate Partner Violence

Scientific literature provides broad evidence on the influence of jealousy on partner violence. Jealousy and violence of man on his woman partner have been early described as a psychological tendency that evolved in the Homo Sapiens to strengthen his confidence in paternity and ensuring sexual exclusiveness and control (Daly, Wilson, & Weghorst, 1982). More recently, studies have focused on the relation of jealousy and other individual variables with aggression or other menacing consequences, and left aside that restricted view of male sex and reproductive functionality to also deal with transgender and nonconformist young people (Goldenberg, Jadwin-cakmak, & Harper, 2018).

Jealousy has been related to psychological and physical aggression in North American young people (Davis, Ace, & Andra, 2000; Giordano, Soto, Manning, & Longmore, 2010), and Spanish students (Muñoz-Rivas, Graña, O'Leary, & González, 2007). A study carried out in Boston (DeSteno, Valdesolo, & Bartlett, 2006) associated the intensity of jealousy, mediated by self-esteem, with aggression incitement towards the partner.

Murphy y Russell (2016) found that jealousy resulted to mediate between the sensitivity to rejection and aggression, and DiBello, Rodriguez, Hadden, and Neighbors (2015) reported the mediation of cognitive jealousy in the association of self-esteem in the couple relationship, alcohol use, and problems related with this addiction.

A Latin American contribution from a feminist qualitative research study showed the relation between jealousy, infidelity, and substance use with conflict and partner violence (do Nascimento Paixao et al., 2014). Another qualitative study from the same country found significant association between non delirious pathological jealousy and anxiety, which could increase violent reactivity (Costa, Sophia, Sanches, Tavares, & Zilberman, 2015). The Argentine research study aforementioned provides support to the existence of a significant relation between jealousy and partner violence (Delucchi, Leon-Mayer, & Folino, 2018). Particularly, this study revealed that behavioral and cognitive jealousy associated positively and significantly with IPVUS, even controlling other factors such as stress and substance use during partner relationship and the age at the beginning of the relationship (Delucchi et al., 2020).

Infidelity, substance use, stress and intimate partner violence

Jealousy, partner infidelity, and alcohol or substance use are closely related with partner violence (Paixão et al., 2014). Early evidence led to consider that previous infidelity, either committed or suffered, increases the individual predisposition to react jealously (Pines & Aronson, 1983). More recently, partner infidelity was reported to be a significant predictor of jealousy, particularly in men (Burchell & Ward, 2011), and to trigger rage and propension to violence in response (Miller & Maner, 2008).

According to evidence from community and assistance institutions, substance use is associated with violence risk (Swanson, Holzer, Ganju, & Jono, 1990; Swanson, Monahan, & Steadman, 1994), even in partner relationships (Capaldi et al., 2012). Brem, Shorey, Rothman, Temple, and Stuart (2018) found alcohol use in jealous men significantly related with partner violence. Moreover, Ihongbe and Masho (2018) reported that synthetic cannabis use is associated with a higher risk of violence victimization in young couples. Though substance use interacts with other variables affecting young partners violence -such as family support and student expectations (Gomez, Orchowski, Pearlman, & Zlotnick, 2019), the study of this variable results quite relevant since it may be the target for further preventive actions.

Stress is known to be part of the diathesis for violence and is one of the factors analyzed to evaluate violence risk (Douglas, Hart, Webster, & Belfrage, 2013; Greer, Taylor, Cella, Stott, & Wykes, 2020). In young couples, it is considered a direct consequence of violence, or indirect, when suffering is caused by the social rejection for young violent partners (Temple et al., 2016). Recently, a significant independent contribution of stress to partner violence has been reported (Buunk & Massar, 2019).

Context

The present research study was carried out in the University of Cuenca, City of Cuenca, Ecuador. This University is a public institution with around 18,000 pre- and postgraduate students. This study contributes to strengthen university policies since it promotes the development of care attention and orientation programs, drug and violence prevention campaigns, and assistance in case of rights vulnerability (Aula de Derechos Humanos, 2018; Consejo Universitario, 2018). Institutional policies for the prevention of violence demonstrate the relevance of the promotion of

empiric investigation on partner violence issues in university students and the need of developing evidence-based preventive actions. However, systematic studies on these issues are still scarce. A recent national report allows to perceive the scope of this problem in Ecuador, showing that, during their lives, 40.8% women have suffered psychological violence and one out of four of them has suffered physical violence (Instituto Nacional de Estadísticas y Censos, 2019).

Present Study

The aim of the present study is to contribute to the gathering of information that can help develop IPVUS prevention programs. Particularly, the objectives of this study are: to describe violent behaviors and explore their relation with jealousy and other variables theoretically relevant in a sample of students from the University of Cuenca. We hypothesize here about the existence of a positive significant association of jealousy, stress, and substance use, with IPVUS.

Materials and Method

Design and Participants

We used a cross-sectional design to survey 186 students (Degree Course of Social Work and Family Orientation, School of Political and Social Sciences, University of Cuenca, Ecuador) during April and May 2018. Out of 220 students taking the course at the time, 186 could be surveyed: 150 women (80.6%), 35 men (18.8%), and one student that did not inform sex (0.5%). The mean age was 22 (*SD* 2.9; min 17; max 31).

Instruments

Conflict in Adolescents Dating Relationships Inventory -CADRI. We used CADRI version (Wolfe, 2001; Wolfe et al., 2001) translated into Spanish by Fernández Fuertes, Fuertes Martín, and Fernández Pulido (2006), with minor adaptation to Argentine terminology (Delucchi et al., 2018). The CADRI comprises 35 item pairs which evaluate the existence of conflict and partner violence. Items are objectively presented (i.e. “I used a hostile or offensive tone”) and contextualized to the moment of conflict or fight with the partner. Items are grouped into pairs. The question refers to the person who is answering and to the partner. To calculate total and sub-scales, 25 items are considered. The score of each item is 0 to 3 according to frequency order (0 corresponds to “never”; 1 to “rarely, or one or twice”; 2 to “sometimes, or 3 to 5 times”; and 3 to “frequently, or 6 or more times”). The remaining 10 pairs are related to strategies for the positive resolution of conflict, play the role of distractors, and are not used for measurement. CADRI items are grouped into five sub-scales representing the respective domain of partner violence: “Sexual violence”-four items; “Relational Violence”-three items; “Verbal-emotional violence” -ten items; “Threats” -four items; “Physical violence” -four items. Relational violence items refer to those actions tending to discredit the partner when in front of mates/friends, while Verbal-emotional violence items refer to different types of insult, threat, reproof, or actions against the partner to cause anger or jealousy. The mean is calculated for each sub-scale. For the remaining sub-scales, the domain measured is literally represented by its respective denominations. These sub-scales contribute to form two scores of second order: “Total abuse committed” and “Total abuse suffered”, obtained by the average of the sub-scales.

Authors of the original instrument informed the following alpha coefficient values: total abuse committed: .83; sexual violence: .51; relational violence: .52; verbal-emotional violence: .82; threats: .66; physical violence: .83 (Wolfe, 2001; Wolfe et al., 2001). Moreover, a recent Argentine study reported the following alpha coefficients: .84; 0.42; .51; .81; .82; .72, respectively (Delucchi et al., 2020). Values from the present work were: .84; .35; .29; .79; .51; .78, respectively. Since Wolfe et al. (2001) found that sexual abuse and relational aggression sub-scales varied in

relation with the second order factor according to age and sex, these authors suggest to use only the sum of the three remaining sub-scales as general indicator of violence (Wolfe, 2001; Wolfe et al., 2001). Following this recommendation and considering the alpha coefficient, the present study does not show results from sexual abuse and relational aggression sub-scales; information about Total abuse committed refers to the sum of Verbal-emotional Violence, Threats, and Physical Violence scales.

Multidimensional Jealousy Scale –MJS. The Argentine version (Delucchi et al., 2018) of MJS (Pfeiffer & Wong, 1989) was used to measure jealousy construct. This instrument was developed to evaluate cognitive, emotional and behavioral aspects of jealousy in romantic relationships. Several studies reported indexes of internal consistency with values higher than .80 (Elphinston, Feeney, & Noller, 2011; Haas Bueno & Carvalho, 2005; Lucas, Pereira, & Esgalhado, 2012; Pfeiffer & Wong, 1989; Tani & Ponti, 2016); in Argentina, alpha coefficient values of .90, .86, .88, and .88 were registered for Cognitive, Emotional, Behavioral, and Total sub-scales, respectively (Delucchi et al., 2020). Values for the sample in the present study were: .92, .87, .93, and .87 respectively.

The scale comprises 24 items distributed in three factors: cognitive and behavioral, which indicate the frequency of actions related with jealousy, and emotional, which indicates the intensity of the emotional response or feeling. Scoring of each item is 1 to 7, corresponding to the following categories in order, respectively: “always”, “almost always”, “many times”, “half the time”, “a few times”, “almost never”, “never”. Values of the cognitive sub-scale must be reverted before the addition. For each sub-scale, possible scores range from 0 to 56; the total ranges from 24 to 168, and highest values indicate highest levels of jealousy (Pfeiffer & Wong, 1989).

Infidelity and Stress Scales. The estimation of the participant of his/her own behavior pattern and infidelity of previous partners was measured using a scale that ranges from 0 (no infidelity) to 10 (complete infidelity). Self estimation of the stress level of the participant was measured in the same way, within the time context of the index couple, with no reference to whether stress was caused by conflict or any other factor.

Level 2 -Substance use –Adult. Substance use within the time context of the index couple was evaluated, based on one of the scales of DSM5 emergent measures. The Spanish version is called Level 2 -Substance use -Adult and is an instrument adapted from ASSIST (Organización Mundial de la Salud, 2011), modified by the National Institute on Drug Abuse (American Psychiatric Association, 2013). Though no information was found about the reliability of the modified version for a university population, Mostardinha, Bártolo, Bonifácio, and Pereira (2019) reported a range of .56 to .84 for alpha coefficients of the 10 sub-scales of the original version for that specific population.

Procedure

Items of instruments and those designed ad hoc to obtain demographic information were prepared as a survey, printed, including the corresponding instructions. These instructions were also transmitted verbally to participants together with some contents about the methodology. Then, participants were allowed to ask questions about their doubts.

Participants were required to formulate their responses within the context of an intense romantic partner relationship, either current or past, independently of the sex and gender of any of the partners. The relationship selected by each participant is called index relationship.

After the objectives of the investigation and the procedure details were explained to all participants, they were asked to provide verbal consent. Following bioethical criteria, they were informed that their decision or rejection to participate would not affect their university performance. They were also informed about the anonymity of the survey, that results would have statistic purposes and would be available for students and scientists, and that the project had been approved by the university authorities.

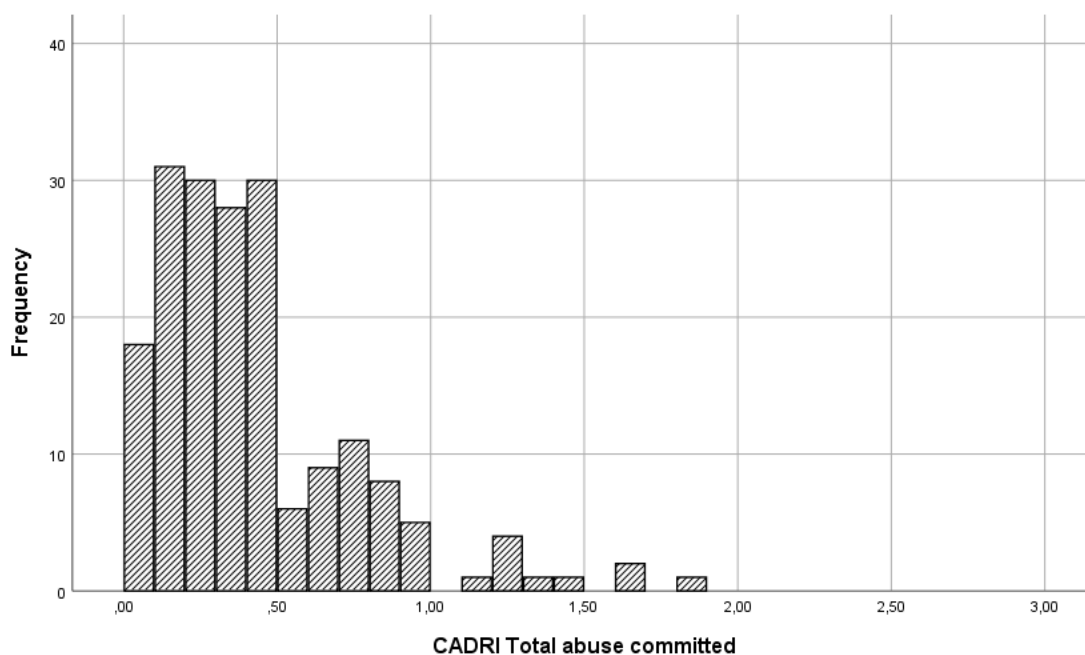
Statistical Analysis

Information was loaded in a double-control database and SPSS 20.1 was used for the analysis. First, a descriptive analysis of variables was carried out according to their measurement level. Then, after establishing $p < 0.05$ confidence level, a bivariate analysis was performed using non-parametric tests -Mann-Whitney test and Sperman's Rho- since most variables showed distribution different from normal according to Kolmogorov-Smirnov test. Finally, a step-forward logistic regression model was formulated following Wald test, with $p < .05$ entry and $p < .10$ removal criteria.

Results

Participants provided information about their index partner relationship, which had started at 18 years old in average (SD 2.74; min. 13; max. 26) and had a mean duration of 33 months (SD 30; min 1; max 144). Out of the whole sample, 49% participants informed that the relationship still continued at the moment of data collection.

IPVUS values distribution according to the CADRI differed significantly from normal for all sub-scales and for total. Total values distribution according to the CADRI for Abuse committed is shown in Graph 1, in which the abscissa is the possible score range. Scores concentration was low; however, value for Total abuse committed was 1 or more in a 5.4% of the participants, which suggests a concerning level of violence. Out of all participants, 60.2% informed to have committed at least one act of physical violence during the index relationship.



Graph 1. Distribution of Total Abuse Committed values according to the CADRI and possible range in abscissa. Mean= 0.41 (SD 0.331). $N= 186$.

Table 1 shows descriptive statistics for CADRI sub-scales and totals, stratified by gender. Verbal-emotional violence was the subtype most committed and suffered. Parity in results stands

out when they are compared between sexes (Table 1). Correlation between total violence committed and suffered was .77 ($p < .001$).

Table 1
Violence committed and suffered according to CADRI sub-scales and totals

CADRI Scale	Total sample ($N= 186$) (a)		Women ($n= 150$)		Men ($n= 35$)		p
	M	SD	M	SD	M	SD	
Verbal/emot. viol. committed	0.84	0.49	0.87	0.49	0.72	0.48	.84
Verbal/emot. viol. suffered	0.86	0.56	0.84	0.55	0.95	0.58	.86
Threats committed	0.18	0.31	0.18	0.30	0.20	0.35	.18
Threats suffered	0.23	0.41	0.21	0.36	0.34	0.58	.23
Physical viol. committed	0.21	0.43	0.24	0.46	0.09	0.23	.21
Physical viol. suffered	0.19	0.43	0.16	0.32	0.37	0.70	.19
Total abuse committed	0.41	0.33	0.43	0.34	0.34	0.28	.41
Total abuse suffered	0.43	0.39	0.40	0.34	0.55	0.57	.43

Note. CADRI: Conflict in Adolescents Dating Relationships Inventory. M : Mean. SD : Standard Deviation. p : Bilateral asymptotic signification of Mann Whitney test, between women and men. (a): A case is missing in sex stratification since category was not assigned.

Measured by MJS, jealousy showed normal distribution only for total values (Kolmogorov-Smirnov= 0.063; $p= .07$). Values for emotional sub-scale showed left asymmetry, and cognitive and behavioral sub-scales, right.

For both sexes, the highest mean value was observed in emotional sub-scale (Table 2). Stratification by sex revealed that there were no statistically significant differences between means.

Table 2
Descriptive statistics of MJS values and sex comparison

Scale	Total ($N= 186$) (a)		Women ($n= 150$)		Men ($n= 35$)		p
	M	SD	M	SD	M	SD	
Cognitive MJS	22.06	10.88	21.77	10.75	23.37	11.61	.50
Emotional MJS	40.45	8.25	40.83	8.26	39.02	8.19	.10
Behavioral MJS	15.87	9.33	15.84	8.97	16.17	10.93	.99
Total MJS	78.38	18.99	78.45	19.25	78.55	18.18	.97

Note. MJS: Multidimensional Jealousy Scale. M : Mean. SD : Standard Deviation. p : Bilateral asymptotic signification of Mann Whitney test, between women and men. (a): A case is missing in sex stratification since category was not assigned.

Co-variables showed an average medium stress during the index relationship ($M= 4.4$; SD 2.6; min. 0; max. 10) and higher level of fidelity than that of their previous partners with them ($M= 2.6$; SD 3.1; min. 0; max. 10 vs. $M= 3.8$; SD 3.2; min. 0; max. 10).

Stratification by sex revealed that their stress estimation by the time of index partner had no significant differences between men and women ($M= 4.5$; $M= 4.4$ respectively; $p= .67$). In average, women informed having committed less infidelity ($M= 2.47$; $M= 3.14$ respectively; $p= .23$) but having suffered more infidelity ($M= 3.89$; $M= 3.18$ respectively; $p= 0.28$), though differences were not statistically significant.

All participants informed that during the index relationship they had not used methamphetamines, heroin, or inhalants but 1.6% of them had used hallucinogens, 1% cocaine, and 1% ecstasy. Moreover, 6.5% had used cannabis some days in a month and 3.3% had used it at least half a month. Out of total participants, 32.8% informed no alcohol use, 53.8% had used it some days in a month, and 12.9% had used it at least half a month or more. Analgesics use without medical prescription was informed by 17.2% participants and 21% had smoked tobacco during the index relationship. A summary variable "Substances used" was developed adding up all substances used except for tobacco, and the mean was 1.48 (SD 1.9). Mean for men was 2 (SD 2.5) and for women, 1.4 (SD 1.7).

Table 3.

Correlations for CADRI total abuse committed and independent variables

Independent variable	<i>r</i>
Cognitive MJS	.318**
Emotional MJS	.029
Behavioral MJS	.502**
Total MJS	.319**
Substance use	.270**
Stress	.442**
Fidelity of participant	.280**
Fidelity of previous partners	.223**
Age at start of index relationship	-.150*

Note. $N= 186$. MJS: Multidimensional Jealousy Scale. *r*: Spearman's Rho correlation. **Significant correlation at level 0.01 (bilateral). *Significant correlation at level 0.05 (bilateral).

In order to consider CADRI variable Total Abuse Committed as the dependent variable in a multivariate model, and taking into account distribution asymmetry, a logistic regression model was formulated. Thus, we dichotomized its total according to the median ($Md= 0.3$) and assigned code 1 to cases with values higher than median, and 0 to those with equal or lower value; they were labeled as "High violence group" (47.8%) and "Low violence group" (52.2 %). A logistic regression model was formulated considering as independent variables all those for which correlation was informed in Table 3, adding sex. Estimation was performed using the "forward conditional" method with entry probability of 0.05 and removal probability of 0.10.

Variables remaining in the model were MJS Behavioral ($OR= 1.09$; $p= .003$; 95% IC 1.03, 1.2) and Stress ($OR= 1.41$; $p< .001$; 95% IC 1.21, 1.64). The model classified correctly 71.4% cases and adjusted data properly [Hosmer and Lemeshow= 8.11 (gl 8) $p= .42$]. Variables in the model explain no less than 22% variance (Cox & Snell R -square= 0.22; Nagelkerke R -square= 0.30).

Discussion

The aims of the present study were to describe violent behavior in a sample of students from the University of Cuenca, Ecuador, and examine their relation with jealousy and other factors theoretically relevant. Data were obtained through a survey which asked participants to inform about the variables within the context of an intense romantic relationship, one that had moved their feelings, romanticism, or love, according to their own interpretation. Students provided information about partners of rather long relationships which in almost half the cases still continued. Since couples had started their relationship at 18 years old in average, they are far from the time in which first adolescent contacts start. These characteristics provide reliability to references since memories are less affected by the course of time, and in coincidence with our request, they are memories of significant experiences. Thus, since information required was vulnerable to memory bias, this risk was minimized.

Any expression of violence is undesirable but it is even more distressing when it is more frequently or intensely externalized. The general IPVUS profile obtained with the CADRI showed low values; prevalence of verbal emotional violence was observed with the highest values, in agreement with findings from a recent Latin American study (Delucchi et al., 2020). However, more than 5% students in the sample showed concerning values and 60.2% informed to have committed at least one physically violent act during the index relationship.

Another finding to be discussed is the parity observed between values for violence committed by the group of women and those by the group of men. Previous studies reported aggression bilaterality in young couples (Chan et al., 2008; Malik et al., 1997; Straus & Ramirez, 2007; Taylor & Mumford, 2016), and even higher values in the group of women (Arbach-Lucioni et al., 2015; Elmquist et al., 2016). Though the present study does not assess those subtypes determined by aggressive unidirectionality -only from man to woman or only from woman to man- or bidirectionality (Straus & Gozjolko, 2014), our findings show a prevailing reciprocity of violence in young couples. Besides parity, the present work confirmed that violence committed varied concomitantly with violence suffered. Moreover, this result suggests the existence of bilateral violent interactions in couples since the context for both types of violence was the index couple itself. Interestingly, Fernández-Fuertes, Fuertes and Pulido (2006) also found high correlations between violence committed and suffered, and made a similar interpretation suggesting the possible existence of mutual violence patterns. This IPVUS aspect could be associated with shared behavioral and expression habits, and even with the predisposition to action, either defensive or offensive, that young people have. In agreement with Taylor and Munford (2016), our findings allow to suggest that prevention/treatment services should not contemplate groups as completely separated into victims and aggressors.

No matter whether the level of violence that women declared is similar or higher than that informed by men, the interpretation will never attenuate the historical regularity of the higher impact of masculine violence but reveals a relevant aspect of this issue: violent behavior in partners belonging to this age group goes beyond biological sex. And this is relevant not only for prevention policies but also for forensic assessment since, at the moment of assessing a specific case, this evidence forces the expert to explore about the existence of an eventual violent interaction behavior.

Findings suggest that the provision of specific prevention services to the local university students population is not only morally fair but also empirically demonstrated. Comparison with studies from other countries show agreement in this sense. Mean values were higher for our sample than for a similar age group -19 years old- from a Spanish sample (Fernández-Fuertes et al., 2006) and an Argentine sample (Delucchi et al., 2020). These considerations highlight the need for special preventive care of local students and make evident for future studies the significance of

analyzing the eventual influence of macro factors such as gender inequality (Okeke, Mumford, & Rothman, 2019) or cultural standards related with the early start of romantic relationships.

Some comments on descriptive findings in the present study will help in the discussion. Regarding total jealousy, we observed a normal distribution, but when analyzing emotional jealousy on the one hand, and cognitive and behavioral jealousy on the other hand, a clear contrast was found. In general, students informed that jealousy was mainly emotional. Differences between women and men were not significant, unlike Argentine results where women informed significantly higher jealousy quantum than men (Delucchi et al., 2020).

Concerning data on the estimation about their own stress, infidelity committed, and that committed by previous partners, students informed medium stress level and no significant differences were found between sexes.

The assessment of substance use during index couple relationship showed that almost 10% had used cannabis and two thirds, alcohol. These data reveal that substance use for the sample in the present study was lower than that for the student population of La Plata, Argentina (Delucchi et al., 2020). In fact, this information should be assessed in future research studies since Ecuadorian mountain area shows the highest level of alcohol use in young population (Instituto Nacional de Estadísticas y Censos, 2014).

Except for emotional jealousy, the relation between each of the rest of co-variables with IPVUS was statistically significant. Interestingly, unlike results with the remaining measures, as lower the age at the start of the relationship, the higher IPVUS value. This finding agrees with those from foreign studies (Delucchi et al., 2020; Johnson et al., 2014) though these last showed higher correlation. This association remained negative when the multivariate model was formulated but lost statistical significance; the same was observed for the association with other factors. Only associations of behavioral jealousy and stress with cases in the high violence group kept statistically significant. Even though the study design does not allow the assessment of causality, findings are compatible with a multifactorial explanatory model in which externalized jealousy and stress finally affect violent behavior between partners. The association between these factors and IPVUS cannot explain the complete variance of the phenomenon. Further investigation will allow identify other influencing factors, but for the time being, this finding unveiled an empirically delimited target for preventive policies. Not only behavioral externalization of jealousy but also concomitant stress are factors to be considered in order to reach an optimistic perspective on intimate violence decrease.

Besides its cross-sectional design, this study presents some further limitations. Results do not represent the whole population of university students. Though the sample includes most of the students from two university degree courses (186 out of 220), it does not encompass the complete universe of local students. The marked disproportion between women and men, and eventual characteristics of students from those particular courses might have biased our results.

Data obtained do not allow determine whether substance use started after violence and was consumed to relieve discomfort, or if it started before, so that eventual psychoactive effects could have been present at the moment of the violent interaction. We cannot either determine whether substance use caused just transitory effects or if it was a long lasting disorder. This factor should be further investigated and considered, at least theoretically, for possible preventive actions. Its harmful influence should not be underestimated since substance use is related with violence in complex and bidirectional ways (Levitt & Cooper, 2010). Substance use may directly act as disinhibiting factor and indirectly when used as palliative, postponing the resolution of conflict, or affecting human relationship.

The characteristics of this study that allowed reduce the risk of memory and social desirability biases, such as the context of an affectively significant relationship and anonymity, have been already addressed. However, we admit the possibility of a certain level of influence on information obtained.

Finally, as far as we could confirm with indexed bibliographic data, this research study is the first empirical attempt to relate jealousy with violence in young students couples from Ecuador. Factors associated with IPVUS should be considered when evidence-based prevention programs are designed. Authors from other countries have already remarked the need for implementing those programs (Khubchandani et al., 2017) and the present study can contribute to make this need known and locally accomplished.

References

- American Psychiatric Association. (2013). *Cross-cutting level 2: Substance use - adult*. Retrieved from <http://www.psychiatry.org/File>
- Arbach-Lucioni, K., Nguyen-Vo, T., & Bobbio, A. (2015). Violencia física en el noviazgo: análisis de los tipos diádicos en población argentina. *Revista Argentina de Ciencias Del Comportamiento*, 7(2), 38-46.
- Aula de Derechos Humanos. (2018). *Protocolo de prevención y actualización en casos de acoso, discriminación y violencia basada en género y orientación sexual en la Universidad de Cuenca*. Cuenca, Ecuador: Universidad de Cuenca.
- Black, M. C., Basile, K. C., Breiding, M. J., Smith, S. G., Walters, M. L., Merrick, M. T., ... Stevens, M. R. (2010). *National Intimate Partner and Sexual Violence Survey 2010. Summary Report*. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.
- Brem, M. J., Shorey, R. C., Rothman, E. F., Temple, J. R., & Stuart, G. L. (2018). Trait Jealousy Moderates the Relationship Between Alcohol Problems and Intimate Partner Violence Among Men in Batterer Intervention Programs. *Violence Against Women*, 24(10), 1132-1148. doi: 10.1177/1077801218781948
- Burchell, J. L., & Ward, J. (2011). Sex drive, attachment style, relationship status and previous infidelity as predictors of sex differences in romantic jealousy. *Personality & Individual Differences*, 51(5), 657-661. doi: 10.03.248/j.paid.2011.06.002
- Burk, W. J., & Seiffge-Krenke, I. (2015). One-sided and mutually aggressive couples: Differences in attachment, conflict prevalence, and coping. *Child Abuse & Neglect*, 50, 254-266. doi: 10.1016/j.chiabu.2015.08.011
- Buunk, A. P., & Massar, K. (2019). Intimate Partner Violence in Nicaragua: The Role of Possessive Jealousy, Intrasexual Competitiveness, Life History, Mate Value, and Stress. *Journal of Interpersonal Violence*. doi: 10.1177/0886260519842854
- Capaldi, D. M., Knoble, N. B., Shortt, J. W., & Kim, H. K. (2012). A Systematic Review of Risk Factors for Intimate Partner Violence. *Partner Abuse*, 3(2), 231-280. doi: 10.1891/1946-6560.3.2.231.A
- Cascardi, M., Avery-Leaf, S., & O'Leary, K. D. (1994). *Building a gender sensitive model to explain male and female use of dating violence: Preliminary results*. Los Angeles, CA: Paper presented at the 102nd annual Meeting of the American Psychological Association.
- Center for Disease Control and Prevention. (2000). Youth risk behavior surveillance--United States 1999. *Morbidity and Mortality Weekly Report*, 49(5), 1-96.
- Chang, D. F., Shen, B. J., & Takeuchi, D. T. (2009). Prevalence and demographic correlates of intimate partner violence in Asian Americans. *International Journal of Law and Psychiatry*, 32(3), 167-175. doi: 10.1016/j.ijlp.2009.02.004
- Chan, K. L., Straus, M. A., Brownridge, D. A., Tiwari, A., & Leung, W. C. (2008). Prevalence of dating partner violence and suicidal ideation among male and female university students worldwide. *Journal of Midwifery & Women's Health*, 53(6), 529-537. doi: 10.1016/j.jmwh.2008.04.016

- Consejo Universitario. (2018). *Reglamento de la Unidad de Bienestar Universitario de la Universidad de Cuenca*. Cuenca, Ecuador: Universidad de Cuenca.
- Costa, A. L., Sophia, E. C., Sanches, C., Tavares, H., & Zilberman, M. L. (2015). Pathological jealousy: Romantic relationship characteristics, emotional and personality aspects, and social adjustment. *Journal of Affective Disorders, 174*, 38-44. doi: 10.1016/j.jad.2014.11.017
- Daly, M., Wilson, M., & Weghorst, S. J. (1982). Male sexual jealousy. *Ethology and Sociobiology, 3*(1), 11-27. doi: 10.1016/0162-3095(82)90027-9
- Davis, K. E., Ace, A., & Andra, M. (2000). Stalking perpetrators and psychological maltreatment of partners: Anger-jealousy, attachment insecurity, need for control, and break-up context. *Violence and Victims, 15*(4), 407-426. doi: 10.1891/0886-6708.15.4.407
- Delucchi, G., Leon-Mayer, E., & Folino, J. (2018). Celos y violencia en parejas de estudiantes universitarios. *Vertex, XXIX*, 245-254.
- Delucchi, G., Leon-Mayer, E., & Folino, J. O. (2020). Intimate partner violence and jealousy in Argentinian university students. *Violence and Gender, submitted paper*.
- DeSteno, D., Valdesolo, P., & Bartlett, M. Y. (2006). Jealousy and the threatened self: Getting to the heart of the green-eyed monster. *Journal of Personality and Social Psychology, 91*(4), 626-641. doi: 10.1037/0022-3514.91.4.626
- DiBello, A. M., Rodriguez, L. M., Hadden, B. W., & Neighbors, C. (2015). The green eyed monster in the bottle: Relationship contingent self-esteem, romantic jealousy, and alcohol-related problems. *Addictive Behaviors, 49*, 52-58. doi: 10.1016/j.addbeh.2015.05.008
- do Nascimento Paixao, G. P., Gomes, N. P., Freire Diniz, N. M., Menezes Couto, T., Carneiro Vianna, L. A., & Pessoa dos Santos, S. M. (2014). Situations which precipitate conflicts in the conjugal relationship: the women's discourse. *Text Context Nursing, 23*(4), 1041-1049.
- Douglas, K. S., Hart, S. D., Webster, C. D., & Belfrage, H. (2013). *HCR-20 v3 Assessing Risk for Violence*. Vancouver: Mental Health, Law, and Policy Institute, Simon Fraser University.
- Elmqvist, J., Wolford-Clevenger, C., Zapor, H., Febres, J., Shorey, R. C., Hamel, J., & Stuart, G. L. (2016). A gender comparison of motivations for physical dating violence among college students. *Journal of Interpersonal Violence, 31*(1). doi: 10.1177/0886260514555130
- Elphinston, R., Feeney, J., & Noller, P. (2011). Measuring romantic jealousy: Validation of the multidimensional jealousy scale in Australian samples. *Australian Journal of Psychology, 63*(4), 243-251.
- Fernández-Fuertes, A. A., Fuertes Martín, J. A., & Fernández Pulido, R. (2006). Evaluación de la violencia en las relaciones de pareja de los adolescentes . Validación del Conflict in Adolescent Dating Relationships Inventory. *International Journal of Clinical and Health Psychology, 6*(2), 339-358. doi: 10.1017/CBO9781107415324.004
- Giordano, P. C., Soto, D. A., Manning, W. D., & Longmore, M. A. (2010). The characteristics of romantic relationships associated with teen dating violence. *Social Science Research, 39*(6), 863-874. doi: 10.1016/j.ssresearch.2010.03.009
- Goldenberg, T., Jadwin-cakmak, L., & Harper, G. W. (2018). Intimate Partner Violence Among Transgender Youth: Associations with Intrapersonal and Structural Factors. *Violence and Gender, 5*(1), 19-25. doi: 10.1089/vio.2017.0041
- Gomez, J., Orchowski, L., Pearlman, D. N., & Zlotnick, C. (2019). Alcohol Use and Intimate Partner Violence among Community College Women: An Exploration of Protective Factors. *Violence and Gender, 6*(3), 187-195. doi: 10.1089/vio.2018.0023
- Greer, B., Taylor, R. W., Cella, M., Stott, R., & Wykes, T. (2020). The contribution of dynamic risk factors in predicting aggression: A systematic review including inpatient forensic and non-forensic mental health services. *Aggression and Violent Behavior, 53*(April), 101433. doi: 10.1016/j.avb.2020.101433
- Haas Bueno, J. F., & Carvalho, L. de F. (2005). Um Estudo de Revisão do Inventário de Ciúme Romântico (ICR). *Psicologia: Reflexão e Crítica, 25*(3), 435-444.

- Ihongbe, T. O., & Masho, S. W. (2018). Gender Differences in the Association Between Synthetic Cannabinoid Use and Teen Dating Violence Victimization. *Violence and Gender*, 3(00), 1-7. doi: 10.1089/vio.2017.0046
- Instituto Nacional de Estadísticas y Censos. (2014). *Encuesta Nacional de Salud y Nutrición*. Quito: Dirección de Innovación en Métricas y Metodologías.
- Instituto Nacional de Estadísticas y Censos. (2019). *Encuesta nacional sobre relaciones familiares y violencia de género contra las mujeres (ENVIGMU)*. Quito.
- Johnson, W. L., Giordano, P. C., Manning, W. D., & Longmore, M. (2014). The Age-IPV Curve: Changes in the Perpetration of Intimate Partner Violence During Adolescence and Young Adulthood. *Journal of Youth and Adolescence*, 44(3), 708-726. doi: 10.1007/s10964-014-0158-z
- Khubchandani, J., Clark, J., Wiblishauser, M., Thompson, A., Whaley, C., Clark, R., & Davis, J. (2017). Preventing and Responding to Teen Dating Violence: *Violence and Gender*, 4(4), 144-151. doi: 10.1089/vio.2017.0043
- Kwan, J., Sparrow, K., Facer-Irwin, E., Thandi, G., Fear, N. T., & MacManus, D. (2020). Prevalence of intimate partner violence perpetration among military populations: A systematic review and meta-analysis. *Aggression and Violent Behavior*, 53(April), 101419. doi: 10.1016/j.avb.2020.101419
- Levitt, A., & Cooper, M. L. (2010). Daily alcohol use and romantic relationship functioning: evidence of bidirectional, gender-, and context-specific effects. *Personality & Social Psychology Bulletin*, 36(12), 1706-1722. doi: 10.1177/0146167210388420
- Lucas, C., Pereira, H., & Esgalhado, G. (2012). Evaluation of Romantic Jealousy: Psychometric Study of the Multidimensional Jealousy Scale for the Portuguese Population. *Psychology, Community & Health*, 1(2), 151-162. doi: 10.5964/pch.v1i2.26
- Malik, S., Sorenson, S. B., & Aneshensel, C. S. (1997). Community and dating violence among adolescents: Perpetration and victimization. *Journal of Adolescent Health*, 21(5), 291-302. doi: 10.1016/S1054-139X(97)00143-2
- Miller, S. L., & Maner, J. K. (2008). Coping with Romantic Betrayal: Sex Differences in Responses to Partner Infidelity. *Evolutionary Psychology*, 6(3), 413-426. doi: 10.1177/147470490800600305
- Mostardinha, A. R., Bártolo, A., Bonifácio, J., & Pereira, A. (2019). Validation of the alcohol, smoking and substance involvement screening test (ASSIST) among university students. *Acta Medica Portuguesa*, 32(4), 279-288. doi: 10.20344/amp.10650
- Muñoz-Rivas, M. J., Graña, J. L., O'Leary, K. D., & González, M. P. (2007). Aggression in Adolescent Dating Relationships: Prevalence, Justification, and Health Consequences. *Journal of Adolescent Health*, 40(4), 298-304. doi: 10.1016/j.jadohealth.2006.11.137
- Murphy, A. M., & Russell, G. (2016). Rejection Sensitivity, Jealousy, and the Relationship to Interpersonal Aggression. *Journal of Interpersonal Violence*, 33(13), 2118-1229. doi: 10.1177/0886260515622572
- Okeke, N. L., Mumford, E. A., & Rothman, E. F. (2019). Adolescent Relationship Aggression Perpetration and Victimization in the Context of Neighborhood Gender Equality. *Violence and Gender*, 6(2), 131-138. doi: 10.1089/vio.2018.0028
- Organización Mundial de la Salud. (2011). *La prueba de detección de consumo de alcohol, tabaco y sustancias (ASSIST)*. Oms. Washington, D.C.: Organización Panamericana de la Salud.
- Organización Panamericana de la Salud. (2003). *Informe mundial sobre la violencia y la salud*. Washington: Organización Panamericana de la Salud, Oficina Regional para las Américas de la Organización Mundial de la Salud.
- Paixão, G. P. do N., Gomes, N. P., Diniz, N. M. F., Couto, T. M., Vianna, L. A. C., & Santos, S. M. P. dos. (2014). Situations which precipitate conflicts in the conjugal relationship: the women's discourse. *Texto & Contexto - Enfermagem*, 23(4), 1041-1049. doi: 10.1590/0104-

07072014003290013

- Pfeiffer, S. M; Wong, P. T. (1989). Multidimensional Jealousy. *Journal of Social and Personal Relationships*, 6, 181-196.
- Pines, A., & Aronson, E. (1983). Antecedents, correlates, and consequences of sexual jealousy. *Journal of Personality*, 51(1), 108-136. doi: 10.1111/j.1467-6494.1983.tb00857.x
- Prinstein, M., Boegers, J., & Vernberg, E. (2001). Overt and relational aggression in adolescents: Social-psychological adjustments of aggressors and victims. *Journal of Clinical Child Psychology*, 30(4), 479-491.
- Roscoe, B., & Callahan, J. (1985). Adolescents' self- report of violence in families and dating relations. *Adolescence*, 20, 545-554.
- Salmivalli, C., & Kaukiainen, A. (2004). Female aggression revisited. Variable- and person-centered approaches to studying gender differences in different types of aggressive behavior. *Aggressive Behavior*, 30, 158-163.
- Seiffge-Krenke, I., & Burk, W. J. (2015). "Bad Romance": Links between Psychological and Physical Aggression and Relationship Functioning in Adolescent Couples. *Behavioral Sciences (2076-328X)*, 5(2), 305-323. doi: 10.0.13.62/bs5020305
- Straus, M. A., & Gozjolko, K. L. (2014). "Intimate Terrorism" and Gender Differences in Injury of Dating Partners by Male and Female University Students. *Journal of Family Violence*, 29(1), 51-65. doi: 10.1007/s10896-013-9560-7
- Straus, M. A., & Ramirez, I. L. (2007). Gender symmetry in prevalence, severity, and chronicity of physical aggression against dating partners by university students in Mexico and USA. *Aggressive Behavior*, 33(4), 281-290. doi: 10.1002/ab.20199
- Swanson, J. W., Holzer, C. E., Ganju, V. K., & Jono, R. T. (1990). Violence and psychiatric disorder in the community: Evidence from the Epidemiologic Catchment Area surveys. *HOSP-COMMUNITY-PSYCHIATRY*, (41), 761-770.
- Swanson, J. W., Monahan, J., & Steadman, H. (1994). Mental Disorder, Substance Abuse and Community Violence: An Epidemiological Approach. In J. Monahan & H. Steadman (Eds.), *Violence and Mental Disorder - Developments in Risk Assessment* (pp. 101–136). Chicago: University of Chicago Press.
- Tani, F., & Ponti, L. (2016). The Romantic Jealousy as Multidimensional Construct: A Study on the Italian Short Form of the Multidimensional Jealousy Scale. *The Open Psychology Journal*, 09(1), 111-120. doi: 10.2174/1874350101609010111
- Taylor, B. G., & Mumford, E. A. (2016). A National Descriptive Portrait of Adolescent Relationship Abuse: Results From the National Survey on Teen Relationships and Intimate Violence. *Journal of Interpersonal Violence*, 31(6), 963-988. doi: 10.1177/0886260514564070
- Temple, J. R., Ph, D., Choi, H. J., Ph, D., Elmquist, J., A, M., ... A, M. (2016). Psychological Abuse , Mental Health , and Acceptance of Dating Violence Among Adolescents. *Journal of Adolescent Health*, 59(2), 197-202. doi: 10.1016/j.jadohealth.2016.03.034
- Wolfe, D. A. (2001). *Conflict in Adolescent Dating Relationships Inventory*. Los Altos, CA: Sociometrics Corporation.
- Wolfe, D. A., Scott, K., Reitzel-Jaffe, D., Wekerle, C., Grasley, C., & Straatman, A.-L. (2001). Development and validation of the Conflict in Adolescent Dating Relationships Inventory. *Psychological Assessment*, 13(2), 277-293.

Authors' participation: a) Conception and design of the work; b) Data acquisition; c) Analysis and interpretation of data; d) Writing of the manuscript; e) Critical review of the manuscript.

X.G.V. has contributed in a,b,c,d,e; J.O.B. en a,b,c,d; G.D. in a,c,d,e; E.L.M. in a,c,d,e; J.F. in a,c,d,e.

Scientific Editor in charge: Dra. Cecilia Cracco