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Cyber-aggression and psychological aggression in adolescent couples: a short-term longitudinal study on prevalence and common and differential predictors.

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## Abstract

This study examined the prevalence of cyber-aggression in Spanish adolescent couples as well as the common and differential predictors for cyber-aggression and psychological aggression using a short-term longitudinal study. Over a 6-month period, six hundred and thirty-two (632) Spanish adolescents with **romantic relationship** experience from seven schools **were** randomly selected to participate in the study (51% male; average age= 15.03). The results revealed a prevalence of cyber-aggression of 13% and that 68.3% of adolescents engaged in psychological aggression. Girls were significantly more involved than boys in both forms. The analysis of predictors for cyber and psychological aggression showed that these two forms of **aggression** shared a common factor, negative couple quality. Furthermore, cognitive empathy predicted cyber-aggression whereas anger regulation and jealousy predicted psychological aggression. These results highlighted the need to consider the particular characteristics of each setting, face-to-face and online, for designing future prevention programs.

*Keywords:* Cyber-aggression; Cyber dating abuse; Psychological aggression; Adolescents; Longitudinal study.

## 1. Introduction

**Cyber-aggression** among adolescents has become a public health problem (Patton et al., 2014; David-Ferdon & Hertz, 2007) with serious implications for young people's adjustment and health (Sargent et al., 2016). A subtype of this **cyber-aggression** is the kind that occurs among young dating couples, defined as the intentional use of new technologies to

harass, monitor, humiliate, threaten and/or isolate the other partner (Álvarez, 2012; Wick et al., 2017).

Some authors have argued that cyber-aggression among couples is a subtype of psychological aggression that takes place via social media, **given that both forms of aggression include the same intentional aggressive behaviors and coercive tactics aimed to threaten, humiliate and control partner behavior and social relationships, but displayed in different contexts** (Bennett et al., 2011; Korchmaros et al., 2013). On the contrary, other authors have proposed that the context-specific characteristics make cyber dating aggression a unique phenomenon (Peskin et al., 2017). **In light of this debate, more work needs to be done to understand the nature of cyber dating abuse. Is cyber dating abuse a subtype of psychological dating aggression? If so, do they share the same predictors? Or, on the contrary, is cyber dating abuse a unique phenomenon that has unique predictors? Addressing these issues would allow us to delve deeper into cyber dating aggression, as well as to improve its prevention. This study attempts to contribute to this debate by analyzing the common and differential predictors of psychological dating aggression and cyber dating aggression.**

### *1.1. Cyber dating aggression: a subtype of psychological aggression or a unique phenomenon?*

Two main results from published literature support the hypothesis that **cyber dating aggression is a subtype of psychological aggression**. **First**, cross-sectional studies show that involvement in cyber dating abuse is strongly associated with involvement in face-to-face dating aggression (Borrajo et al., 2015; Korchmaros et al., 2013; Schnurr et al., 2013; Zweig et al., 2013). **Second**, several studies have found higher rates for face-to-face aggression in comparison to cyber-aggression. Specifically, psychological aggression has reported rates two or three times higher than cyber-aggression (Temple et al., 2016; Zweig et al., 2013). In this

regard, some authors have concluded that this disparity in prevalence confirms the psychological nature of cyber-aggression (Temple et al., 2016), where the use of new technologies to harass the other can be thought of as an extension of face-to-face psychological aggression (Korchmaros et al., 2013).

**On the contrary, studies that consider cyber dating aggression as a unique phenomenon support its thesis on the context-specific characteristics of cyber-aggression.**

First, this form of aggression occurs in an online environment and can surface at any time (24 hours /seven days a week). As such, both parties are not required to be in physical proximity to each other and the consequences for the victim are not immediately apparent. This fact makes it difficult for adolescents to understand the impact and damage that their behavior has caused (Stonard et al., 2017; Van Ouytsel et al. 2017), especially for those in early adolescence (12-13 years). In this respect, some adolescents tend to **perceive** certain abusive practices as appropriate **or acceptable** (Stonard et al., 2017). **For example**, looking at their partner's mobile phone or constantly asking them where they are via phone or social networks. Second, the experiences of victims of cyber-aggression may differ to those of traditional aggression, given that it is more difficult to escape from a cyber-attack and the potential audience grows (Smith, 2012). Third, the particular characteristics of online settings and social networks can increase a couple's involvement in certain abusive behaviors and uses, such as control, monitoring, harassment and stalking (Utz & Beukeboom, 2011; Wright, 2013). Some authors explain it in terms of an online disinhibition effect (Suler, 2004), which highlights how the online context can favor the expression of immoral behaviors from a position of anonymity and invisibility. Finally, some aggressive behaviors can be specific to the online context, since technology may be used as a tool to hurt or attack the other partner (Hinduja & Patchin, 2011). Examples include sending a humiliating photograph of their

dating partner to others, posting personal information publicly online, and creating a false social network account to monitor or harass.

### 1.2. *Predictors of cyber-aggression and psychological dating aggression*

To date, few (if any) studies have directly attempted to analyze common and differential predictors of cyber and psychological aggression using longitudinal designs. The majority of studies have focused on specific risk factors for both phenomena separately. In the case of psychological aggression, some studies have addressed this topic with a longitudinal approach (Foshee et al., 2013; Shortt et al., 2013), whereas previous studies dealing with cyber-aggression have been cross-sectional in their approach. These different methodological designs make it difficult to accurately reach a conclusion regarding cyber-aggression risk factors in comparison to psychological aggression. By assuming this limitation, we will review some of risk factors identified in the literature for both forms of aggression. In this analysis we follow the Dynamic Developmental Systems Model (DDS) (Capaldi et al., 2005), which represents an explanatory and ecological approach to analyzing dating aggression. According to this theory, dating aggression can be explained in terms of an interactive process whereby the contextual factors, the characteristics of both members of the dyad as well as factors related to the couple dynamic itself interact over time, thus increasing the developmental risk for aggression toward the other partner (Capaldi et al., 2005). From this perspective, aggression among couples can be understood as a consequence of *contextual factors* (these factors included demographic variables such as age and gender), *individual factors* (these factors comprised psychological and behavioral variables such as antisocial problems, depression and substance abuse; cognitive variables such as attributes, attitudes and beliefs; and emotional variables such as anger or empathy), and *developmental variables* pertaining to the family and peers that both partners bring to the relationship (i.e., association with deviant peers or exposure to intimate partner violence in family or origin). Apart from

these factors, the *couple context* level plays an important role in the explanation of dating aggression. The status of the relationship, the couple quality, the attachment styles of both members of the dyad or the presence of jealousy attitudes and feelings contribute to the relational dynamic of the couple context as well as the involvement in dating aggression.

In relation to *sociodemographic* factors, systematic reviews have concluded that boys and girls report similar rates in psychological aggression (Capaldi et al., 2012). Yet, in contrast, findings are inconclusive for cyber-aggression. Only three studies have examined gender differences in cyber dating abuse. Zweig and colleagues (2013), from a sample of 3745 adolescents, found that cyber-aggression among teens was most frequent in females. Van Ouytsel and colleagues (2017), after interviewing 700 adolescents, did not find differences by gender. Peskin and colleagues (2017), from a sample of 891 adolescents, found a trend association between gender and cyber dating abuse, where being female was associated with higher odds of perpetrating cyber dating abuse. Because effect size was not reported in these studies, it is difficult to know the magnitude of its association and to conclude about the role of gender on cyber dating aggression. With regard to *individual* factors, systematic reviews have concluded that emotional variables, such as anger regulation, seem to play an important role in the explanation of psychological aggression (Capaldi et al., 2012; Vagi et al., 2013). Few studies have analyzed the link between anger and cyber-aggression and their results have been mixed. Deans and Bhogal (2017) have not found a significant association between anger and cyber-aggression in university students. In contrast, Watkins and colleagues (2016) found that greater feelings of anger were related to greater cyber-aggression in the adult population, although the effect size was small. In the case of empathy, only one study has explored it in association with traditional forms of dating aggression, concluding that deficits in empathy did not predict dating aggression over time but were correlated at the same time (Wolfe et al., 2004). No previous studies have explored

the association between empathy and cyber-aggression among couples, but related research has found empathy to be a strong predictor of cyberbullying aggression (Del Rey et al., 2016), where higher scores of empathy were related to lower scores of cyberbullying perpetration.

Moving from an individual to an interactional perspective, only a few studies have focused on the impact of *couple context* variables on cyber-aggression (Deans & Bhogal, 2017; Durán-Segura & Martínez-Pecino, 2015; Watkins et al., 2016), despite it being considered one of the main factors for face-to-face dating aggression (Capaldi et al., 2012). In this regard, research have concluded about the conflictual nature of dating aggression (Connolly et al., 2010; Nocentini et al., 2013), and previous studies have identified lower couple satisfaction as a predictor of cyber-aggression (Durán-Segura & Martínez-Pecino, 2015; Watkins et al., 2016). However, the specific role of negative couple quality on cyber-aggression has, to date, not been explored. In relation to the role of jealousy, emotional jealousy is recognized as a main predictor of face-to-face aggression (Capaldi et al., 2012; Sánchez-Jiménez et al., 2014), but its role on cyber-aggression has not been clearly defined. While one study found no relationship between jealousy and cyber dating aggression (Deans & Bhogal, 2017), another work concluded that the magnitude of the association between jealousy and cyber-aggression depended on the specific form of cyber-aggression under analysis (Watkins et al., 2016). In this regard, higher levels of jealousy were associated with higher scores of cyber-stalking.

To summarize, studies suggest that there is a gap in the literature with regard to common and differential risk factors for cyber and psychological dating aggression, particularly those related to certain *individual* and *couple context* variables. Moreover, there is a need for longitudinal studies that allow us to conclude more accurately about the risk factors of cyber-aggression and psychological dating aggression.



### 1.3. *The present study and hypothesis*

The main aim of this study was to analyze the common and differential risk factors of cyber dating aggression and psychological dating aggression among Spanish adolescent couples using a short-term longitudinal design. By doing this, we can contribute to the knowledge base on the specific nature of cyber-aggression, outlining whether the same predictors influence both forms of aggression similarly or differently. **In addition, we will contribute to the prevention of dating aggression among adolescents.**

As a preliminary step, we chose to analyze the prevalence of cyber-aggression and subsequently compare it to the prevalence of psychological aggression. Research into **cyber-aggression** among adolescent dating couples is still in its infancy and has mainly been carried out in the United States. These studies have largely been conducted on older adolescents and young adults (Peskin et al., 2017), meaning that knowledge of the phenomenon in the younger population has not been adequately addressed. Consequently, the incidence of this phenomenon for adolescent couples and in other countries is little known. Prevalence rates, **obtained from international representative samples**, continue to vary considerably, from 2% to 50% (**see Stonard et al., 2014 for more details**). **In studies with a Spanish sample** (Borrajo et al., 2015; Cava & Buelga, 2018; Sánchez-Jiménez et al., 2017), **a similar pattern has been observed. These studies have found prevalence rates ranging from 9% (Borrajo et al., 2015) to 80% (Borrajo et al., 2015; Sánchez-Jiménez et al., 2017)**, depending on the behavior under analysis. Monitoring and controlling the partner via social networks **were the most frequent forms** (Sánchez-Jiménez et al., 2017) in comparison to other forms of aggression such as humiliating, excluding and/or threatening one's partner via the online context, with rates around 10-13% (Bennett et al., 2011; **Borrajo et al., 2015**; Zweig et al., 2013). These forms of dating aggression, **named direct cyber-aggression**, can be considered more severe than monitoring or control because they are aggressive acts with a deliberate intention to hurt the

partner (Borrajo et al., 2015). In Spain, no direct forms of cyber-aggression were previously analyzed among adolescent couples. Additionally, no descriptive studies have compared the prevalence rates of psychological and cyber-aggression in Spanish adolescents. According to national (Borrajo et al., 2015; Sánchez-Jiménez et al., 2017) and international studies (Peskin et al., 2017; Zweig et al., 2013), low rates of direct cyber-aggression are expected. Moreover, we expected to obtain higher rates of psychological aggression than cyber-aggression (Korchmaros et al., 2013; Temple et al., 2016; Zweig et al., 2013) (**Prevalence hypothesis**).

**To carry out the main aim of this study**, we adopted the DDS model in order to gain better insight into the longitudinal risk factors for psychological and cyber dating aggression. Sociodemographic, individual and couple context factors were analyzed given the limited and mixed research into these specific risk predictors for cyber-aggression. Specifically, the predictors chosen in this study were, 1) gender as *sociodemographic factor*; 2) anger regulation and empathy as *individual factors*; and 3) negative couple quality and emotional jealousy as *couple context* variables, specifically, as indicators of a negative couple context. Negative couple quality refers to the presence of relational dynamics characterized by antagonism, irritation, and high levels of conflicts (Collins et al., 2009). Affective jealousy involves negative emotions related to perceived relationship threats (Elphinston et al., 2011).

**In relation to gender**, no differences between boys and girls for psychological aggression are expected (Capaldi et al., 2012) (**Hypothesis 1**). **However, evidence about the role of gender on cyber-aggression is scarce and controversial (Van Ouytsel et al., 2017; Zweig et al., 2013), and this association will therefore be analyzed in an exploratory fashion.** With respect to individual factors, greater feelings of anger will be related to higher levels of psychological aggression over time (Capaldi et al., 2012; Vagi et al., 2013) (**Hypothesis 2a**). **However, considering that previous studies have either not observed a relationship between anger and cyber-aggression (Deans & Bhogal, 2017) or its association was small in terms of**

effect size (Watkins et al., 2016), it is expected that a relationship between anger and cyber-aggression over time will not be found (Hypothesis 2b). For empathy, a stronger association of empathy with cyber-aggression was expected, rather than with psychological aggression, in line with early studies on cyberbullying and bullying (i.e., Del Rey et al., 2016), as well as longitudinal studies on dating aggression (Wolfe et al., 2004). Therefore, the expectation was for there to be low association between empathy and psychological aggression (Hypothesis 3a), but strong association between empathy and cyber-aggression (Hypothesis 3b). In this regard, higher levels of empathy will be related to lower levels of cyber-aggression. In relation to couple context variables, greater feelings of jealousy will be related to higher levels of psychological aggression (Capaldi et al., 2012; Sánchez-Jiménez et al., 2014) (Hypothesis 4a). By comparison, no significant association between jealousy and cyber-aggression over time is expected (Hypothesis 4b), given that previous studies have found no relationship between the two variables (Deans & Bhogal, 2017) or that the effect size was small (Watkins et al., 2016) for the specific forms of cyber-aggression that will be analyzed in this study. Lastly, considering the relevance of the couple dynamics in the explanation of dating aggression (Connolly et al. 2010; Nocentini et al. 2013), we expected that negative couple quality will be a main predictor of psychological dating aggression (Hypothesis 5). Because the current study is the first to compare the effect of negative couple quality on cyber dating aggression, the role of negative quality was analyzed in an exploratory way.

## 2. Material and Methods

### 2.1. Research design

A short-term longitudinal study (six months, from January 2016 to June 2016) was conducted for this research. A sample of adolescents from western Andalucía (southern Spain) was taken. Participants were recruited from state high schools (compulsory education). These centers were randomly selected by the regional government in accordance with the following

inclusion criteria: a) they must be state-run schools; b) they must present a medium economic, social and cultural level (ISC Index in Spain); and c) each school must have at least 200 students. The regional government put forward a total of seven schools that met these requirements.

## 2.2. Participants

The original sample comprised 1003 adolescents. Given the nature of the study, only those with **romantic relationship** experience (current or past relationship) were selected, which brought the final sample size down to 632 participants (321 boys; 51%) aged between 12 and 18 years ( $M= 15.03$ ;  $SD= 1.38$ ) that were interviewed in both waves. Regarding sexual orientation, 95.7% of participants defined themselves as heterosexual or straight ( $n = 604$ ), 1.1% as gay or lesbian ( $n = 7$ ), 1.1% as bisexual ( $n = 7$ ), 0.3% as pansexual ( $n = 2$ ), 0.2% as demisexual ( $n = 1$ ), and 1.6% still didn't know ( $n = 11$ ). As for nationality, 95.7% were Spanish ( $n = 605$ ), 2.5% from Latin America ( $n = 16$ ), 0.8 % European ( $n = 5$ ), 0.1% from Asia ( $n = 1$ ), and 0.8% did not give their nationality ( $n = 5$ ). In terms of romantic experience, participants had an average of 3.75 dating relationships ( $SD= 3.99$ ), the length of the current relationship was 25.60 weeks ( $SD= 32.29$ ), and the length of previous relationship was 11.74 weeks ( $SD= 14.67$ ).

## 2.3. Instruments

*Sociodemographic variables:* an ad hoc questionnaire was drawn up to ask participants about their sex, age, sexual orientation, locality and nationality.

*Dating relationship status:* three items from the *Dating questionnaire* (Connolly et al. 2004) were used to analyze relationship status. The first item, a multiple-choice question, assessed the participants' romantic experience and served as a filter to select the participants. The response options were: a) Yes, I'm currently dating someone; b) I'm not currently dating

anyone, but I have done in the past; and c) I've never dated anyone before. The second item asked about the number of dating relationships. The third item asked about the length of the relationship expressed as number of weeks.

*Cyber-aggression:* this was evaluated using an adapted version of the non-sexual **cyber abuse** scale corresponding to the *Cyber Dating Abuse* survey (Zweig et al., 2013). Nine items, measured on a 5-point Likert scale (0=Never; 4=Always), asked about the frequency with which they had threatened and/or humiliated their respective partner (e.g., “send threatening text messages to him/her”). The measure's fit was good [ $\chi^2(27)= 31.363$ ;  $RMSEA= .02$ ;  $CFI= .99$ ] and the internal consistency of the scale was adequate ( $\alpha=.76$ ).

*Psychological aggression:* this was evaluated using the *Psychological Dating Abuse Scale* (Foshee, 1996). Fourteen items, measured on a 5-point Likert scale (0=Never; 4=Always), assessed the frequency with which the participants had displayed monitoring behaviors (e.g., “would not let my partner do things with other people”), perpetrated threats (e.g., “threatened to hurt him/her”), personal insults (e.g., “insults him/her in front of others”) and emotional manipulation (e.g., “said things to hurt his/her feelings on purpose”). The confirmatory factor analysis of the scale revealed a good fit [ $\chi^2(77)= 271.379$ ;  $RMSEA= .06$ ;  $CFI= .92$ ] and its internal consistency was good ( $\alpha= .82$ ).

*Anger regulation:* this was evaluated using an adapted version for Spanish adolescents (Oliva et al., 2011) of the subscale “Stress Management” of the *Emotional Quotient Inventory: Youth Version* (Bar-on & Parker, 2000). Eight items, measured on a 5-point Likert scale (1=Never; 5=Always), assessed difficulties in controlling anger, duration of anger episodes, and the frequency with which they engaged in fights or arguments (e.g., “I find it difficult to control my anger”). High scores on the scale indicate less anger regulation and vice versa. The scale's confirmatory factor analysis yielded an unacceptable RMSEA value

$[\chi^2(24) = 117.873; RMSEA = .09; CFI = .90]$ ; for this reason, modification indices (MI) and standardized expected parameter change (SEPC) were analyzed in order to improve model fit and to detect model misspecifications. An error covariance was added between two items: “I have a temper” and “I get angry easily” (MI = 76.504; SEPC = .420). Lastly, the model showed a good fit  $[\chi^2(19) = 49.989; RMSEA = .05; CFI = .97]$  and internal consistency was adequate ( $\alpha = .81$ ).

*Empathy*: this was evaluated using a short version of the *Basic Empathy Scale* (Jolliffe & Farrington, 2006) adapted to Spanish adolescents (Oliva et al., 2011). Nine items, measured on a 5-point Likert scale (1 = Completely disagree; 5 = Completely agree), analyzed two dimensions of empathy: a) cognitive empathy, which refers to the ability to understand the emotions of others (e.g., “I can often understand how people are feeling even before they tell me”); and b) affective empathy, which refers to the ability to feel the emotions experienced by others (e.g., “I get caught up in other people’s feelings easily”). High scores of cognitive and affective empathy indicate greater ability to understand and feel others’ emotions. **A one-dimensional model as well as a two-dimensional model were tested. The two-dimensional solution  $[\chi^2(26) = 171.853; RMSEA = .10; CFI = .88]$  displayed a better fit than the one-dimensional model  $[\chi^2(27) = 355.20; RMSEA = .14; CFI = .74]$ . Taking into account the best fit of the two-dimensional model and that the correlation between cognitive and affective empathy was moderate (.58), the bi-dimensional model was selected as the best solution. However, the two-dimensional model had to be improved according to the cut-off points for RMSEA and CFI. Modification indices were analyzed and standardized expected parameter change (SEPC) were analyzed in order to improve model fit and to detect model misspecifications. An error covariance was added between the items “I can understand my friend’s happiness when she/he does well at something” and “I can usually realise quickly when a friend is angry” (MI = 46.974; SEPC = .212). Lastly, the model showed a good fit**

[ $X^2(25) = 129.113$ ;  $RMSEA = .08$ ;  $CFI = .92$ ] and internal consistency was adequate for both scales (cognitive empathy  $\alpha = .77$ ; emotional empathy  $\alpha = .78$ ).

*Jealousy*: the emotional jealousy scale taken from the *Multidimensional Jealousy Scale* (Elphinston et al., 2011) was used. Seven items, measured on a 7-point Likert scale (0 = It doesn't bother me; 6 = It bothers me a lot), analyzed the extent to which young people felt bothered or angry about their respective partner's behavior in relation to third parties (e.g., "A boy or a girl is trying to get close to your partner all the time"). High scores in the scale indicated greater jealousy reaction towards the partner. The confirmatory factor analysis of the scale revealed a poor fit in terms of the RMSEA value [ $X^2(14) = 221.057$ ;  $RMSEA = .15$ ;  $CFI = .90$ ]; for this reason, modification indices were analyzed and standardized expected parameter change (SEPC) were analyzed in order to improve model fit and to detect model misspecifications. The item "Your partner shows a great deal of interest or excitement in talking to someone" was deleted because it showed high cross-loading with the item "Your partner comments to you on how great looking a particular person is" and a SEPC higher than 1 (MI = 116.777; SEPC = 1.301). However the model fit remained poor [ $X^2(9) = 88.404$ ;  $RMSEA = .12$ ;  $CFI = .95$ ]. Therefore, two error covariances were added (one each occasion) in order to achieve a good model fit: one between the items "Your partner is flirting with someone" and "A boy or a girl is trying to get close to your partner all the time" (MI = 30.270; SEPC = .563), and another between the latter and the item "Your partner comments to you on how great looking a particular person is" (MI = 32.364; SEPC = .640). Lastly, the fit of the scale was good [ $X^2(7) = 30.014$ ;  $RMSEA = .07$ ;  $CFI = .99$ ] and internal consistency was adequate ( $\alpha = .93$ ).

*Negative couple quality*: this was evaluated using an adapted version of the conflict, criticism and antagonism scales taken from the *Network of Relationships Inventory: Behavioral Systems Version* (Furman & Buhrmester, 2009). Nine items, measured on a 5-

point Likert scale (0 = Never; 4 = Always), assessed the frequency with which misunderstandings or arguments in a relationship occur (e.g., “How often do you and this person argue with each other?”). The authors of the scale suggested that it can be analyzed as a second-order scale or alongside the first-order scales (conflict, criticism and antagonism); A first-order model as well as a second-order model were tested. The fit was the same for both models [ $X^2(24) = 70.502$ ;  $RMSEA = .05$ ;  $CFI = .97$ ]. We opted for the second-order model because it was considered more parsimonious, since the correlations between the factors were high ( $r_{\text{antagonism-criticism}} = .82$ ;  $r_{\text{conflict-antagonism}} = .78$ ;  $r_{\text{conflict-criticism}} = .67$ ). Internal consistency was adequate ( $\alpha = .86$ ). Higher scores in the factors indicated more conflicts and misunderstandings within the couple.

#### 2.4. Procedure

Ethical approval was obtained from the Research Ethics Committee of the Autonomous Region of Andalucía (code: 0575-N-14). Following that, the regional education authority provided a random list of schools that fulfilled the inclusion criteria. Schools were contacted in December 2015, inviting them to take part. The schools’ respective directors informed families about the research aims and the study conditions (all collected information was made anonymous, students could drop out at any time, and families could request feedback on the results). Once the schools agreed to participate and gave their informed consent, the first wave was carried out. This first wave was administered in January 2016 and the second in June 2016. In order to identify students at the two time points, the names of the participants were linked to a code that was used at both waves. The code was created taking into account the school, the class, and the student number in his/her class. School staff provided this information to the research group. Confidential self-reports and paper-and-pencil questionnaires were used for both waves. Data were collected during school hours. Participants received no rewards or incentives for taking part in the study.



## 2.5. Data analysis

Descriptive analyses were performed using SPSS 24. Cramer's V was used to estimate the effect size of the association between gender and aggression. To test the effects of anger, empathy, jealousy and negative couple quality on cyber-aggression and psychological aggression, we fit one path model to the data using MPLUS 7. In this model, the modified version of scales were included. This model analyzed the direct effects of individual and couple context variables on dating aggression at wave 2, controlling for wave 1. Because the assumption of multivariate normality for partner aggression was not supported, the MLR method was used. In the case of cyber-aggression, the items scale were dichotomized due to the low prevalence observed between items (see Table 1). Because of this, we decided to also dichotomize psychological aggression items in order to compare the longitudinal predictors of both types of violence. The following indices were used to evaluate the fit of the models: the chi-square ( $X^2$ ) statistic; the root mean square error of approximation (RMSEA); and the comparative fit index (CFI), with cut-off points of .08 for RMSEA (Browne & Cudeck, 1993) and .90 for CFI (Bollen, 1989).

In terms of missing data, a percentage less than 5% was observed across all variables under analysis, except for empathy, which reached 9.2% of missing data. For this reason, we used the *Full Information Maximum Likelihood* (FIML) method to estimate the model, given that it has shown to be unbiased to estimate models with missing at random data (MAR) (Enders & Bandalos, 2001).

## 3. Results

### 3.1. Prevalence of cyber-aggression and psychological aggression

Table 1 shows the percentage of adolescents involved in cyber-aggression and psychological aggression.

Table 1. Involvement of adolescents in cyber dating aggression and psychological aggression

	Items	% Involved	<i>n</i>
Cyber-aggression	Posted embarrassing photos or other images of him/her online	1.9%	12
	Sent threatening text messages to him/her	1.5%	9
	Took a video of him/her and sent it to my friends without permission	2.9%	18
	Used his/her social networking account without permission	4.9%	30
	Sent him/her instant messages or chats that made him/her feel scared	1.6%	10
	Wrote nasty things about him/her on my profile page (e.g. on Facebook, Myspace)	1.8%	11
	Created a profile page (like Facebook, Myspace, or YouTube) about him/her knowing it would upset him/her	1.3%	8
	Sent him/her so many messages (like texts, e-mails, chats) that it made him/her feel unsafe	4.1%	25
	Spread rumors about him/her using a cell phone, e-mail, IM, web chat, social networking site, etc.	1.8%	11
		Cyber-aggression scale	12.8%
Psychological aggression	<i>Threatening behavior</i>		
	Damaged something that belong to my partner	9.7	59
	Threw something at my partners but missed	7.8	47
	Started to hit my partner but stopped	4.8	29
	Threatened to hurt my partner	3.5	21
	<i>Monitoring</i>		
	Would not let my partner do things with other people	28.5	173
	Told my partner he/she could not talk to someone	13.9	84
	Made my partner describe where he/she was every minute of the day	12.9	78
	<i>Personal insults</i>		
	Insulted my partner in front of others	7.7	47
	Put down his/her looks	34.6	210
	Blamed my partner for bad things they did	29.2	177
	<i>Emotional manipulation</i>		
	Said things to hurt my partner 'feelings on purpose	11.2	67
Threatened to start dating someone else	8.4	51	
Did something just to make my partner jealous	46.2	277	
Brought up something from the past to hurt my partner	20.3	128	
	Psychological aggression scale	68.3	421

Note. % = Percentage of adolescents involved; *n* = number of adolescents involved

Overall data revealed a 13% of adolescents' involvement in cyber-aggression ( $n= 79$ ) and 68.3% of adolescents were engaged in psychological aggression ( $n= 421$ ). The most frequent cyber-behaviors were "Used his/her social networking account without permission (4.9%)" and "Sent him/her so many messages (like texts, e-mails, chats) that it made him/her feel unsafe (4.1%)". In contrast, the less frequent behaviors were "Created a profile page (like Facebook, Myspace, or YouTube) about him/her knowing it would upset him/her (1.3%)" and "Sent threatening text messages to him/her (1.5%)". In relation to psychological aggression,

the less present behaviors were of a threatening nature and direct aggression: “Threatened to hurt my partner (3.5%)” and “Started to hit my partner but stopped (4.8%)”. In contrast, the most present behaviors were of a relational kind: “Did something just to make my partner jealous (46.2%)” and “Put down his/her looks (34.6%)”.

With respect to the prevalence of cyber-aggression and psychological aggression by sex, in overall terms, girls were significantly more involved than boys. 8.13% ( $n= 50$ ) of girls were involved in cyber-aggression in comparison to 4.55% ( $n= 28$ ) of boys [ $X^2(1)= 8.215$ ;  $p = .005$ ; *Cramer’s V*= .12], whereas 37.62% ( $n= 231$ ) of girls were involved in psychological aggression in comparison to 30.62% ( $n= 188$ ) of boys [ $X^2(1)= 18.660$ ;  $p = .000$ ; *Cramer’s V*= .17]. The effect size was small in both cases.

### 3.2. Longitudinal predictors for cyber-aggression and psychological aggression

A descriptive analysis of individual and couple quality predictors in wave 1 showed that adolescents reported low levels of negative couple quality ( $M= .85$ ;  $SD= .71$ ); moderate rates of jealousy ( $M= 3.21$ ;  $SD= 2.01$ ) and anger regulation ( $M= 2.37$ ;  $SD= .79$ ); and high values of cognitive ( $M= 4.05$ ;  $SD= .78$ ) and affective empathy ( $M= 3.39$ ;  $SD= .99$ ).

We analyzed the association among anger regulation, cognitive and affective empathy, jealousy, and negative couple quality on cyber-aggression and psychological aggression (see Table 2). At wave 1, cyber-aggression was related to psychological aggression, negative couple quality, jealousy, and anger. Psychological aggression was related to negative couple quality, jealousy, anger, and cognitive empathy. No association was found between affective empathy and dating aggression (cyber-aggression and psychological aggression). Considering this result, we decided to test a final model without affective empathy.

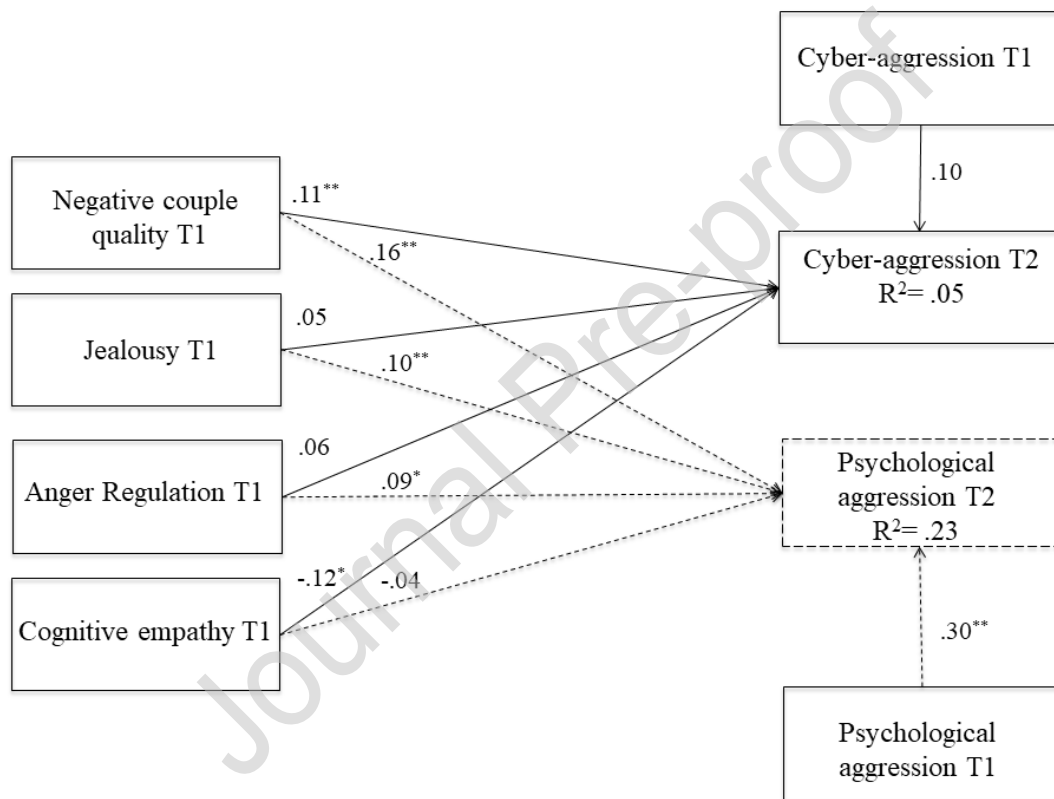
Table 2. Correlations between predictor factors and outcomes at wave 1

	Psychological aggression	Negative couple quality	Jealousy	Anger	Cognitive empathy	Affective empathy
Cyber-aggression	.37***	.21***	.14***	.19***	.00	.00
Psychological aggression		.58***	.23***	.33***	.07*	.06

Note. \*\*\* $p < .001$  \*\* $p < .01$  \* $p < .05$

The final model fit the data well [ $\chi^2(2) = 10.200$ ;  $RMSEA = .08$ ;  $CFI = .96$ ].

Figure 1. Longitudinal predictors of cyber and psychological aggression



Note. \* $p \leq .05$ ; \*\* $p \leq .01$ ; Standardized path coefficients are presented. In order to simplify the display of the model, correlations are not included in the figure.

As shown in Figure 1, a significant effect of negative couple quality and cognitive empathy was observed for cyber-aggression. Thus, greater negative couple quality and less cognitive empathy in wave 1 increased cyber-aggression in wave 2. **The variance explained by these factors was 5%.**

A significant effect of psychological aggression, negative couple quality, jealousy and anger regulation, was observed for psychological aggression. To summarize, more psychological aggression, more negative couple quality, greater feelings of jealousy, and worse anger regulation in wave 1 increased psychological aggression six months later. **The variance explained by these factors was 23%.**

#### 4. Discussion

This short-term longitudinal study had a twofold objective: first, to analyze the prevalence of cyber-aggression and psychological aggression among Spanish adolescent couples; and second, to examine the common and differential predictors for cyber-aggression and psychological aggression.

Prevalence results showed a low involvement in cyber-aggression, at around 13%, in comparison to the percentage noted for psychological aggression, with nearly seven out of ten adolescents involved. This meaningful difference observed between the prevalence of cyber-aggression and psychological aggression **was consistent with our hypothesis about it.** Several studies have found higher rates for face-to-face aggression by comparison to cyber-aggression (Korchmaros et al., 2013; Zweig et al., 2013), particularly when direct forms of cyber-aggression were considered, such as threatening and humiliating behaviors, as we did in this study. Congruently, threats and insults were also the less frequent behaviors pertaining to the psychological aggression scale, confirming that these forms of cyber-aggression and psychological aggression were around 10%. This prevalence of cyber-aggression was similar to the rates found in previous North American studies using older adolescent and young adult samples (Peskin et al., 2017; Zweig et al., 2013), and coincides with earlier studies reported in Stonard et al.'s (2014) review. These findings enable us to conclude that 1) the phenomenon is present at the same level during adolescence and the first years of adulthood; and 2) the

rates in Spain are comparable to those observed in the United States. Future studies will confirm these results.

Contrary to expectations (hypothesis 1), the analysis of gender differences showed that girls were more involved in psychological aggression and cyber-aggression than boys were. Although these results are in line with previous studies on cyber-aggression that have used the same measure (Zweig et al., 2013), the role of gender on cyber-aggression has not been clearly established, since other studies have observed the opposite in young adults (Deans & Bhogal, 2017) or not differences by gender (Van Ouytsel et al., 2017). Similarly, previous studies about psychological aggression have found a higher involvement among girls than boys in these behaviors (Temple et al., 2013; Zweig et al., 2013). However, systematic reviews have concluded that boys and girls display similar rates of psychological aggression (Capaldi et al., 2012). Considering the small effect size of these gender differences, these results should be interpreted with caution, highlighting the need for more research into prevalence in Spain.

The second aim of our study was to analyze whether the predictors for cyber-aggression and psychological aggression were common or differential. Supporting hypotheses 2a-5a, results indicated that poorer anger regulation, higher levels of jealousy, a greater presence of negative couple quality, and a greater involvement in psychological aggression at wave 1 predicted psychological aggression in wave 2. According to the results, those couples in which conflict arose, as well as those partners who experienced difficulties in managing and modulating their emotions, were more prone to psychological aggression involvement six months later. Considered together, these longitudinal predictors highlight the important role played by proximal factors, such as couple context, as well as the individual characteristics of both partners, especially emotional ones, when it comes to explaining psychological aggression (Connolly et al., 2010; Nocentini et al., 2013). Indeed, conflict (Nocentini et al.,

2013), jealousy (Sánchez-Jiménez et al., 2014) and anger regulation (Nocentini et al., 2013; Wolfe et al., 2004) are deemed longitudinal predictors of psychological aggression and other forms of traditional dating aggression.

In the case of cyber-aggression, strong associations with negative couple quality and cognitive empathy were found, **supporting hypothesis 3**. These results confirmed cyber-aggression is conflictual in nature, in the same way that traditional dating violence is. **In support of hypothesis 2b**, the role of anger has not been observed for cyber-aggression in this study, in line with previous research (Deans & Bhogal, 2017). This lack of temporal association would suggest that these cyber-behaviors do not seem to be a consequence of the difficulties that adolescents face when it comes to regulating their emotions, particularly those associated with annoyance and anger. Two possible explanations could be considered. First, it may be due to contextual characteristics of the online world. The asynchronous nature of online communication makes it possible to reflect on what to do before displaying a behavior, creating a psychological distance or a greater autonomy from the emotional situation during anger episodes (Mcglynn, 2006). Second, the longitudinal design of this study differs from previous cross-sectional studies where this association was found, although the effect size was small (Watkins et al., 2016). In fact, anger in time 1 was related to cyber-aggression in the same wave, confirming the cross-sectional association between anger and cyber-aggression. Future longitudinal studies should confirm the contribution of anger to cyber-aggression.

With respect to jealousy, no direct effect of emotional jealousy on cyber-aggression was observed, **supporting hypothesis 4b**. Previous studies have found a strong relation between jealousy and online controlling behaviors (Brem et al., 2015; Muise et al., 2014), suggesting that monitoring could occur as a strategy to face the fear and insecurity about the partner and therefore, as a way to make sure that everything is going well (Stonard et al., 2017). In this study a different form of cyber-aggression was measured, that is, the use of ICT

to threaten and humiliate the partner. This result would suggest that jealousy could play a different role in the explanation of distinct forms of cyber-aggression. Future studies should look at exploring the specific contribution of jealousy on different forms of cyber-aggression, in order to move forward on the nature of cyber-aggression.

The role of empathy on dating aggression has produced interesting results. On one hand, affective empathy was related neither to psychological aggression nor cyber-aggression. **Studies on the relationship between empathy and dating aggression are few and no previous research has explored the role of empathy on cyber-aggression among couples. Wolfe et al. (2004) found that a deficit in empathy was related to dating aggression in same wave point but did not predict dating aggression over time. Because of the scarcity of prior evidence, it was expected that a weak association between empathy and psychological aggression would be found (hypothesis 3a). The result of the study supported this hypothesis.** One possible explanation is that empathy could not inhibit psychological aggression because this form of violence is widespread and normalized among adolescents (Barter, 2009; González-Lozano et al., 2003; Lavoie et al., 2000; Muñoz-Rivas et al., 2007; Sears et al., 2006). From this perspective, when some behaviors are widely accepted, individuals are more likely not to think about and reflect on how their actions impact others.

On the other hand, high levels of cognitive empathy translated into lessened involvement in cyber-aggression over time, **supporting hypothesis 3b**; that is, those adolescents who showed a greater ability to understand others' emotions engaged less in cyber-aggressive behaviors six months later. To appreciate how this longitudinal factor protects cyber-aggression, we need to consider the particular characteristics of the online context: both parties are not required to be in physical proximity to each other. As such, the consequences for the victim are not immediately apparent. This makes it difficult for adolescents to comprehend the impact and damage that their behavior has caused (Stonard et



al., 2017; Van Ouytsel et al., 2017). Under these circumstances, cognitive empathy can play an important role, because those more skilled at understanding the emotions of others may have a greater awareness of how their actions affect others. No earlier studies have analyzed the longitudinal link between cognitive empathy and cyber-aggression among adolescent couples, yet our findings are consistent with research on cyberbullying; cognitive empathy predicted cyberbullying perpetration (Del Rey et al., 2016; Steffgen et al., 2012).

## 5. Conclusions

In general terms, results indicated that both forms of aggression presented a conflictual nature. However, considering the direct effects of anger and jealousy on psychological aggression, these face-to-face behaviors seem more emotional. In comparison, taking into account the effect of cognitive empathy and the lack of association between anger and jealousy on cyber-aggression, these cyber behaviors seem to be more rational and cooler in their nature. Moreover, affective empathy did not have an effect on cyber-aggression or psychological aggression, which allows us to conclude that dating aggression is not the result of adolescents' difficulty in connecting emotionally with their partners' feelings. **To summarize, this study reveals that cyber-aggression can be considered a subtype of psychological aggression in terms of the behaviors displayed, but, because of the differential roles of anger, empathy and jealousy, its context-specific nature should be considered. Further research is needed to explore this thesis.**

Furthermore, even though the prevalence of cyber-aggression was not as alarming as that of psychological aggression, we are faced with a form of violence that should be addressed in future studies. Specially from a prevention perspective, given the high rate of co-involvement between both forms observed in previous studies (Korchmaros et al., 2013; Schnurr et al., 2013; Zweig et al., 2013) and the negative consequences for the victims' health

(Sargent et al., 2016). We currently observe a significant gap in cyber dating violence prevention programs, as only two prevention programs have included online violence: Start Strong (Miller et al., 2015) and the adaptation of Safe Dates to an at-risk population entitled Moms and Teens for Safe Dates (Foshee et al., 2015). The results of this study provided evidence that should be considered in the design of dating violence prevention programs. First of all, curriculum-based programs should emphasize contents that address how to deal with conflicts when they appear in romantic relationships, the development of positive conflict resolution strategies, healthy communication skills and emotion regulation strategies (Centers for Disease Control, 2008). Additionally, these programs should also tackle contents related to specific predictors of cyber-aggression, such as cognitive empathy. In this respect, while dating violence prevention programs have usually focused on the modification of beliefs and attitudes that support violence, empathy is not commonly addressed as a part of these interventions (De la Rue et al., 2017). Dating violence prevention programs should include these new contents to prevent new forms of dating violence.

Finally, despite the strengths of this study, some limitations warrant mention. First, the cyber-aggression items included herein showed very low variability, which makes it difficult to perform other meaningful comparisons; for example, to identify whether the risk factors for cyber-aggression were the same for both boys and girls. Second, despite this study being one of the first to analyze this phenomenon from a longitudinal design approach, we find it necessary to continue exploring the associated risk and protective factors. Although significant predictors were observed, these factors only explained 5% of cyber-aggression variability as opposed to 23% for psychological aggression. Including other variables more specific to the peer and family context could produce an increase in explained variance. In a similar way, future studies could specifically explore the role of adolescents' beliefs and moral disengagement regarding cyber-dating aggression. Lastly, this study only covered two

waves, which makes it difficult to explore the between-variable mediating effects. Future studies that include a third wave would allow us to explore this point in question and gain better understanding of the processes behind partner aggression.

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### Highlights

- Cyber and psychological aggression presented a conflictual nature.
- Anger and jealousy predicted psychological aggression.
- Anger and jealousy were not associated to cyber aggression.
- Cognitive empathy predicted cyber aggression but not psychology aggression.
- Emotional and cognitive predictors affect both forms of violence differently.

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