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Sexist attitudes, romantic myths, and offline dating violence as predictors of cyber dating violence perpetration in adolescents

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ABSTRACT

The objectives of this study were to analyze the prevalence of cyber dating violence perpetration (cyber-control and cyber-aggression) in adolescent boys and girls, and to explore the relations between adolescents' involvement in cyber dating violence perpetration (never, occasional, and frequent) and their sexist attitudes (hostile and benevolent), romantic myths, and offline dating violence perpetration (relational, physical, and verbal-emotional). The predictive weight of these variables in relation to cyber dating violence perpetration (cyber-control and cyber-aggression) was also analyzed. Of an initial sample of 919 adolescents, who had or had had a dating relationship in the past 12 months, 492 adolescents were included in this study (M age $= 15.10$, $SD = 1.59$). The results revealed a higher prevalence of cyber-control behaviors and a different predictive weight of the analyzed variables in relation to cyber-control and cyber-aggression for boys and girls. Physical and relational offline dating violence were significant predictors of cyber-aggression for boys, while sexist attitudes and romantic myths were the main predictors for girls. Hostile sexism and relational offline dating violence were positive predictors of cyber-control for boys, while romantic myths and verbal-emotional offline dating violence were the main predictors of cyber-control for girls. These results highlight the need for gender analyses in cyber dating violence research.

1. Introduction

In recent decades, communication among adolescents has vastly changed, and mobile phones and the Internet are essential elements of their interpersonal relationships (Baker & Carreño, 2016; Mosley & Lancaster, 2019; Smith et al., 2018). Although the communication technologies are frequently used positively by adolescents, they can also be used as a way to exercise dating violence -DV- (Borrajo & Gámez-Guadix, 2016; Fernet, Lapierre, Hébert, & Cousineau, 2019; Machimbarrena et al., 2018; Stonard, Bowen, Lawerence, & Price, 2014; Víllora, Yubero, & Navarro, 2019a, 2019b). Cyber DV, also called cyber dating abuse and online dating violence, is defined as the control, harassment, threats, stalking and abuse of one's current or former dating partner via technology and social media (Brown & Hegarty, 2018; Gámez-Guadix, Borrajo, & Calvete, 2018; Peskin et al., 2017; Smith et al., 2018; Zweig, Dank, Yahner, & Lachman, 2013; Zweig, Lachman, Yahner, & Dank, 2014). Cyber DV includes both behaviors that involve harming the victim through direct attacks, e.g. threats, insults, or disseminating private information, namely cyber-aggression, as well as forms of abusive control of victims to monitor their social relationships and what they are doing at any time, namely cyber-control (Borrajo, Gámez-Guadix, Pereda, & Calvete, 2015; Cava & Buelga, 2018; Gámez-Guadix et al., 2018; Víllora, Navarro, & Yubero, 2019a, 2019b).

This type of violence presents major differences with respect to offline DV. Cyber DV is characterized by the absence of geographical and temporal boundaries (it can occur anywhere and at any time), the rapid dissemination (many people can see, and resend, the victim's denigrating photos or comments), and the ease of access to the victim (Borrajo et al., 2015; Cava & Buelga, 2018; Peskin et al., 2017; Stonard, 2020; Zweig et al., 2013, 2014). These characteristics increase the victim's sense of vulnerability and have serious consequences on their psychosocial well-being (Borrajo et al., 2015; Hancock, Keast, & Ellis, 2017; Lu, Van Ouytsel, Walrave, Ponnet, & Temple, 2018; Stonard, Bowen, Walker, & Price, 2017; Temple et al., 2016). However, research

on cyber DV in adolescents is recent and still scarce, and possible differences between boys and girls in the variables related to their involvement in cyber DV perpetration have still not been explored.

1.1. Prevalence of cyber dating violence perpetration

Some previous studies have analyzed the prevalence of cyber DV in adolescents, showing high percentages of perpetration. Cutbush, Williams, Miller, Gibbs, and Clinton-Sherrod (2012) found that 18.4% of adolescents aged 12–13 years had perpetrated some cyber violence behavior toward their partners, Peskin et al. (2017) observed that almost 15% of adolescents aged 11–12 years were involved in cyber DV perpetration, and Zweig et al. (2013) found a percentage of 11.8% (9.3% for boys, 13.9% for girls) for cyber DV perpetration in adolescents aged 12–18 years. Smith et al. (2018) reported how 33% of adolescents aged 14–18 years had perpetrated at least one act of cyber violence against their romantic partner. Muñiz-Rivas, Vera, and Povedano-Díaz (2019) separately analyzed the percentages of cyber-control and cyber-aggression behaviors perpetrated by adolescents aged 14–18 years. They found percentages of 2.5% for perpetrated cyber-aggression (3.6% boys and 1.5% girls) and 8% for perpetrated cyber-control (10.1% boys, 9.4% girls). Although these percentages show some differences, which are possibly due to distinct instruments and measured behaviors, they indicate a worring involvement of adolescents in cyber DV perpetration.

However, one question not considered to date is the analysis of the prevalence of occasional and frequent involvement in cyber DV perpetration in adolescents. First romantic relationships involve new challenges for which adolescents lack prior experience and may not know how to handle conflicts and difficulties in this relationship which could lead to them engaging in some occasional violent behaviors to face these conflicts (Ortega & Sánchez, 2011; Viejo, 2014; Viejo, Monks, Sanchez, & Ortega-Ruiz, 2016). In previous studies on offline DV, different psychosocial profiles appeared among those adolescents occasionally and frequently involved in offline DV (Carrascosa, Cava, & Buelga, 2018). Therefore, it is important to know the prevalence of adolescents' involvement in occasional and frequent cyber DV perpetration, and to explore the possible differences between these adolescents in offline DV perpetration.

Moreover, it is necessary to differentiate between cyber-control and cyber-aggression behaviors toward partners. The prevalence of cyber-control behaviors is higher than for cyber-aggression behaviors in adolescents and youths (Borrajo et al., 2015; Borrajo, Gámez-Guadix, & Calvete, 2015a; Muñiz-Rivas et al., 2019), and cyber-control perpetration could be related more to adolescents' lack of previous experience in romantic relationships and their little awareness of these behaviors as a form of abusive behavior. Some romantic myths of love, such as considering jealousy and control to be signs of love, could contribute to adolescents' perceiving some cyber-control behaviors as being normal behaviors in a romantic relationship, and they could even perceive them as an expression of love to a partner (Malonda, Tur-Porcar, & Llorca, 2017; Rodríguez-Castro, Lameiras-Fernández, Carrera-Fernández, & Vallejo-Medina, 2013). In addition, information and communication technologies (ICTs) make it very easy to exercise control behaviors on partners as adolescents continuously expose their lives publicly on social networks, and given their constant online availability and them having to instantly check WhatsApps, social networks and information about partners (Linne, 2014; Sabater, 2014; Stonard, 2020). Some of these cyber-control behaviors are currently standard practice in our societies, and it may be difficult for adolescents to perceive them as abusive behavior. Furthermore, as ICTs increase opportunities to monitor partners' activities, those adolescents more involved in offline control behaviors toward partners (more involved in relational offline DV perpetration) could also exercise cyber-control behaviors more easily. The connections between cyber-control behaviors and relational offline DV perpetration could be particularly close. Conversely, the prevalence

of cyber-aggression perpetration is lower in adolescents, and may be related to more negative romantic relationships characterized by adolescents using more direct aggression both offline and online to cope with their conflicts. Cyber-aggression and cyber-control perpetration not only show a different prevalence in adolescent couples, but can also be related to distinct variables. Better knowledge of the variables related to these two forms of cyber DV perpetration may contribute to develop more effective prevention programs.

Another important question to be analyzed is the possible gender differences in cyber-control and cyber-aggression perpetration. In previous studies conducted with young adults, girls have been observed to be more involved in cyber-control perpetration (Borrajo, Gámez-Guadix, & Calvete, 2015b; Burke, Wallen, Vail-Smith, & Knox, 2011). In adolescents, Zweig et al. (2013) reported more cyber DV perpetration in girls, but other studies have indicated that boys were more involved in cyber-aggression and they do not indicate any significant differences for cyber-control perpetration between boys and girls (Muñiz-Rivas et al., 2019). The results on gender differences in cyber DV perpetration prevalence are, therefore, inconclusive. However, not only it is important to examine the prevalence (frequent and occasional) of cyber-control and cyber-aggression perpetration in boys and girls, but it is also especially relevant to analyze possible gender differences in the variables related to each one. Romantic relationships are central to the social lives of many adolescents and contribute to consolidate their identity (Collins, 2003; Collins, Welsh, & Furman, 2009; Connolly, Graig, Goldberg, & Pepler, 2004). Nevertheless, gender differences in the socialization process could mean that romantic relationships may play a more relevant role for adolescent girls to form their identity (Ferrer & Bosch, 2013; Rodríguez-Castro et al., 2013). According to the theory of differential socialization, boys and girls acquire differentiated gender identities that involve cognitive, attitudinal and behavioral styles and stereotypical norms of the behavior assigned to each gender (Ferrer & Bosch, 2013). This differential socialization also implies that certain social life aspects are more or less relevant when adolescent boys and girls form their identity (Ferrer & Bosch, 2013). More specifically, this differential socialization process means that private spaces and romantic relationships more strongly influence the consolidation of girls' identity, while public spaces and the professional future are more relevant for boys (Rodríguez-Castro et al., 2013).

The gender differences in the socialization process may also imply that some variables, such as the beliefs in myths of romantic love or sexist attitudes, have a different influence on cyber DV perpetration for adolescent boys and girls. In line with this, a stronger influence of romantic myths of love on first romantic relationships for girls has been suggested (Rodríguez-Castro et al. (2013), and previous studies have reported more sexist attitudes in boys (Malonda et al., 2017; Ramiro-Sánchez, Ramiro, Bermúdez, & Buela-Casal, 2018). Romantic myths and sexist attitudes may be variables that are used differently by adolescent boys and girls to justify their cyber-control and cyber-aggression behaviors with partners. These possible gender differences in the variables used by adolescents to justify their involvement in cyber DV perpetration have not yet been analyzed. Moreover, distinct forms of offline DV perpetration (relational, physical, verbal-emotional) could differently influence the involvement of adolescent boys and girls in cyber DV perpetration. Previous studies have found gender differences when studying the prevalence of distinct forms of offline DV perpetration (Cava, Buelga, & Carrascosa, 2015; Fernández-Fuertes & Fuertes, 2010; Niolon et al., 2015). These gender differences, e.g. greater involvement of girls in verbal-emotional offline DV perpetration (Muñoz-Rivas, Graña, O'Leary, & González, 2007), could imply a different influence of distinct forms of offline DV perpetration in cyber-control and cyber-aggression perpetration in boys and girls. The relations among the distinct forms of offline DV and cyber DV perpetration (cyber-control and cyber-aggression) could be different in adolescent boys and girls.

1.2. Co-occurrence of cyber and offline dating violence perpetration

Cyber DV perpetration is associated with traditional forms of DV perpetration, such as psychological or physical dating violence (Borrajo et al., 2015; Cutbush et al., 2012; Marganski & Melander, 2018; Peskin et al., 2017; Temple et al., 2016; Zweig et al., 2013, 2014). Similarly to the associations observed between bullying and cyberbullying (Ortega-Barón, Buelga, Cava, & Torralba, 2017; Schneider, O'Donnell, Stueve, & Coulter, 2012), real and virtual worlds are connected. DV is defined as physical, sexual, psychological or emotional violence within dating relationships, including stalking (Center for Disease Control and Prevention, 2016), and it is characterized by its high prevalence in adolescents, especially psychological-emotional violence (Exner-Cortens, Eckenrode, & Rohtman, 2013; Fernández-Fuertes & Fuertes, 2010; Foshee et al., 2013; Leen et al., 2013; Paat, Markham, & Peskin, 2019; Viejo et al., 2016). Currently, the growing use of ICTs means that these technologies are increasingly employed as a tool to exercise DV among adolescents (Gámez-Guadix et al., 2018; Víllora et al., 2019). ICTs provide adolescents with new opportunities to control, monitor and abuse dating partners, which means that offline DV moves more easily to the virtual world (Cava & Buelga, 2018; Hellevik, 2019; Stonard, 2020). These links between cyber and offline DV perpetration can be explained by one same pattern of violent behaviors performed by some adolescents in different offline and online contexts. Some adolescents could have learned to handle conflicts in their romantic relationships aggressively, and both online and offline. The adolescents who exercise verbal-emotional and physical offline DV with their partners could also exercise cyber-aggression with them. Similarly, control behaviors exercised with partners could be easily connected in both the real and virtual worlds. The adolescents who use relational offline DV to control the social relationships of their partners (e.g. demand their partners to break certain friendships and attempt to achieve their social isolation in the real world) may also use cyber-control behaviors to monitor their partner's social relationships, expect them to finish certain contacts on their social networks, forbid them to chat with some friends, or force them to delete photos and comments on their social networks.

However, online social interactions also have some differences. Many people who use technological forms of communication feel less inhibited in their online interactions and can type or say things that they would not say face to face (Bocij, 2004; Li, 2006; Marganski & Melander, 2018). The effect of online disinhibition, as discussed by Suler (2004), includes some online communication characteristics that favor online aggressions. For example, online aggressors could feel that their abusive behaviors will have no consequences for themselves (Suler, 2004). In addition, control and aggressive behaviors exercised via ICTs are easier to perform than face-to-face aggressions thanks to the physical distance from victims, which reduces the feelings of responsibility for such behaviors and avoids coping with the immediate consequences of such behaviors with victims (Stonard, 2020; Suler, 2004). Nevertheless, aggressors less awareness about the consequences of their online abusive behavior on the victim could be different for cyber-aggression and cyber-control perpetration. Currently, our societies are permissive about some cyber-control behaviors and many people easily expose plenty of information about their private life on social networks (Christofides, Muise, & Desmarais, 2009; Linne, 2014; Sabater, 2014). The current social standardization of these behaviors can make it more difficult for adolescents to perceive some cyber-control behaviors toward partners as a form of online abusive behavior. Their constant use of ICTs to monitor what partners are doing, where they are and with whom they are all the time, might mean that many adolescents do not easily recognize this as abusive behaviors if we consider that most of them are always connected. Other cyber-control behaviors, such as forcing a partner to delete contacts from chats or photos and personal messages from social networks, could be more easily detected by adolescents as abusive behaviors.

Previous research on the connections between different forms of offline DV perpetration (relational, physical, and verbal-emotional) and cyber-control and cyber-aggression perpetration is very scarce. In a previous research conducted with young people, cyber-control significantly correlated with psychological offline DV, and cyber-aggression with physical offline DV (Borrajo et al., 2015), but these specific relationships have not been explored in adolescents. Better knowledge of the relations between offline and online DV perpetration in adolescents could contribute to develop early interventions to prevent DV. In addition, it is necessary to analyze possible gender differences in these relations in order to obtain a more complete understanding of DV in adolescents.

1.3. Beliefs in myths of romantic love and sexist attitudes

Some cyber-control behaviors seem to be strongly related to adolescents' beliefs in myths of romantic love, such as associating love with control and jealousy. These beliefs can make it difficult for adolescents to identify some aggressive behaviors in their romantic relationship and they might consider them to be normal behavior in a romantic relationship (Carrascosa, Cava, Buelga, & de Jesús, 2019; Malonda et al., 2017; Pazos, Oliva, & Hernando, 2014; Rodríguez-Domínguez, Durán-Segura, & Martínez-Pecino, 2018). Myths of romantic love includes beliefs in the power of love to cope all kind of difficulties, the need of having a romantic relationship to be happy, the consideration of jealousy as a sign of love, the perception of love as suffering, and the existence of our soul mate who is our only one true love (Carrascosa et al., 2019; Rodríguez-Castro et al., 2013; Papp, Liss, Erchull, Godfrey, & Waaland-Kreutzer, 2017). These romantic myths are transmitted to adolescents through songs, movies, media and TV series, and also by the relevant people in their closer social context (Bonomi, Altenburger, & Walton, 2013; Hefner & Wilson, 2013; Rodríguez-Castro et al., 2013). Adolescents' beliefs in these romantic myths can provide them with justification for some cyber-control and cyber-aggression behaviors toward partners (e.g., they could justify some abusive behaviors because they are really in love). The beliefs in myths of romantic love have been linked with greater probability of cyber-control perpetration toward the partner in youths aged 18 to 30 (Borrajo et al., 2015b). In adults, these beliefs have been related to a higher degree of justifying intimate partner violence and more experiences relating to this violence (Lelaurin, Fonte, Giger, Guignard, & Lo Monaco, 2018; Papp et al., 2017). However, possible relations between romantic myths and cyber DV perpetration in adolescents have not been explored to date.

Beliefs in romantic myths of love are linked in adolescents to gender stereotypes and could contribute to the emergence and maintenance of teen DV (Rodríguez-Castro et al., 2013). These beliefs have also been related to sexist attitudes in adolescents (Carrascosa et al., 2019; Rodríguez-Castro et al., 2013). Sexist attitudes include a stereotyped view of women which, according to the ambivalent sexism theory (Glick & Fiske, 1996), would include two sexism types: hostile and benevolent. Hostile sexism is a more traditional sexism and maintains a negative affective view of women based on supposed inferiority of women as a group. Benevolent sexism is associated with the need to protect women and takes a more positive affective tone (Hammond, Milojev, Huang, & Sibley, 2018; Ibabe, Arnoso, & Elgorriaga, 2016; Ramiro-Sánchez et al., 2018). Benevolent sexism also includes the belief in the complementarity of women's qualities with those of men, the traditional roles of women, and heterosexual intimacy as a fundamental pillar to achieve true happiness in the couple (Papp et al., 2017).

In adolescents, both forms of sexism have been related with their justification for peer violence, domestic violence and violence against minorities (Garaigordobil & Aliri, 2013; Pozo, Martos, & Alonso, 2010; Shen, Chiu, & Gao, 2012), and with more offline DV perpetration (Pazos et al., 2014). Hostile sexism has been positively related to cyber-aggression toward partners (Martínez-Pecino & Durán, 2019; Rodríguez-Domínguez, Durán, & Martínez-Pecino, 2018), and overt aggression, relational aggression, and cyber-aggression toward peers

(Carrascosa et al., 2019). However, the relations between benevolent sexism and DV are inconclusive because some studies have found no significant relations between benevolent sexism and DV perpetration (Fernández-Fuertes, Carcedo, Orgaz, & Fuertes, 2018; Lee, Begun, DePrince, & Chu, 2016; Martínez-Pecino & Durán, 2019; Rodríguez-Domínguez et al., 2018). Others have even suggested this benevolent sexism to be a protector against the DV perpetrated against women (Allen, Swan, & Raghavan, 2009).

1.4. The present study

By taking into account the negative consequences of cyber DV, especially in adolescence when specific models of how to establish and maintain romantic relationships are developed, this study aimed to extend knowledge about the prevalence of cyber DV perpetration in adolescent boys and girls, and to explore their relation with offline DV perpetration, romantic myths and sexist attitudes. More specifically, the objectives of this study were to: (1) analyze the prevalence of occasional and frequent cyber DV perpetration (cyber-control and cyber-aggression) in adolescent boys and girls; (2) explore the relations between adolescents' different involvement in cyber DV perpetration (never, occasional, and frequent) and their sexist attitudes (hostile and benevolent), beliefs in romantic myths and offline DV perpetration (relational, physical, and verbal-emotional); (3) analyze the predictive weight of these variables in relation to cyber DV perpetration (cyber-control and cyber-aggression) in adolescent boys and girls.

The following hypotheses were proposed in relation to these objectives. (1) In line with the results of previous studies (Muñiz-Rivas et al., 2019), a higher prevalence of cyber-control behaviors than cyber-aggression behaviors was expected for both boys and girls. We also expected a higher prevalence of occasional cyber-control perpetration. (2) Higher scores for offline DV perpetration (relational, physical, verbal-emotional), romantic myths and sexist attitudes (hostile and benevolent) were expected in the adolescent boys and girls more frequently involved in cyber-control and cyber-aggression perpetration. Nevertheless, taking into account previous studies (Ramiro-Sánchez et al., 2018; Rodríguez-Castro et al., 2013), we expected more significant differences in romantic myths in the girls frequently involved in cyber-control and cyber-aggression, and more significant differences in hostile sexism in the boys frequently involved in cyber-control and cyber-aggression. (3) Finally, a different predictive weight of relational, physical, and verbal-emotional offline DV perpetration, romantic myths, and sexist attitudes was expected for cyber-control and cyber-aggression, and for boys and girls. More specifically, we expected a significant predictive weight of relational offline DV perpetration for cyber-control in both boys and girls, a significant predictor weight of hostile sexism for cyber-control in boys, and a significant predictor weight of romantic myths for cyber-control in girls. Regarding cyber-aggression perpetration, we expected: physical and verbal-emotional offline DV perpetration to be significant predictors in both boys and girls; a significant predictor weight of hostile sexism for cyber-aggression in boys; and a significant predictor weight of romantic myths for cyber-aggression in girls.

2. Material and methods

2.1. Participants

The participants were selected by stratified cluster sampling, where sampling units were secondary schools. Participants were studying Compulsory Secondary Education in three public schools in the Valencian region (this region is located in eastern Spain). Our initial study sample comprised 919 adolescents (48.1% boys) aged 12–18 years ($M =$ 14.90; $SD = 1.60$). Of this initial sample, only the adolescents who had a dating relationship at the time, or in the past 12 months, were considered. These adolescents were asked to fill out the scale about their partner by referring to the latest relationship they had.

Before encoding data, 3% of the cases were eliminated because of errors or omissions in their responses. The final sample was composed of 492 adolescents, 229 boys (46.5%) and 263 girls (53.5%), aged 12–18 years. The mean age of boys ($M = 15.28$; $SD = 1.64$) and girls ($M =$ 14.94; $SD = 1.54$) was similar. The highest percentages of adolescents were 14- (20.4%), 15- (20.2%) and 16-year-olds (18.6%), with lower percentages of 12- (3%), 13- (15.6%), 17- (14.6%) and 18-year-olds (7.5%). The mean age of their partners was 15.79 years old ($SD =$ 2.45). Most adolescents admitted having a heterosexual romantic relationship (94.5%), and only 5.5% of them indicated having a homosexual romantic relationship. Regarding the duration of relationships, the majority of adolescents (51%) reported relationships lasting between 1 and 6 months, with lower percentages for romantic relationships lasting less than 1 month (17.6%), between 6 and 12 months (14.2%) and over 1 year (17.2%). Romantic relationships lasting less than 1 month were more frequent in the adolescents aged 12–15 years. Romantic relationships are usually short in early adolescence, but they are of much emotional importance for adolescents (Connolly, Craig, Goldberg, & Pepler, 2004).

2.2. Measures

2.2.1. Cyber dating violence perpetration

Cyber DV perpetration was measured with the *Cyber-Violence Scale in Adolescent Couples* (Cib-VPA, Cava & Buelga, 2018). This scale includes two subscales: Cyber-violence perpetrated and Cyber-victimization. In this study only the Cyber-violence perpetrated subscale was used. This subscale includes 10 items related to aggressive and control behaviors that can be perpetrated through social media in adolescent couples. These 10 items are integrated into two factors: Cyber-control (excessive control behaviors; e.g., "I do not let my partner chat with some friends and if he/she does I get angry and I make him/her feel bad") and Cyber-aggression (threats and insults through social media; e.g., "I have spread malicious rumors or lies about my partner though social networks"). Adolescents answered these items indicating the frequency with which they had performed these behaviors toward their partner using four response possibilities: 1 (*never*), 2 (*seldom*), 3 (*sometimes*), 4 (*often*). The internal consistency (Cronbach's alpha) of these two factors in this study was 0.75 for cyber-control and 0.83 for cyber-aggression.

2.2.2. Offline dating violence perpetration

Offline DV perpetration was assessed with the *Conflict in Adolescent Dating Relationships Inventory* –CADRI- (Fernández-Fuertes, Fuertes, & Pulido, 2006; Wolfe et al., 2001; Spanish adaptation). This scale evaluates different forms of violence perpetration and victimization in adolescent couples. In this study, three forms of DV perpetration (relational, physical, and verbal-emotional) were measured using three subscales of CADRI. The Relational subscale includes three items describing situations in which adolescents have negatively affected the social relationships of their partners (e.g., "I said things about my partner to his/her friends to put them against him/her"). The Physical subscale comprises fours items related to behaviors of physical abuse toward their partners ("I slapped him/her or pulled his/her hair"). The Verbal-emotional subscale is made up of 10 items describing situations in which adolescents have perpetrated emotional/psychological abuse toward their partners (e.g., "I insulted her/him with put-downs"). Adolescents responded to these items with four options: 1 (*never),* 2 (*seldom*: *1–2 times*), 3 (*sometimes: 3–5 times*), 4 (*often*: *6 times or more*). The reliability (Cronbach's alpha) of these subscales in this study was 0.63, 0.88, and 0.86, respectively.

2.2.3. Sexist attitudes

Sexist attitudes were measured by the *Ambivalent Sexism Inventory for adolescents* (ISA-A, Glick & Fiske, 1996; Spanish adaptation, De Lemus, Castillo, Moya, Padilla, & Ryan, 2008). This scale consists of 20 items

integrated into two factors: Hostile Sexism, with 10 items reflecting traditional sexist attitudes with a negative emotional tone toward women (e.g., "Girls often interpret innocent comments as sexist"); Benevolent Sexism, with 10 items with a positive affective tone that shows women are unable to perform some activities and roles, and in need of protection (e.g., "Girls should be cherished and protected by boys"). Adolescents respond to these items on a scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). The reliability (Cronbach's alpha) of these two factors in this sample was .88 for Hostile Sexism and 0.82 for Benevolent Sexism.

2.2.4. Myths of romantic love

Adolescents' beliefs in myths of romantic love were measured by the *Scale of Myths of Romantic Love* (Rodríguez-Castro et al., 2013; adapted by; Carrascosa et al., 2019). This scale includes seven items that evaluate adolescents' beliefs in some myths of romantic love: soul mate ("We all have a single ideal partner, our 'soul mate'"), jealousy as a sign of love ("When my partner controls me, he/she shows me his/her love"), the omnipotence of love ("If I show him/her that I love him/her, he/she will change and make me happy"), the need to have a partner ("Separating from the couple is a failure") and the love-violence compatibility ("You can mistreat someone you love"). Five options are used to answer these items, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). In this sample, this scale's reliability (Cronbach's alpha) was 0.76.

2.3. Procedure

After initially contacting the principals of the selected schools, an informative meeting was held with the teachers to explain the research objectives and to request their collaboration. Adolescents' families were informed about the research proposal by letter, and also about data confidentiality and the possibility of their children not participating. Active consent was asked from parents and adolescents. Only 1% of parents refused their children to participate. Adolescents anonymously and voluntarily filled out the scales during a regular class period (55 min). Trained researchers handed out the instruments to adolescents on a school day, and previously informed them that their participation in this study was voluntary and anonymous. This study was approved by the Ethics Committee of the University of Valencia (Protocol No. H1456762885511).

2.4. Data analyses

First, three groups of adolescents were formed according to their different involvement in cyber-control and cyber-aggression behaviors toward their partners (non involvement, occasional involvement and frequent involvement). These groups were established separately for boys and girls. The adolescents who answered "never" to all the perpetrated cyber-control subscale items (score = 1) were assigned to the "non involvement" group. The adolescents with scores that exceeded the mean score by one standard deviation (score > 1.67; $M = 1.28$, $SD = 0.39$) were assigned to the "frequent involvement" group. The adolescents with scores higher than 1, but lower than 1.67, were assigned to the "occasional involvement" group. Similarly, the adolescents who answered "never" to all the perpetrated cyber-aggression subscale items (score = 1) were assigned to the "non involvement" group. Those with a score in this subscale that exceeded the mean score by one standard deviation (score > 1.28; $M = 1.05$, $SD = 0.23$) were assigned to the "frequent involvement" group. The adolescents with scores higher than 1, but lower than 1.28, were assigned to the "occasional involvement" group. The frequency and percentage of both boys and girls assigned to each group were calculated.

Next Kruskall-Wallis tests were performed to examine any possible differences between these groups in the variables hostile sexism, benevolent sexism, romantic myths and offline dating violence perpetration (physical, verbal-emotional, and relational). Finally, linear

regression analyses were carried out to determine the impact of sexist attitudes (hostile and benevolent), romantic myths and offline dating violence perpetration on the variables cyber-control and cyber-aggression. Odds ratios with a 95% confidence interval were computed by a regression analysis to establish which variables were associated more with cyber-control and cyber-aggression. All the analyses were performed using the SPSS-24 statistical package.

3. Results

3.1. Prevalence of cyber dating violence perpetration: cyber-control and cyber-aggression

Regarding the prevalence of cyber DV perpetration (Table 1), almost half of the adolescents (44.1%) indicated having occasionally displayed some cyber-control behavior toward their partners, and more than one tenth of them (11.7%) had done so more frequently. However, only 10.1% of the adolescents stated having displayed cyber-aggression behavior toward their partners, of whom 5% had done so occasionally and 5.1% more frequently. The distribution of boys and girls in the groups of differing cyber-control involvement showed significant differences ($\chi^2 = 10.142$, $p < .01$) as the percentage of girls occasionally involved in cyber-control was higher. The distribution of boys and girls in these different groups for cyber-aggression against their partners presented no significant differences ($\chi^2 = 3.757$, $p > .05$).

3.2. Differences in sexist attitudes, romantic myths, and offline dating violence according to adolescents' involvement in cyber dating violence perpetration

Kruskall-Wallis tests were performed to examine differences in hostile sexism, benevolent sexism, romantic myths and offline DV perpetration (physical, verbal-emotional, and relational) according to adolescents' involvement in cyber-control behaviors toward their partners (see Table 2). These analyses were carried out separately for boys and girls. The results for boys showed significant differences in the groups of non involved, occasionally involved and frequently involved adolescents in the variables hostile sexism ($\chi^2 = 7.43$, $p < .05$), relational offline DV perpetration ($\chi^2 = 24.56$, $p < .001$), verbal-emotional offline DV perpetration ($\chi^2 = 34.64$, $p < .001$) and physical offline DV perpetration ($\chi^2 = 13.23$, $p = .001$). The *post hoc* pairwise comparisons revealed that the boys who indicated frequent involvement in cyber-control behavior toward their partner obtained significantly higher scores than the boys in the non involvement group for these variables. They also obtained significantly higher means than the occasional involvement group for the variables relational and physical offline DV perpetration. The mean of the boys showing occasional involvement in cyber-control behaviors was significantly higher than non involved boys

Table 1
Distribution of adolescent boys and girls in different groups according to their involvement in Cyber Dating Violence perpetration: Cyber-control and Cyber-aggression behaviors.

	Cyber control			
	Total Sample	Non Involvement	Occasional Involvement	Frequent Involvement
Boys	229 (46.5)	117 (23.8)	84 (17.1)	28 (5.7)
Girls	263 (53.5)	100 (20.3)	133 (27.0)	30 (6.1)
Total	492 (100)	217 (44.1)	217 (44.1)	58 (11.8)
	Cyber aggression			
	Total Sample	Non Involvement	Occasional Involvement	Frequent Involvement
Boys	229 (46.5)	200 (40.6)	13 (2.6)	16 (3.2)
Girls	263 (53.5)	242 (49.3)	12 (2.4)	9 (1.8)
Total	492 (100)	442 (89.9)	25 (5.0)	25 (5.1)

Note: Frequency (%).

Table 2
Means (SD) for romantic myths, sexist attitudes and offline dating violence perpetration in adolescent boys and girls with different involvement in Cyber-control behaviors toward their partners.

Boys						
	1. Non Involvement	2. Occasional Involvement	3. Frequent Involvement	Kruskall-Wallis χ^2 p		Sig. pairwise differences
Romantic myths	2.13 (.76)	2.32 (.69)	2.24 (.85)	3.87	.144	
Hostile sexism	2.90 (1.05)	3.16 (.89)	3.43 (1.37)	7.43	.024	1 vs. 3
Benevolent sexism	3.11 (1.06)	3.32 (.78)	3.29 (1.19)	3.55	.170	
Relational offline DVP	1.05 (.29)	1.10 (.28)	1.41 (.66)	24.56	<.001	1 vs. 3, 2 vs. 3
Verbal-emotional offline DVP	1.17 (.39)	1.36 (.39)	1.52 (.62)	34.64	<.001	1 vs. 3, 1 vs. 2
Physical offline DVP	1.05 (.32)	1.07 (.34)	1.27 (.57)	13.23	.001	1 vs. 3, 2 vs. 3
Girls						
	1. Non Involvement	2. Occasional Involvement	3. Frequent Involvement	Kruskall-Wallis χ^2 p		Sig. pairwise differences
Romantic myths	1.63 (.52)	1.75 (.51)	2.27 (.62)	25.47	<.001	1 vs. 3
Hostile sexism	2.20 (.93)	2.16 (.80)	2.66 (1.06)	6.86	.032	1 vs. 3
Benevolent sexism	2.58 (1.04)	2.65 (.91)	3.11 (.90)	8.06	.018	1 vs. 3
Relational offline DVP	1.02 (.10)	1.05 (.18)	1.13 (.32)	5.70	.058	
Verbal-emotional offline DVP	1.24 (.35)	1.37 (.34)	1.75 (.48)	43.12	<.001	1 vs. 3, 1 vs. 2, 2 vs 3
Physical offline DVP	1.06 (.16)	1.06 (.29)	1.26 (.59)	9.15	.010	2 vs. 3

Note: DVP = Dating Violence Perpetration.

for verbal-emotional offline DV perpetration.

Regarding girls, significant differences among the three groups (non involved, occasionally involved and frequently involved) were observed for the variables romantic myths ($\chi^2 = 25.47$, $p < .001$), hostile sexism ($\chi^2 = 6.86$, $p < .05$), benevolent sexism ($\chi^2 = 8.06$, $p < .05$), verbal-emotional offline DV perpetration ($\chi^2 = 43.12$, $p < .001$) and physical offline DV perpetration ($\chi^2 = 9.15$, $p = .01$). The *post hoc* pairwise comparisons indicated that the frequently involved girls had significantly higher scores than the non involved girls for the variables romantic myths, hostile sexism and benevolent sexism. All three groups showed significant differences in verbal-emotional offline DV perpetration. Finally, the girls frequently involved in cyber-control behaviors obtained a significantly higher mean than the occasionally involved girls for physical offline DV perpetration.

The results of the possible differences in the adolescents who reported distinct involvements in the cyber-aggression behaviors for the variables hostile sexism, benevolent sexism, romantic myths and offline dating violence perpetration (physical, verbal-emotional, and relational) are shown in Table 3. These analyses were carried out separately for boys and girls. Regarding boys, the results showed significant differences in the three groups for romantic myths ($\chi^2 = 718$, $p < .05$), hostile sexism ($\chi^2 = 14.59$, $p < .01$), relational offline DV perpetration ($\chi^2 = 17.92$, $p < .001$), verbal-emotional offline DV perpetration ($\chi^2 =$

24.87, $p < .001$) and physical offline DV perpetration ($\chi^2 = 57.92$, $p < .001$). The *post hoc* pairwise comparisons indicated that the frequently involved boys scored significantly higher than the non involved boys for the variables hostile sexism and offline DV perpetration (relational, verbal-emotional, and physical). Furthermore, the frequently involved boys reported higher levels of physical offline DV perpetration than the occasionally involved boys. Lastly, the occasionally involved boys obtained higher scores for hostile sexism and verbal-emotional offline DV perpetration than the non involved boys.

The results for girls revealed statistically significant differences in the non involved, occasionally involved and frequently involved groups for the variables romantic myths ($\chi^2 = 7.95$, $p < .05$), benevolent sexism ($\chi^2 = 10.31$, $p < .01$), verbal-emotional offline DV perpetration ($\chi^2 = 24.50$, $p < .001$) and physical offline DV perpetration ($\chi^2 = 20.15$, $p = .01$). The *post hoc* pairwise comparisons revealed that the girls frequently involvement in cyber-aggression behavior toward their partner scored higher for romantic myths and verbal emotional offline DV perpetration than the non involved girls. Furthermore, the occasionally involved girls scored higher for benevolent sexism and verbal-emotional offline DV perpetration than the non involved girls. Finally, the girls frequently involved in cyber-aggression behavior scored higher in benevolent sexism than the occasionally involved girls.

Table 3
Means (SD) for romantic myths, sexist attitudes and offline dating violence perpetration in adolescent boys and girls with different involvement in Cyber-aggression behaviors toward their partners.

Boys						
	1. Non Involvement	2. Occasional Involvement	3. Frequent Involvement	Kruskall-Wallis χ^2 p		Sig. pairwise differences
Romantic myths	2.17 (.73)	2.51 (.75)	2.55 (.90)	7.18	.028	1 vs. 3
Hostile sexism	2.96 (1.03)	3.85 (.84)	3.62 (1.09)	14.59	.001	1 vs. 3, 1 vs. 2
Benevolent sexism	3.16 (.99)	3.77 (1.03)	3.35 (.87)	3.81	.149	
Relational offline DVP	1.07 (.26)	1.18 (.32)	1.57 (.85)	17.92	<.001	1 vs. 3
Verbal-emotional offline DVP	1.22 (.36)	1.48 (.45)	1.82 (.78)	24.87	<.001	1 vs. 3, 1 vs. 2
Physical offline DVP	1.04 (.25)	1.04 (.09)	1.68 (.88)	57.92	<.001	1 vs. 3, 2 vs. 3
Girls						
	1. Non Involvement	2. Occasional Involvement	3. Frequent Involvement	Kruskall-Wallis χ^2 p		Sig. pairwise differences
Romantic myths	1.74 (.56)	1.75 (.48)	2.35 (.62)	7.95	.019	1 vs. 3
Hostile sexism	2.23 (.87)	1.75 (.53)	2.71 (1.62)	3.75	.153	
Benevolent sexism	2.70 (.97)	1.83 (.64)	2.99 (.82)	10.31	.006	1 vs. 2, 2 vs. 3
Relational offline DVP	1.05 (.18)	1.00 (.00)	1.15 (.34)	3.07	.216	
Verbal-emotional offline DVP	1.32 (.33)	1.69 (.28)	2.20 (.77)	24.50	<.001	1 vs. 3, 1 vs. 2
Physical offline DVP	1.05 (.15)	1.40 (.66)	1.67 (1.07)	20.15	<.001	1 vs. 2

Note: DVP = Dating Violence Perpetration.

3.3. Predictors of adolescents' involvement in cyber dating violence perpetration

A linear regression analysis, with the stepwise method, was conducted separately for boys and girls, considering romantic myths, hostile and benevolent sexism, and relational, verbal-emotional and physical offline DV perpetration as predictor variables, and cyber-control perpetration as the dependent variable. Subsequently, a similar linear regression analysis was conducted with the same predictor variables, and cyber-aggression perpetration toward partner as the dependent variable. The results of these analyses are provided in Table 4. For the variable cyber-control perpetration, this regression model explained 31% of variance for boys, and 28% of variance for girls. For boys, the variables hostile sexism ($\beta = 0.18$, $p = .002$) and relational offline DV perpetration ($\beta = 0.52$, $p < .001$) predicted being more involved in cyber-control perpetration. For girls, the variables romantic myths ($\beta = 0.32$, $p < .001$), and relational and verbal-emotional offline DV perpetration (relational: $\beta = 0.13$, $p = .015$, verbal-emotional: $\beta = 0.32$, $p < .001$) predicted being more involved in cyber-control perpetration.

In relation to adolescents' involvement in cyber-aggression perpetration, the proposed regression model explained 40% of variance for boys and 13% of variance for girls. For boys, relational and physical offline DV perpetration were significant predictors of cyber-aggression perpetration (relational: $\beta = 0.24$, $p = .001$, physical: $\beta = 0.44$, $p < .001$). For girls, four variables significantly predicted cyber-aggression perpetration: romantic myths ($\beta = 0.25$, $p = .001$), hostile sexism ($\beta = 0.24$, $p = .001$) and verbal-emotional offline DV perpetration ($\beta = 0.17$, $p = .005$) were associated with more involvement in cyber-aggression, whereas benevolent sexism was significantly related to a lower cyber-aggression perpetration ($\beta = -0.28$, $p < .001$).

4. Discussion

A first objective of this study was to analyze the prevalence of cyber DV perpetration in adolescent boys and girls, analyzing cyber-control and cyber-aggression behaviors toward the partner separately. This study analyzed not only the prevalence of the adolescents more frequently involved in these two forms of cyber DV, but also the prevalence of the adolescents who were occasionally involved. The results indicated the following percentages for the adolescents more frequently involved in cyber DV perpetration; 11.7% in cyber-control and 5.1% in cyber-aggression; which are similar to other previous studies (Cutbush et al., 2012; Peskin et al., 2017; Zweig et al., 2013). These results confirmed a higher prevalence of cyber-control perpetration compared to cyber-aggression perpetration (Borrajo et al., 2015a, 2015; Muñiz-Rivas et al., 2019). The greater involvement of adolescents in cyber-control behaviors was even more marked when their occasional involvement was taken into account. In the present study, almost half of

the adolescents (44.1%) reported having occasionally performed cyber-control behavior toward their partner at least once, while only 5% reported at least one cyber-aggression. These results could be due to adolescents' lower perception of some cyber-control behaviors as forms of cyber DV. The romantic myths that associate love and control could influence the lower perception of some cyber-control behaviors as cyber dating abuse, as suggested in previous studies (Malonda et al., 2017; Rodríguez-Castro et al., 2013). Moreover, some characteristics of adolescents' current use of ICTs, such as the vast amount of private information they display on social networks and their constant connection via ICTs, along with the ease that new technologies offer to monitor partners (Christofides et al., 2009; Linne, 2014; Sabater, 2014), could make it difficult for adolescents to perceive some cyber-control behaviors as abusive behavior toward partners. Some of these behaviors could even be considered by adolescents to be appropriate behaviors in romantic relationships and proof of their love (Malonda et al., 2017). Regarding the possible differences between boys and girls in the prevalence of cyber DV perpetration, the obtained data confirmed a similar prevalence for the boys and girls frequently involved in cyber-control (Muñiz-Rivas et al., 2019), but showed a higher prevalence for the girls occasionally involved in cyber-control behaviors. In relation to cyber-aggression, the obtained data differ from previous studies, which have indicated a higher prevalence of cyber-aggression perpetrated by boys (Muñiz-Rivas et al., 2019) by showing a similar prevalence of these behaviors in both boys and girls.

The results of the present study show interesting differences in the variables related to cyber-control and cyber-aggression perpetration in adolescent boys and girls, and also between frequent and occasional perpetration. Regarding boys, those frequently involved in cyber-aggression and cyber-control perpetration obtained higher scores for hostile sexism and relational, verbal-emotional and physical offline DV perpetration, which was initially hypothesized. Therefore, a strong association between online and offline DV perpetration in adolescent boys was confirmed (Borrajo et al., 2015; Cutbush et al., 2012; Marganski & Melander, 2018; Peskin et al., 2017; Temple et al., 2016; Zweig et al., 2013, 2014), and the close existing connection for adolescents between the real world and the virtual world stood out (Baker & Carreño, 2016; Ortega-Barón et al., 2017; Schneider et al., 2012). Moreover, in line with previous studies that have linked hostile sexism with offline DV perpetration (Pazos et al., 2014), the relations between hostile sexism and cyber DV perpetration in adolescent boys were also confirmed. For most of these variables, no differences were observed between the adolescent boys not involved and occasionally involved, which highlights the importance of contemplating the frequency of cyber DV perpetration. Similarly to offline DV perpetration (Cava et al., 2015; Viejo, 2014), adolescents' occasional involvement in cyber DV perpetration could be related to dirty forms of courtship, which would not be indicative of romantic relationships characterized by DV. However, no significant

Table 4
Linear regression analysis for predicting Cyber-control and Cyber-aggression.

	Cyber control						Cyber aggression					
	Boys[a]			Girls[b]			Boys[c]			Girls[d]		
	B	t	p	β	t	p	β	T	p	β	t	p
Romantic myths	.02	.35	.724	.32***	5.98	<.001	.02	.38	.707	.25***	3.45	.001
Hostile sexism	.18**	3.18	.002	-.02	−2.48	.805	.06	1.21	.227	.24***	3.22	.001
Benevolent sexism	-.07	−1.15	.253	-.08	−1.19	.232	-.01	-.14	.892	-.28***	−3.67	<.001
Relational offline DVP	.52***	9.51	<.001	.13*	2.44	.015	.24***	3.47	.001	-.03	-.48	.628
Physical offline DVP	.01	.01	.999	-.08	-.93	.352	.44***	6.31	<.001	.09	1.38	.169
Verbal-emotional offline DVP	.09	1.34	.182	.32***	5.87	<.001	-.04	-.59	.558	.17**	2.86	.005

Note: DVP = Dating Violence Perpetration * $p < .05$; ** $p < .01$; *** $p < .001$.
[a] $F_{(2, 226)} = 51.70$ $p < .001$, Adjusted $R^2 = .31$.
[b] $F_{(3, 259)} = 34.69$ $p < .001$, Adjusted $R^2 = .28$.
[c] $F_{(2, 226)} = 76.82$ $p < .001$, Adjusted $R^2 = .40$.
[d] $F_{(4, 258)} = 10.41$ $p < .001$, Adjusted $R^2 = .13$.

differences were found between the adolescent boys' occasionally and frequently involved in verbal-emotional offline DV perpetration and hostile sexism. For verbal-emotional offline DV perpetration, this result could be related to the high prevalence of verbal-emotional offline DV observed in adolescent couples (Exner-Cortens, Eckenrode, & Rothman, 2013; Fernández-Fuertes & Fuertes, 2010; Foshee et al., 2013; Leen et al., 2013; Paat et al., 2019; Viejo et al., 2016). Given its high prevalence in adolescents, this type of offline DV could contribute less to distinguish between the adolescent boys frequently and occasionally involved in cyber DV perpetration. As regards hostile sexism, previous studies have reported higher hostile sexism scores for adolescent boys than for adolescent girls (Malonda et al., 2017; Ramiro-Sánchez et al., 2018). These sexist attitudes could be accepted by boys who use ICTs to attack a partner, even if these behaviors are occasional. No differences were found for this variable for the adolescent boys who were occasionally and frequently involved.

Regarding girls, higher scores for romantic myths, benevolent sexism and verbal-emotional and physical offline DV perpetration were obtained by those frequently involved in cyber-control and cyber-aggression. Hence the relation between online and offline DV perpetration, and a close link between the real and virtual worlds similar to boys, were also observed in adolescent girls (Burke et al., 2011; Machimbarrena et al., 2018; Marganski & Melander, 2018; Mosley & Lancaster, 2019; Stonard, Bowen, Lawrence, & Price, 2014). Nevertheless, the differences between the girls who were occasionally and frequently involved were not as clear as they were for boys, so the initial hypothesis was not fully confirmed. On the one hand, and as expected, romantic myths were a relevant variable in relation to girls' frequent involvement in cyber DV perpetration. A stronger influence of romantic myths on the characteristics desired by girls in their first romantic relationships and using these myths more to justify some cyber DV behaviors (Rodríguez-Castro et al., 2013) could explain this result. However, on the other hand, relational offline DV perpetration was not a variable that allows differentiating between adolescent girls with distinct involvements in cyber DV perpetration, as was hypothesized, and sexist attitudes were more relevant than we initially expected. Regarding relational offline DV perpetration, a greater use of relational aggression by girls in their interpersonal relationships, as indicated in previous studies (Björkqvist, 2018), could make it hard to find differences in this variable in girls who are differently involved in Cyber DV perpetration. In sexist attitudes, adolescent girls not involved and those frequently involved in cyber-aggression perpetration obtained higher benevolent sexism scores compared to occasionally involved girls. Benevolent sexism includes holding the view that women need the care and protection of men, and assumes the traditional social roles assigned to men and women to a greater extent (Arnoso, Ibabe, Arnoso, & Elgorriaga, 2017; Glick & Fiske, 1996; Hammond et al., 2018; Papp et al., 2017; Ramiro-Sánchez et al., 2018). For the frequently involved girls, their greater perpetration of cyber-aggression behaviors could be one way of rebelling against the traditional submissive role of women, while the non involved girls would internalize and assume this traditional feminine role.

Interesting findings were obtained for the different predictive weight of romantic myths, sexist attitudes and offline DV perpetration (relational, physical, verbal-emotional) for cyber-control and cyber-aggression in adolescent boys and girls. In boys, relational offline DV was closely associated with both cyber-control and cyber-aggression behaviors as it proved to be a significant predictor of both these forms of cyber DV perpetration. The adolescent boys who control the social relationships of their partners outside social media and attempt to isolate them from their friendships, would also exercise cyber-aggression and cyber-control behaviors toward their partners. Moreover, relational offline DV perpetration was the main predictor of cyber-control for boys. However, physical offline DV was only a significant predictor of cyber-aggression. Although previous studies have linked cyber-control and cyber-aggression with psychological and physical

offline DV (Borrajo et al., 2015), the results of this study provide novel data about these relations. On the one hand, the obtained data highlight a closer link between physical offline DV perpetration and cyber-aggression perpetration, which was hypothesized, and reveal how some offline aggressive behaviors can be easily carried out online by adolescents (Burke et al., 2011; Ortega-Barón et al., 2017; Temple et al., 2016). Some adolescent boys with aggressive interpersonal patterns would use aggressive behaviors in their romantic relationships both offline and online. On the other hand, the associations found between physical offline DV and cyber-aggression perpetration were only observed in adolescent boys, and not in girls. Romantic myths and sexist attitudes were the variables that related more to cyber-aggression in girls, which could indicate the existence of differences between boys and girls in socialization patterns and beliefs in romantic relationships, in line with the theory of differential socialization (Ferrer & Bosch, 2013). These romantic beliefs could have an important influence on girls' identity development and a greater impact on their behavior toward their partner (Rodríguez-Castro et al., 2013).

Another variable related to cyber DV perpetration in boys was hostile sexism. This variable was a significant predictor of cyber-control for adolescent boys. According to the ambivalent sexism theory (Glick & Fiske, 1996, 2001), sexist attitudes are ambivalent, consisting of both hostile and benevolent feelings. Hostile sexism attitudes include a negative perception of women (Glick & Fiske, 1996; Hammond et al., 2018; Ramiro-Sánchez et al., 2018), and previous studies have linked hostile sexism attitudes with cyber DV perpetration (Martínez-Pecino & Durán, 2019; Rodríguez-Domínguez et al., 2018). However, hostile sexism was not a significant predictor of cyber-aggression for boys. In boys, the relation between attitudes of hostile sexism and cyber DV perpetration would take place through cyber-control behaviors, and not through cyber-aggression behaviors. The higher prevalence of cyber-control behaviors in adolescent couples (Muñiz-Rivas et al., 2019) and the higher scores for hostile sexism in boys (Malonda et al., 2017; Ramiro-Sánchez et al., 2018) could explain the closer link between them. For cyber-aggression perpetration, with a lower prevalence among adolescents, physical offline DV perpetration was the main predictor for boys, which confirmed a closer link between these two forms of DV perpetration in adolescent boys. Regarding benevolent sexism, and in line with some previous studies, no significant relations with cyber-control and cyber-aggression behaviors were found in boys (Fernández-Fuertes et al., 2018; Lee et al., 2016; Martínez-Pecino & Durán, 2019; Rodríguez-Domínguez et al., 2018).

Unexpectedly, sexist attitudes were also related to cyber-aggression perpetration in girls, with interesting differences found in these relations compared to boys. Hostile sexism was a significant positive predictor of cyber-aggression for girls, but not of cyber-control. Perhaps some of the girls who have internalized attitudes of hostile sexism, including the view that boys are stronger, wish to rebel against this image of women as being a weaker inferior group. Their greater internalization of these hostile sexism attitudes could lead them to want to break away from this image of weakness and become more actively involved in cyber-aggression perpetration. Moreover, these cyber-aggression behaviors could be mutual in their romantic relationships. This aspect was not herein analyzed, but should be considered in future studies. The cyber-aggression perpetrated by girls could occur in response to a prior online aggression of their partner, or could even form part of interpersonal dynamics in their romantic relationship in which both members use social networks to insult and threaten one another (Durán & Martínez-Pecino, 2015; Stonard, 2020; Víllora et al., 2019a, 2019). Previous studies have shown high percentages of mutual aggression; that is, bidirectionality in cyber DV perpetration (Baker & Carreño, 2016; Durán & Martínez-Pecino, 2015; Paat et al., 2019; Víllora et al., 2019a, 2019), and this aspect should be taken into account. By contrast, benevolent sexism was a significant negative predictor of cyber-aggression for girls. Most girls were not involved in cyber-aggression perpetration, and many could hold internalized beliefs

in benevolent sexism, such as women's greater sensitivity and their traditional social role. Benevolent sexism could, therefore, be a factor of protection against their involvement in cyber-aggression behaviors toward their partners. However, these possible explanations should be analyzed more in-depth in future studies.

Verbal-emotional offline DV perpetration was also a significant positive predictor of cyber-control and cyber-aggression perpetration for girls. Verbal-emotional violence involves acts like humiliating, insulting and threatening victims. Adolescent girls could use the ease of ICTs to control, monitor and abuse dating partners to extend verbal-emotional offline DV to the online context. The effect of online disinhibition (Stonard, 2020; Suler, 2004) may make girls feel more confident to control and attack their partners online when they also exercise verbal-emotional offline DV. Likewise, the characteristics of communication via ICTs, such as the possibility of anonymity, physical distance with victims, perception that online life has different rules and lack of immediate coping with the consequences of such behaviors (Suler, 2004), could help girls to resort to these technologies to control their partners when they exercise relational offline DV. The results revealed that relational offline DV was a significant positive predictor of cyber-control for girls, which might indicate that girls could easily spread relational offline DV to the virtual world through their cyber-control behaviors. A closer link between cyber-control and relational offline DV perpetration could also be associated with girls' more frequent use of relational aggression (Björkqvist, 2018; Estévez, Jiménez, & Cava, 2016). Both forms of aggressive behavior (relational offline DV and cyber-control) include manipulating the social environment and controlling partners' social relationships.

One interesting difference found between adolescent boys and girls was the relevance of girls' belief in romantic myths of love, which was not found for boys. Romantic myths of love were a significant positive predictor of cyber-control and cyber-aggression perpetration for girls, but was not significant for boys. Relations between adherence to myths of romantic love and the legitimization of intimate partner violence have been observed in adults (Lelaurin et al., 2018; Papp et al., 2017), but have not yet been explored in adolescents. The results of the present study suggest that the adolescent girls who believed more in myths of romantic love, including myths such as the association between control and love, the existence of a single true love or the omnipotence of love, could use these beliefs to justify and legitimize their cyber-control and cyber-aggression behaviors toward their partners. From socio-cognitive frameworks, the importance of cognitive factors, such as adolescents' perceptions and justifications for DV perpetration, has been highlighted (Nardi-Rodríguez, Pastor-Mira, López-Roig, & Ferrer-Pérez, 2019; Víllora et al., 2019).

These romantic beliefs could prove more relevant for girls than boys due to different socialization processes. According to the theory of differential socialization (Ferrer & Bosch, 2013), girls receive more messages from relevant people in their social context, and also through media, publicity, songs, movies, and TV series, which means that they attach more importance to the private spaces and the romantic relationships while they shape their identity. These gender differences in the socialization process could be related to a stronger influence of romantic myths in girls to form their ideal image of a romantic relationship and use these myths to justify cyber DV perpetration. Romantic beliefs could more strongly influence gender identity development in girls, as well as a relevant impact on the type of behaviors that they consider appropriate in a romantic relationship. All these issues should be analyzed more broadly in future research.

4.1. Limitations and conclusions

This study has several limitations that must be taken into account. First, this study only contemplated the perpetration of cyber and offline teen DV, and did not include cyber and offline DV victimization. As the bidirectionality in both offline and cyber DV is high, future studies

should also include DV victimization as a variable to be analyzed. Another limitation of this study is that the possible differences in cyber DV according to adolescents' age were not analyzed in this study as most participants were in their middle adolescence. However, features of romantic relationships differ in early, middle and late adolescence (Collins, 2003; Smetana, Campione-Barr, & Metzger, 2006), and previous studies have observed differences in DV throughout adolescence, with psychological aggression increasing from 14 to 20 years and physical aggressions peaking at 16–17 years old (Fernández-González, O'Leary, & Muñoz-Rivas, 2014). Future studies should analyze the possible differences in cyber DV perpetration according to adolescents' age. Moreover, another limitation of this study is its use of self-report measures, which may include some biases based on the perceptions of adolescents or the possible social desirability of their responses. Although these measure types are common in research into aggressive behaviors in adolescents, it would be convenient to resort to other sources of information; for example, being able to resort to information from both members of the couple. In addition, the inclusion of a qualitative methodology, such as interviews or discussion groups with adolescent boys and girls, could extend and supplement the obtained information.

Despite these limitations, the present study provides novel interesting data on cyber DV perpetration in adolescents. The virtual world is a fundamental part of interpersonal relationships for adolescents, which implies advantages and also new problems such as cyber DV. However, our knowledge on the variables related to this problem is still scarce. The results of this study note not only how different forms of offline DV relate to distinct forms of cyber DV, but also a closer relation between offline and cyber DV in adolescent boys. Both relational and physical offline forms of DV are positive predictors of cyber-aggression perpetration for boys. In contrast, beliefs in romantic myths seem a more relevant variable to explain girls' involvement in cyber-aggression and cyber-control behaviors toward their partners. Regarding sexist attitudes, it is necessary to differentiate between hostile and benevolent sexism. While hostile sexism is positively related to cyber-control in boys and cyber-aggression in girls, it is negatively related to cyber-aggression perpetration in girls. The internalization of the view of women formed from benevolent sexism in girls, by considering that women were more sensitive and weaker, could explain their lesser involvement in this cyber violence.

In general, the results of the present study not only confirm important relations linking sexist attitudes, romantic myths, offline DV and cyber DV in adolescents, but also highlight some differences in these relations between boys and girls. Thus one relevant contribution of this study is the convenience of maintaining a gender perspective in DV research conducted with adolescents both offline and online. Some previous studies have pointed out the importance of including an analysis of gender differences in DV research (Cava, Buelga, & Tomás, 2018; Espelage et al., 2019; Nardi-Rodríguez et al., 2019; Muñiz-Rivas et al., 2019). The gender perspective implies not only analyzing possible gender differences in related variables, but also incorporating the theory of differential socialization (Rodríguez-Castro et al., 2013) into research on DV, and including variables like gender identity or adolescents' internalization of gender stereotypes. Along with other more frequent theoretical explanations for DV in the literature, such as the Social Learning Theory (O'Keefe, 1997; Pipes & LeBov-Keeler, 1997), including more gender perspectives could help to acquire more complete knowledge about the risk factors for DV involvement. A better understanding of gender differences in variables related to teen DV, such as romantic myths and sexist attitudes, could be especially useful for developing prevention programs. Some recent intervention programs to prevent DV in adolescents have incorporated the reduction of romantic myths and sexist attitudes into their objectives (Carrascosa et al., 2019; Vives-Cases et al., 2019). However, as some variables seem to more strongly impact girls, while others more markedly influence boys, these gender differences should also be considered in evaluations about the

effectiveness of these intervention programs. So it would be important to analyze whether these programs are more effective for girls or boys, and in which variables more gender differences in their effectiveness are found. These analyses could help to enhance the effectiveness of prevention programs for adolescents.

Ethical approval

All the procedures performed in the studies that involved human participants were in accordance with the ethical standards of the institutional and/or national research committee, and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

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Informed consent was obtained from all the individual participants included in the study.

Declaration of competing interest

The authors declare that they have no conflicts of interest.

CRediT authorship contribution statement

María-Jesús Cava: Conceptualization, Methodology, Formal analysis, Writing - original draft, Writing - review & editing. **Belén Martínez-Ferrer:** Methodology, Formal analysis, Writing - review & editing. **Sofía Buelga:** Writing - review & editing. **Laura Carrascosa:** Writing - review & editing.

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