



Stability of cyber dating victimization and psychological adjustment in adolescents: a short-term longitudinal study

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KEYWORDS

Longitudinal correlates
Cyber dating violence
Consequences

ABSTRACT

The effect of cyber dating victimization on adolescents' adjustment is understudied. The present study aimed to analyze the impact of cyber dating victimization on antisocial behavior, anxious depressive symptoms, and stress management according to their frequency and stability over time. In the study, 453 Spanish students aged between 12 and 19 years (52.5% girls) with sentimental experience completed surveys in a two-time longitudinal study six-month apart. Cyber dating victimization predicted a worse stress management. Regarding stability, four cyber dating victimization groups were found: non-cyber victims, past cyber victims, recent cyber victims, and stable cyber victims. The results indicated that recent cyber victims worsen their levels of antisocial behavior and anxious depressive symptoms coinciding with the moment of cyber dating victimization. Stable cyber victims showed worse scores in all the study variables over time. This study highlights the impact that cyber dating victimization has on adolescents' psychological adjustment. These results address the need to develop psychoeducational interventions aimed to prevent cyber dating victimization, favoring adolescents' healthy development and the improvement of the school life.

Estabilidad de la cibervictimización en la pareja y ajuste psicológico en adolescentes: un estudio longitudinal

PALABRAS CLAVE

Correlatos longitudinales
Ciberviolencia en la pareja
Consecuencias

RESUMEN

El efecto de la cibervictimización en la pareja sobre el ajuste adolescente ha sido poco estudiado. El presente estudio analizó el impacto de la frecuencia y estabilidad de la cibervictimización en el comportamiento antisocial, sintomatología ansiosa-depresiva y control del estrés de chicos y chicas adolescentes. En el estudio, 453 estudiantes españoles con edades comprendidas entre los 12 y los 19 años (52.5% chicas) con experiencia sentimental completaron los cuestionarios en un estudio longitudinal de dos tiempos separados por un intervalo de seis meses. La cibervictimización predijo un peor control del estrés. En cuanto a la estabilidad, se encontraron cuatro grupos de cibervictimización: no cibervíctimas, cibervíctimas pasadas, cibervíctimas recientes y cibervíctimas estables. Los resultados indicaron que las cibervíctimas recientes empeoraron sus niveles de comportamiento antisocial y sintomatología ansiosa-depresiva. Las cibervíctimas estables mostraron peores puntuaciones en todas las variables del estudio de manera mantenida en el tiempo. Este estudio resalta el impacto que la cibervictimización tiene en el ajuste psicológico de los jóvenes y plantea la necesidad de desarrollar intervenciones psicoeducativas dirigidas a prevenir la cibervictimización en la pareja.

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Cyber dating victimization is defined as the violence perpetrated electronically by a current or former romantic partner, sexual and non-sexual (Zweig et al., 2013; Zweig et al., 2014). Non-sexual cyber dating victimization refers to behaviors aimed at hurting one's partner directly, such as insults and threats, as well as those aimed at hurting them indirectly, by controlling and monitoring both them and their social networks (Reed et al., 2017). Sexual cyber dating victimization refers to pressure, threats, and coercion aimed at convincing one's partner to engage in sexual activities, such as sending or receiving multimedia content of a sexual nature, performing sexual acts online, or humiliating them by sending private pictures or videos to third parties (Dick et al., 2014). Available data indicate that adolescents are cyber dating victimized even from an early age (Cava et al., 2020), with prevalence rates varying between 14% and 73% (Stonard, 2019; Temple et al., 2016), being the non-sexual forms twice as common as its sexual counterpart (Reed et al., 2017; Zweig et al., 2013). Regarding gender differences, the results reported to date are inconsistent. Some studies seem to indicate that teenage girls are more often victimized (Barter et al., 2017; Dick et al., 2014), while others argue that both adolescent boys and girls are victimized to the same extent (Reed et al., 2017; Zweig et al., 2013), at least in terms of non-sexual cyber dating victimization.

Research about the consequences of cyber dating victimization is to date scarce. Most of the studies carried out in this field have been cross-sectional in nature, which makes it difficult to draw conclusions regarding cause-effect relationships. These studies showed that being a cyber dating victim could impact on the psychological adjustment of minors, in terms of behavioral and emotional problems that affect the mental and social well-being of adolescents (Zweig et al., 2014). Among these problems, studies have shown a correlation between suffering cyber dating victimization and reporting higher levels of substance abuse and delinquent behavior (Zweig et al., 2014), less frequent use of contraception methods (Dick et al., 2014), lower levels of self-esteem (Smith et al., 2018), more intense feelings of loneliness and depressive symptoms (Cava et al., 2020), and higher levels of hostility (Zweig et al., 2014). A recent correlational study (Cava et al., 2020) found that frequency of cyber dating victimization was associated with the intensity of the victim's emotional experience. Adolescent boys and girls who had been frequently cyber victimized by their romantic partners reported more feelings of loneliness and a more intensely depressive mood than occasional cyber victims or those who had never suffered cyber dating violence (Cava et al., 2020).

The few longitudinal studies available on cyber dating violence indicate that cyber victimization remains stable over time and that adolescent cyber victims are at greater risk of being victimized in the future. Cutbush et al. (2021) found that, among girls, cyber dating victimization remained stable during adolescence, whereas among boys it decreased in a linear way towards the end of that developmental period. Temple et al. (2016) found that involvement in cyber dating victimization predicted it one year later. Considering these results, one question worth asking is whether stability in involvement as a victim

may influence adolescents' behavioral and emotional adjustment. Ortega-Barón et al. (2020), in a longitudinal study across three time points, recently explored the effect of cyber dating victimization on adolescent quality of life (understood as physical and psychological well-being, social support and family relationships), considering the stability of victimization. The authors identified five groups of victims: new, ceased, intermittent, stable (those who reported being victimized in the three time points), and non-victims, with this last group containing a high proportion of boys. According to this study, non-victims (both boys and girls) reported good quality of life levels, whereas stable victims (1.9% of the total) reported the lowest levels. Overall, the results seem to indicate that stable victims have poorer adjustment levels than other types of victims.

The research carried out to date suggests that there are certain behavioral and emotional variables related to psychological adjustment that are associated with cyber dating victimization, at least from a correlational viewpoint (Zweig et al., 2014). Furthermore, Ortega-Barón et al. (2020) suggest that adolescents exposed to ongoing cyber dating victimization could be affected to a greater extent.

The present study

The present study aims to further this research path through a two-time longitudinal study (W1, W2) with a six-month interval between waves. In line with correlational studies (Cava et al., 2020; Zweig et al., 2014), this work analyzed whether cyber dating victimization and its stability impact on adolescent psychological adjustment in terms of antisocial behavior, anxious depressive symptoms, and stress management. Exploring these variables through longitudinal studies would provide greater insight into the impact of cyber dating victimization during adolescence.

The specific aims were: 1) To analyze the longitudinal association between cyber dating victimization and adolescents' psychological adjustment six months later; and 2) to determine whether the stability of cyber dating victimization is associated with changes in antisocial behavior, anxious depressive symptoms, and stress management over the course of a six-month period. For this second aim, stability was recognized based on involvement or non-involvement in cyber dating victimization in the two waves. As this was a two-time longitudinal study, four categories were considered: not involved, adolescents who stopped being cyber victims in W2 (past cyber victims), adolescents who started to be cyber victims in W2 (recent cyber victims), and adolescents who were steadily victimized. In an exploratory way, the third aim explore the role of gender on the involvement and impact of cyber dating victimization.

In relation to the first aim, we expected to find that cyber dating victimization would be associated with poorer psychological adjustment six months later (Cava et al., 2020; Ortega-Barón et al., 2020; Zweig et al., 2014). In relation to the second aim, we expected adolescents suffering stable or recent cyber dating victimization would report poorer levels of psychological adjustment across the six-month period (Ortega-Barón

et al., 2020; Temple et al., 2016). As for the third aim, a recent meta-analysis focused on the effect of gender on cyber dating violence in adult relationships concluded that gender was not associated with cyber victimization (Gilbar et al., 2022). The meta-analysis developed by Caridade & Braga (2020) on adolescents and young adults concluded in the same direction. However, these two works also indicated the need to further explore the role of gender. The first reason is the small number of available studies analyzing the relationship between gender and cyber dating victimization, which could favor biased results. The second reason is that the studies conducted with adolescents do not show conclusive results. Some studies indicated that girls are more cyber victimized than boys (Barter et al., 2017; Dick et al., 2014; Ortega-Barón et al., 2020); others found no differences (Reed et al., 2017; Zweig et al., 2013) or greater victimization in boys (Cava et al., 2020). One possible explanation for these differences lies in the particular form of cyber dating victimization under study. According to this, we could hypothesize that if the instrument included severe forms, such as direct aggressions and public ones, girls would be more victimized (Muñoz-Fernández & Sánchez-Jiménez, 2020). Regarding gender differences on the impact of cyber dating victimization, the available literature is scarce. Studies on face-to-face dating violence indicate that the consequences are more severe in girls (Fernández-González et al., 2014; Joppa, 2020), but the data on cyber teen dating violence is limited and up until now, it has not yielded any conclusive results (Ortega-Barón et al., 2020), so it is necessary to advance in this area.

Method

Participants

Participants were students from six public schools randomly selected in Seville and Cordoba (Andalusia, Spain), with a medium-level sociocultural status. Of the 1,185 students who participated in W1, 946 also participated in W2. To respond to the aims of the present study, we selected only those adolescents who: 1) at W1 were in or had been engaged in a romantic relationship in the past; and 2) at W2 were in or had been engaged in a romantic relationship in the past six months. These two criteria were selected to ensure that all participants had had at least one romantic relationship, and to guarantee that the information reported in W2 did not refer to a sentimental experience prior to W1.

The final sample comprised 453 students (52.5% girls) aged between 12 and 19 years ($M_{w1} = 15.08$, $SD_{w1} = 1.41$), with a response ratio of 82.34%. Of these, 47.5% were in the first two years of compulsory secondary education ($n = 215$) and 52.5% being in the second two years ($n = 238$). In terms of sexual orientation, 94.5% considered themselves to be heterosexual ($n = 428$), 1.50% homosexual ($n = 7$), 1.5% bisexual ($n = 7$), 0.4% pansexual ($n = 2$), 0.2% demisexual ($n = 1$), and 1.8% said they did not know yet ($n = 8$). The duration (in weeks) of their current romantic relationship was 25.78 ($SD = 32.08$) in W1 and 27.74 ($SD = 33.25$) in W2. The duration (in weeks) of their last

past romantic relationship was 11.98 ($SD = 14.65$) in W1 and 13.80 ($SD = 21.78$) in W2.

Measures

Sociodemographic variables. Participants were asked about their age, gender, and sexual orientation.

Romantic relationship status. Relationship status was measured using an item adapted from the Dating Questionnaire (Connolly et al., 2004), in which participants were asked to state their romantic current situation and the duration in weeks of the relationships.

Cyber dating victimization. The Spanish translation and adaptation (Sánchez-Jiménez et al., 2018) of the non-sexual cyber scale of the Cyber Dating Abuse Survey (Zweig et al., 2013) was used to measure cyber dating victimization. The scale comprises 9 items that measure the frequency with which participants were cyber victimized by their romantic partner, including behaviors as posting online personal information (*Publishing humiliating photos or images of your partner online*), or invasion of privacy (*Using your partner's social media account without permission*). Items were rated on a 5-point Likert-type scale (0 = *Never*; 4 = *Always*). The internal consistency of the scale was $\alpha = .79$ (W1) and $\alpha = .73$ (W2).

Externalizing and internalizing problems. The translated and adapted version of the antisocial and anxious-depressed subscales of the Youth Self-Report (YSR; Achenbach & Rescorla, 2001) was used to measure externalizing and internalizing problems. This instrument measures behavioral (antisocial behavior, 15 items) and emotional problems (anxious depressive symptoms, 12 items) on a 3-point Likert-type scale (0 = *Not at all true*; 2 = *Completely true*). Antisocial behavior subscale includes social rule breaking and maladaptive behavior (*I break rules at home, school, or elsewhere*). The anxious depressive symptoms subscale includes intense feelings of fear, shame, and sadness, as well as self-demanding behavior (*I feel that I have to be perfect*). The internal consistency was $\omega = .71$ (W1) and $.75$ (W2) for antisocial behavior, and $\omega = .77$ (W1) and $.79$ (W2) for anxious depressive symptoms. This instrument has been validated in the Spanish adolescent population (Viejo, 2012).

Stress management. Stress management was measured using the adapted version, validated with Spanish adolescents (Sánchez-Jiménez et al., 2018), of the Stress Management subscale of the Emotional Quotient Inventory Youth Version (EQ-i:YV) developed by Bar-On & Parker (2000). This subscale assesses adolescents' ability to tolerate stress and manage impulsiveness or anger through 8 items rated on a 5-point Likert-type scale (1 = *Never*; 5 = *Always*). An example of an item is *When I get angry, I act without thinking*. The internal consistency was $\alpha = .83$ (W1) and $\alpha = .85$ (W2).

Procedure

The study was approved by the Andalucía Ethical Coordination Committee for Biomedical Research (0575-N-14). Participating schools were selected following a random cluster

sampling procedure. The regional education authority provided a random list of schools in Andalusia (Southern Spain). The research team then explained the nature and aim of the study to these schools, along with the participation conditions, and invited them to take part. The principles of the schools willing to take part informed the families about the project, its aims, and the research conditions, and asked for their informed consent. Once consent had been obtained from the schools and families, the research team gathered the first wave of data through paper-based self-report questionnaires, after first reassuring students of the confidential nature of their responses. Participation was voluntary and students could withdraw at any moment. The second wave of data collection took place six months later. Both waves were carried out in class time in the presence of the students' teacher. To match the data from both time points, each student was assigned a code by the school, which was the same in both data collection waves.

Data analysis

Analyses were conducted in different steps. In a first step, Little's MCAR test and comparative analyses (chi-squared test, Student's t-test, and univariate general linear models) were used to analyze missing data. In a second step, T-Test was used to compare the means of gender and age in all the study variables. To do that, age was dichotomized following the criterion proposed by Steinberg (2014), differentiating between early adolescence (12 to 13.99 years; 27.2%) and middle adolescence (14 to 18.99 years; 72.8%).

Later, we estimated the required sample size with G-Power to conduct multiple linear regression models (Gatsonis & Sampson, 1989). Considering a power of .95, a medium effect size of .30 and four predictors, the required sample size was 53. Considering small effect size of .10, the total required sample size was 177. Therefore, the final sample ($n = 453$) was sufficient to run multiple linear regressions. Also, due to the high non-normality of the cyber dating victimization scale distribution, the best solution was to perform a reverse conversion of this variable ($1/\text{Mean Variable}$), as it is the one that best attenuates the bias (Rodríguez & Ruiz, 2008).

To respond to the first aim of the study, namely, to analyze the longitudinal association between frequency of cyber dating victimization in W1 and adolescent adjustment in W2, three multiple linear regressions were performed using the enter method. For each regression model, the baseline of the dependent variable (scores for antisocial behavior, anxious depressive symptoms, and stress management in W1) was controlled for in the first block, along with gender and age (early vs. middle adolescence). The cyber dating victimization in W1 variable was introduced in the second block.

To respond to the second aim, to determine whether cyber dating victimization stability was associated with changes in adolescent psychological adjustment, groups of cyber victims were created following the criteria used in previous studies (Hellfeldt et al., 2016; Ortega-Barón et al., 2020; Smith et al., 2004). First, the cyber dating victimization items were

dichotomized by creating a cyber victimization variable for W1 and W2 (0 = no cyber victimization; 1 = cyber victimization when the sum of the items was equal to or higher than one). Based on these dichotomous cyber dating victimization variables in W1 and W2, a new variable was calculated for the cyber victim groups. Four different types of cyber victim were identified: 1) non-cyber victims (participants who had never been cyber victims at either of the two time points); 2) past cyber victims (participants who reported a situation of cyber victimization in W1 but not in W2); 3) recent cyber victims (participants who did not report cyber victimization in W1 but did in W2); and 4) stable cyber victims (participants who claimed to experience cyber victimization at both time points). The four groups were created based on the responses given by participants with valid values at both time points, with seven cases being excluded for not reporting data on cyber dating victimization during one of the two waves. Descriptive analyses were carried out to determine the percentage and number of adolescents in each cyber victimization stability group. To analyze the effect of the stability of cyber dating victimization on the evolution of adolescents' psychological adjustment between W1 and W2, three mixed ANOVAs – one for each psychological adjustment variable – were performed using the partial eta-squared statistic to calculate effect size. The variables stability of cyber dating victimization and gender were included as inter-subject effects. The variables antisocial behavior, anxious depressive symptoms, and stress management in W1 and W2 were included as intra-subject variables. All the analyses were carried out using SPSS 26.

Results

Attrition and missing data analysis

The attrition rate was 20.17%. In W2, 239 students did not participate for different reasons: 1) they did not attend the school on the date of data collection; 2) they were already finished school, particularly those in the fourth year of Secondary Education; and 3) the code used to pair participants' questionnaires was incomplete or illegible. These questionnaires could not be recovered because the W2 was carried out at the end of the school year. Regarding the analysis of the missing data, Little's MCAR test showed that missing data were not completely random ($\chi^2(146) = 253.46, p < .001$). Going deeper, there was no difference in most of the study variables among the students who participated in both waves and those who abandoned. However, differences were found in romantic relationship status ($\chi^2(1, 928) = 8.12, p = .004, \eta^2 = .08$), $t(323.70)$ and externalizing behaviors (antisocial behavior; $t(269.76)$). The students who dropped out had more sentimental experiences, were older and had higher externalizing behaviors scores than the participants who participated in W1 and W2. The effect size (Cohen's d) was small in the case of age and externalizing behaviors. Regarding antisocial behavior, there were no differences between the students who dropped out and those who participated in both waves ($F(1, 1050), p = .061, \eta^2 = .003$) only by age

($F(1, 1050), p < .001, \eta^2 = .06$). Due to these results and the subsequent filtering, we concluded that the results obtained in this study were not influenced by sample attrition.

Are there differences in cyber dating victimization and psychological adjustment by gender and age?

Gender and age comparisons (see Table 1) revealed some significant differences. Girls were victimized more frequently than boys in both W1 and W2. No age differences were observed. Regarding psychological adjustment variables, boys reported higher levels of antisocial behavior in W1, whereas girls reported higher levels of anxious depressive symptoms and poorer stress management in both W1 and W2. In terms of age, in both W1 and W2, older adolescents scored higher for anti-

social behavior, whereas younger adolescents reported more anxious depressive symptoms. No age differences were observed in terms of stress management.

Does cyber dating victimization predict poorer psychological adjustment?

The multiple linear regression models for antisocial behavior ($F_{4,57} = 12.14, p < .001$), anxious depressive symptoms ($F_{4,57} = 24.65, p < .001$), and stress management ($F_{4,63} = 14.70, p < .001$) were significant (see Table 2). The results indicated that antisocial behavior, anxious depressive symptoms, and stress management levels in W1 predicted the levels of these same variables respectively in W2. Age correlated positively with antisocial behavior, whereas gender correlated positively

Table 1
Gender and age differences in the study variables

		Boys		Girls		<i>t</i>	<i>p</i>	Cohen's <i>d</i>	Early adolescence		Middle adolescence		<i>t</i>	<i>p</i>	Cohen's <i>d</i>
		<i>N</i>	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>				<i>N</i>	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>			
Cyber dating victimization	W1	211	0.02 (.07)	235	0.07 (.25)	-2.99	.003	.27	122	0.05 (.29)	325	0.04 (.14)	0.49	.627	-.05
	W2	214	0.03 (.16)	235	0.07 (.19)	-2.12	.034	.20	123	0.04 (.14)	327	0.05 (.18)	-0.89	.375	.09
Antisocial behavior	W1	182	0.36 (.26)	210	0.29 (.22)	2.98	.003	-.30	99	0.27 (.26)	294	0.34 (.23)	-2.52	.012	.29
	W2	199	0.36 (.29)	230	0.31 (.26)	1.72	.087	-.17	114	0.26 (.26)	315	0.36 (.27)	-3.61	.000	.40
Anxious depressive symptoms	W1	182	0.47 (.32)	209	0.65 (.39)	-5.02	.000	.50	98	0.64 (.43)	294	0.54 (.34)	2.02	.045	-.26
	W2	199	0.42 (.36)	229	0.63 (.37)	-5.73	.000	.56	113	0.59 (.44)	315	0.51 (.35)	1.7	.091	-.21
Stress management	W1	203	2.26 (.74)	235	2.44 (.83)	-2.38	.018	.23	119	2.47 (.85)	320	2.33 (.78)	1.72	.087	-.18
	W2	207	2.25 (.88)	237	2.48 (.85)	-2.86	.004	.27	120	2.41 (.87)	325	2.37 (.87)	0.48	.634	-.05

Note. In bold: direction of a statistically significant comparison of means

Table 2
Multiple linear regression models for psychological adjustment

	<i>B</i>	β	<i>SE</i>	<i>R</i> ²	ΔR ²
Antisocial behavior W2				.46	
Antisocial behavior W1	.63**	.67	.10		
Gender ^a	.09	.16	.06		
Age ^b	.14*	.22	.06		
Cyber dating victimization W1	-.01	-.06	.01		.003
Anxious depressive symptoms W2				.63	
Anxious depressive symptoms W1	.67**	.72	.08		
Gender ^a	.17*	.20	.07		
Age ^b	-.06	-.06	.08		
Cyber dating victimization W1	.001	.01	.01		.000
Stress management W2				.45	
Stress management W1	.79**	.69	.11		
Gender ^a	.09	.05	.17		
Age ^b	-.06	-.03	.20		
Cyber dating victimization W1	.05*	.19	.03		.04

Note. ^a 1 = Boys, 2 = Girls. ^b 0 = Early adolescence, 1 = Middle adolescence. * $p < .05$. ** $p < .001$.

Table 3

Frequency of the stability of cyber dating victimization according to gender and age

	N (<i>f</i>)	Gender		Age	
		Boys (<i>f</i>)	Girls (<i>f</i>)	Early adolescence (<i>f</i>)	Middle adolescence (<i>f</i>)
Cyber dating victims W1	68 (15.2%)	20 (29.4%)	48 (70.6%)	14 (20.6%)	54 (79.4%)
Cyber dating victims W2	72 (16%)	19 (26.4%)	53 (73.6%)	13 (18.1%)	59 (81.9%)
Non-cyber victims	338 (75.8%)	178 (52.8%)	159 (47.2%)	100 (29.7%)	237 (70.3%)
Past cyber victims	37 (8.3%)	14 (37.8%)	23 (62.2%)	9 (24.3%)	28 (75.7%)
Recent cyber victims	40 (9%)	13 (33.3%)	26 (66.7%)	8 (20%)	32 (80%)
Stable cyber victims	31 (7%)	6 (19.4%)	25 (80.6%)	5 (16.1%)	26 (83.9%)

f = frequency

Figure 1

Trajectory of antisocial behavior according to the stability of cyber dating victimization

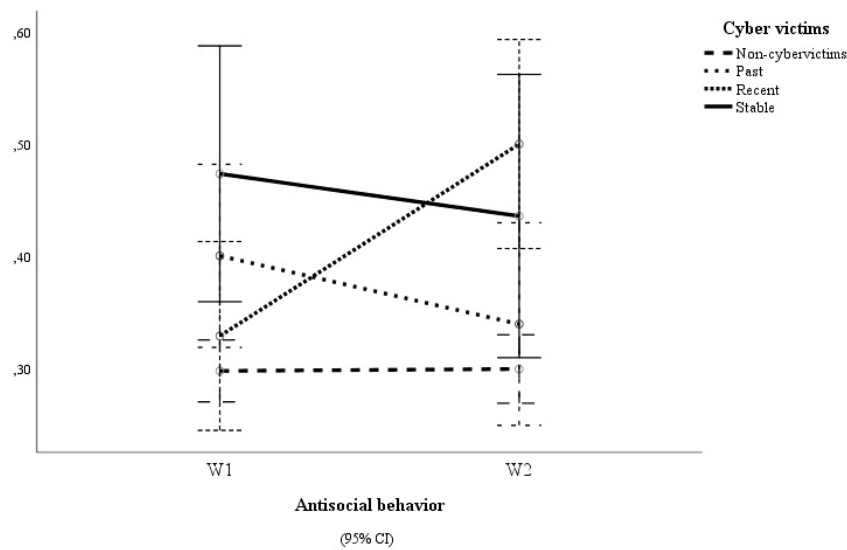
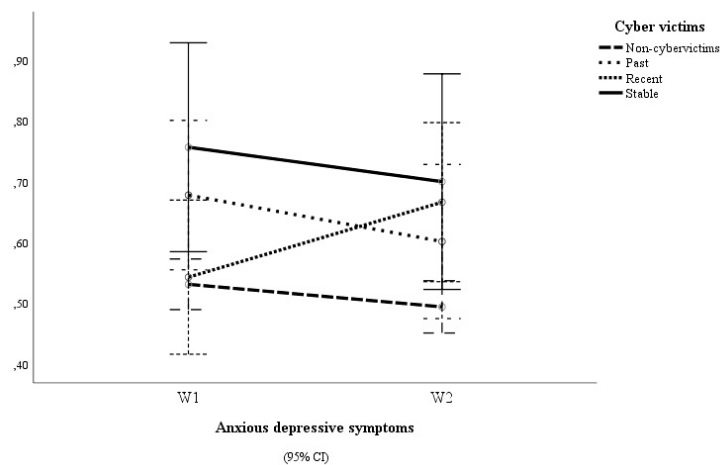


Figure 2

Trajectory of anxious depressive symptoms according to the stability of cyber dating victimization



with anxious depressive symptoms: participants in middle adolescence increased antisocial behavior, and girls increased levels of anxious depressive symptoms in W2. Cyber dating victimization in W1 was not associated with psychological adjustment in W2, except in the situation of stress management. In this case, being cyber dating victimized predicted worse stress management six months later ($p = .040$).

Is the stability of cyber dating victimization associated with changes in psychological adjustment?

The prevalence of the cyber victims' groups (Table 3) established in accordance with the stability of cyber dating victimization revealed that most of the respondents (75.8%) had not suffered cyber dating victimization at any point; 8.3% were cyber victims in W1 but not W2; and a similar percentage (9%) had recently become cyber victims, only reporting involvement in cyber dating victimization in W2. Finally, 7% of participants were in an ongoing situation of cyber victimization, being cyber victims in both W1 and W2. The groups were not balanced in terms of gender ($\chi^2(3, 444) = 18.19, p < .001$): there was a higher percentage of boys in the non-cyber victims' group and a higher percentage of girls in the stable cyber victims' group. No gender differences were observed in the past and recent cyber victims' groups. No age differences were found across cyber dating victimization stability groups ($\chi^2(3, 445) = 4.13, p = .248$).

The mixed ANOVA analyses determined whether changes in psychological adjustment were influenced by the stability of cyber dating victimization over time. Age was not included in the analyses since no differences had been found in it in accordance with stability.

The inter-subject effects showed significant differences in antisocial behavior ($F(3,370) = 5.06, p = .002, \eta^2 = .04$), anxious depressive symptoms ($F(3,369) = 3.79, p = .011, \eta^2 = .03$), and stress management ($F(3,419) = 3.6, p = .014, \eta^2 = .03$) in accordance with the stability of cyber dating victimization. For antisocial behavior, the estimated marginal means of recent ($M = 0.42$) and stable cyber victims ($M = 0.46$) were significantly higher than that of non-cyber victims ($M = 0.30$). For anxious depressive symptoms, the estimated marginal mean of stable cyber victims ($M = 0.73$) was higher than that of non-cyber victims ($M = 0.51$), with the difference being marginally significant ($p = .062$). Finally, for stress management, the estimated marginal mean of stable cyber victims ($M = 2.77$) was higher than that of non-cyber victims ($M = 2.31$), with the difference again being marginally significant ($p = .055$).

In terms of gender, significant differences were observed in antisocial behavior ($F(1,370) = 5.21, p = .023, \eta^2 = .01$) and anxious depressive symptoms ($F(1,369) = 5.67, p = .018, \eta^2 = .02$), although not in stress management ($F(1,419) = .12, p = .727, \eta^2 = .00$). Whereas the marginal mean of boys ($M = 0.43$) was statistically higher than that of girls ($M = 0.34$) for antisocial behavior, for anxious depressive symptoms the marginal mean of girls ($M = 0.69$) was statistically higher than that of boys ($M = 0.55$).

The intra-subject effect tests revealed significant interactions between the cyber dating victimization stability groups and changes in antisocial behavior ($GG-\epsilon_{3,370} = 7.91, p < .001, \eta^2 = .06$) and anxious depressive symptoms ($GG-\epsilon_{3,369} = 3.22, p = .023, \eta^2 = .03$) over a six-month period. In the case of stress management, this interaction was marginally significant ($GG-\epsilon_{3,419} = 2.33, p = .074, \eta^2 = .02$). Specifically, the evolution of antisocial behavior was different in the recent and non-cyber victims' groups. Although both groups started with similar levels in W1, antisocial behavior levels among recent cyber victims increased in W2, whereas those of non-cyber victims remained stable (see Figure 1). In W1, the anxious depressive symptoms levels of stable cyber victims were higher than those of non-cyber victims. Although these differences were not as pronounced in W2, the stable cyber victims' group continued to score higher. Also, in W2, the anxious depressive symptoms levels of recent cyber victims were higher than in W1, with the difference between them and their non-cyber victims' counterparts being marginally significant (See Figure 2).

The interaction between the cyber victim groups and gender was marginally significant only for antisocial behavior ($GG-\epsilon_{3,370} = 2.45, p = .063, \eta^2 = .02$). Whereas in W1 the boys in all groups had similar levels of antisocial behavior, in W2 recent male cyber victims scored higher than their non-cyber victims' counterparts. For girls, antisocial behavior levels in W1 were higher among stable cyber victims than among both recent and non-cyber victims. In W2, the difference between stable and non-cyber victims remained, although scores for recent and stable cyber victims were more similar.

Discussion

This study aimed to explore the impact of cyber dating victimization on the psychological adjustment of Spanish adolescents. As regards the first aim of the present study, i.e., to analyze the longitudinal association between cyber dating victimization and the psychological adjustment of adolescents, the results revealed that frequency of cyber victimization in W1 did not affect the levels of antisocial behavior and anxious depressive symptoms six months later. However, an increased frequency of cyber dating victimization did predict worse stress management. These results align with correlational studies (Zweig et al., 2014) where cyber dating victims were more irritable, but are contrary to other longitudinal studies that have not found these associations over time. For example, Lu et al. (2018) found a cross-sectional association between cyber dating victimization and mental health outcomes (anxiety, depression, and post-traumatic stress), but not longitudinal associations. According to these authors, cyber dating victimization does not translate into worsening externalizing and internalizing problems months after the cyber aggression has occurred. In other words, it might be that cyber dating victimization affects adolescents' behavioral and emotional adjustment now or even during a short time afterwards, but this effect is not sustained over time. Our results are partially similar to Lu et al. (2018), indicating that the intensity of cyber dating victimization is

relevant for some variables of adolescent adjustment while, in others, it would be necessary to look closely at other aspects such as its stability. Future research should seek to corroborate the results found here, analyzing more specifically the impact of cyber dating victimization on different variables of adolescent adjustment.

In this line, the second aim was to assess the impact of cyber victimization stability on changes in cyber victims' social and emotional adjustment. The mixed ANOVA analyses reported that stable and recent cyber victims presented higher levels of anxious depressive symptoms than non-cyber victims. The recent cyber victims group showed higher levels of antisocial behavior than non-cyber victims. Adolescents in the stable group also had higher initial levels in these variables than their counterparts in other groups, perhaps because they had already been involved in cyber victimization prior to the study. In contrast, whereas the recent cyber victims' group started in W1 with levels like those of non cyber victims, by W2 their scores had begun to approach those of stable cyber victims. These findings suggest that starting to suffer cyber violence at the hands of a romantic partner seems to be stressful enough to have an immediate negative effect on adolescent adjustment. These results confirm the correlates between cyber dating victimization and a wide range of problems reported in previous cross-sectional studies (Cava et al., 2020; Zweig et al., 2014) as well as corroborated by studies on face-to-face dating violence, including antisocial behavior, alcohol and drug abuse, depressive symptoms, and suicide ideation (Banyard & Cross, 2008; Exner-Cortens et al., 2012; Johnson et al., 2014; Reyes et al., 2018; Roberts et al., 2003). Nevertheless, our results should be interpreted with some caution, as the cyber victimization groups were created according to the absence or presence of victimization without considering the frequency of involvement. It is important to continue exploring this question through longitudinal studies with longer intervals between data collection waves and more participants, especially since there is currently a lack of studies in the European context that distinguish between different types of cyber dating victims.

The third aim advanced in understanding the role of gender in cyber dating victimization. Although results should be taken into caution because of the small effect size of some results, girls would be at greater risk of suffering non-sexual cyber dating victimization and in a stable manner. These results complement those found in previous research where girls were more cyber victimized in the most severe non-sexual forms such as insults, threats, and public humiliation (Muñoz-Fernández et al., 2020) and, at the same time, they add information regarding stability (Ortega-Barón et al., 2020). Nevertheless, despite these initial differences, the impact of cyber dating victimization on adjustment affects boys and girls similarly (Cava et al., 2020) which would indicate that psychological maladjustment caused by cyber dating victimization occurs regardless of gender.

Finally, in line with previous studies (Van Ouytsel et al., 2016), no age differences in prevalence or stability were found. This data indicates that in early adolescence, boys and girls are already cyber victimized in their first sentimental relations-

hips, even in a stable way (Borrajo et al., 2015). Future research should delve into the characteristics and evolution of cyber dating victimization through adolescence and identify its risk and protective factors that could be incorporated into the dating violence prevention programs.

Limitations

Some limitations should be taken into consideration. First, the study followed a two-time longitudinal design with a six-month interval between data collection waves. Consequently, the data are applicable in the short-medium term. A third data collection wave would be required to determine whether the effects found are sustained in the medium-long term, as well as to identify other victim groups, such as intermittent cyber-victims. Second, non-sexual cyber dating victimization can be considered a multidimensional construct (Rodríguez-de Arriba et al., 2021), encompassing different types of victimization (verbal, emotional, control or relational victimization). To ensure a greater degree of precision when exploring the impact of this phenomenon on adolescent health, we would need to analyze the specific consequences of each type of cyber dating victimization. Finally, another limitation is linked to the sample size. The percentage of those belonging to each cyber dating victimization group was low. Having a larger sample would therefore enable the effects found to be confirmed.

Implications

This study is one of the first longitudinal studies that focus on the impact of cyber dating victimization on adolescents, considering different groups of cyber victims. The findings have important implications for intervention since they highlight the need to incorporate content related to romantic competencies (Davila et al., 2009) and intervene at an early age to prevent this phenomenon, to which some adolescents are exposed in an ongoing, stable manner. This information is especially relevant since these adolescents show greater resistance to change (Mora-Merchán et al., 2021). Adolescent boys and girls need to learn to identify aggressive behaviors in their romantic relationships, not only in relation to face-to-face aggression, but also in terms of abuse perpetrated using technological means. The results reported here enable us to conclude that even when violence is perpetrated without physical contact, through a screen, it has consequences for those involved. Preventive psychoeducational programs that include content linked to the online medium are still scarce (Galende et al., 2020), even though they could help adolescents avoid cyber dating victimization and/or mitigate its impact. Moreover, said impact may not be immediately apparent, but may manifest months after the aggression or in those exposed to prolonged situations of abuse.

The present study also underscores the fact that the consequences of cyber dating victimization compromise the development and mental health of young victims. It is therefore necessary to design interventions for the target population (adolescents already involved in violence), since said interventions are still

very scarce in programs seeking to prevent face-to-face dating violence (Sánchez-Jiménez et al., 2021) and totally non-existent in relation to cyber dating violence (Galende et al., 2020).

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Conflict of interest

The authors have no conflicts of interest to declare.

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