

# Cyberbullying in schools: mobile phone and internet effect in adolescents

*Cyberbullying escolar: incidencia del teléfono móvil e internet en adolescentes*

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## Abstract

The study objective is focusing on the different cyberbullying forms (mobile phone and internet), and how these are influenced by the personal and scholar variables. The final sample was composed for a total of 749 students from the Secondary Education, between 12 and 15 years old ( $M = 13.77$  years;  $DT = 1.12$ ). To collect information, we use a survey “ad hoc” (data about social factors at school) and the Adolescent Victimization through Mobile Phone and Internet Scale (CYBVIC) (Buelga, Cava & Musitu, 2012). In spite of obtaining a similar percentage with the first descriptive analysis, there is a soft prevalence of bullying via mobile phone (18.6%) over bullying via internet (12%) in teenagers. Likewise, among the different behaviours to assault someone, the denigration and the intimacy violation excel in both case, mobile phones and internet. Furthermore, data shows us that teenagers with more predispositions to suffer cyberbullying via mobile phone and internet are girls between thirteen and fifteen years old, who failed some subject and with an unstructured family.

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## Resumen

El objetivo del estudio está enfocado a conocer la prevalencia de las formas de cyberbullying (teléfono móvil e internet) y cómo estas se ven influenciadas por las variables personales y escolares. La muestra final estuvo formada por un total de 749 alumnos de Educación Secundaria Obligatoria, con edades comprendidas entre los 12 y los 15 años ( $M = 13.77$  años;  $DT = 1.12$ ). Para la recogida de información se utiliza un cuestionario “ad hoc” (datos socioescolares) y la escala de Victimización entre Adolescentes a través del Teléfono Móvil y de Internet (CYBVIC) (Buelga, Cava & Musitu, 2012). De un primer análisis descriptivo, se obtienen porcentajes similares pero con ligera prevalencia en los actos de acoso a través del teléfono móvil (18.6%) sobre internet (12%) de los adolescentes. Asimismo, entre las formas de comportamiento que implican agresiones, tanto a través del teléfono móvil e internet, despuntan la denigración y la violación de la intimidad. Además, los datos indican que los adolescentes con mayor predisposición a sufrir cyberbullying a través del teléfono móvil e internet serían chicas entre trece y quince años, con alguna materia suspensa y que viven en familias desestructuradas.

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The constant social changes over the last years, the increase of the social conflict, the impact of horrible events (suicides), as well as the effect on the personal and relational attitudes, highlight the need to consider the

cyberbullying phenomenon in the educational agenda. The dangers derived from this, affect all citizens and it is higher in adolescence period (Amado, Matos, Pessoa, & Jäger, 2009; Del-Rey, Casas, & Ortega, 2012;

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Garaigordobil, 2011; Livingstone, Haddon, Görzig, & Ólafsson, 2011). Over the last decades, is also observable a new digital divide between those who have a good perception and use of the information and communication technology and those who hasn't (Duart, 2010). This one tends to grow among certain social collectives, especially in teenagers.

Even we emphasis in the fact of the information and communication technology (especially mobile phone and internet) are destined to improve human relations, is also true, that the use of these technologies are not always appropriate. There is a paradox in that, in spite of the continuous attribution to the potential social background, is contradictory to recognize them as a problem from the public health (David-Ferdon, & Feldman, 2007; Juvonen, & Gross, 2008). However, is impossible as well as useless to define completely his uses, especially at the present time, we are total dependent on it and the use is increasing.

Therefore, that the starting point, is logic to recognize cyberbullying, as an aggressive and intentional behaviour. This procedure will be repeated frequently over the time individually or in group, using electronic devices against a victim who cannot protect herself (Belsey, 2005; Smith, Mahdavi, Carvalho, Fisher, Russell, & Tippett, 2008). In spite of this, bullying is the biggest component of cyberbullying (Campbell, 2005) there are nuances that make it more pernicious. The guarantee of the anonymity and the overcrowding of the aggression have to be underlined, they involve an increase in the defenselessness of the victim (Hernández, & Solano, 2007). However, the construction of cyberbullying is complex and difficult to operationalize (Garaigordobil, 2013), but the behaviour toward it, can be pooled in: verbally and in writing (e-mails, chats, blogs, websites), visual (share, publish and send photos and videos), impersonation (stole or reveal personal information), and exclusion (isolate someone deliberately) (Nocentini, *et al.*, 2010).

The cyberbullying is the upgraded bullying phenomenon between equals, biased by the continuous impact of the new information and communication technology in adolescents behaviour and interpersonal relationship (Calmaestra, 2011; Mora-Merchan, 2008). Probably, many of bullying situations use these new technologies (ITC) to convert bullying in a new phenomenon called cyberbullying (Smith, Mahdavi, Carvalhi, & Tippett, 2006). This means, the execution of aggressive and insulting conduct against someone via interactive technology -mobile phone and internet- basically (Aviles, 2009; Buelga, Cava, & Musitu, 2010; Ortega, Calmaestra, & Mora-Merchan, 2008).

Focusing on this high concern about cyberbullying in educational centers, we have to indicate relational aspects about this type of violence that make it more dangerous. For example; the feeling of being trapped forever, the aggressor's invisibility, the defenseless of the victim, the massive dissemination of cyber- aggression and especially by the scale of the scenario (Buelga, Cava, & Musitu, 2012; Cerezo-Ramírez, 2012; McKenna, 2007). The cyberbullying issue is the concealment of it. The main reasons for that are: the fear to see the access of the ICT limited, the shame in front of their parents because of their behaviour, and above all, the need to arrange their own problems by themselves (Hoff, & Mitchell, 2009; Juvonen, & Gross, 2008; Kowalski, & Limber, 2007; Li, 2010). On the other hand, Willard (2006, 2007) identify as aggressive behaviour via information and communication technology: harassment, vilification, identity theft, intimacy violation, social exclusion and cyber persecution. Consequently, is difficult to detect and prove it. Cyberbullying despite being sometimes imperceptible, it can be able to embitter many adolescents life.

In this scenario, the social and educational concern about the inappropriate and excessive use of the internet between adolescents is increase (Blaszczynsky, 2006; Viñas, 2009). Differences studies evince the relevance of the phenomenon and the fast growth, the

percentage range between a 10% and a 30% (Buelga, Cava, & Musitu, 2010; Cerezo-Ramirez, 2009; Garaigordobil, & Oñederra, 2008; Estévez, Villardón, Calvete, Padilla, & Orue, 2010; Sánchez-Lacasa, & Cerezo, 2010; Perren, Dooley, Shaw, & Cross, 2010). Therefore, the investigations realised only allowed to obtain a characterisation of the problem, they distinguish it from other types of scholar violence.

In spite of taking into account a big portion of youth with a peaceful spirit, to promote sensitization, action, training and monitoring programs are needed to introduce positive forms of cohabitation (Gairín, Armengol, & Silva, 2013). In this study we consider cyberbullying according to the way we make it. So we difference it between mobile phone cyberbullying (harassment, vilification, intimacy violation and social exclusion) and cyberbullying via internet (harassment, vilification, intimacy violation, social exclusion and identity theft). Therefore, the objective of this study is to focus on the prevalence of cyberbullying forms (mobile phone and internet) and how these are impacted by personal (age, sex and family structure) and by scholar variability (location of the educational center, academic year and academic achievement).

## Method

### *Participants*

The population size is approximately 88529 students (Xunta de Galicia, 2014). Using STATS, we would have an adequate sample size for this population (95% confidence, 5% error and  $p = 0.5$  or 50%) is 383. The final sample was formed for 749 pupils belonging to 10 different secondary educational centers (47% male; 53% female), and aged between 12 and 15 years old ( $M = 13.8$ ;  $SD = 1.12$ ). Most participants live in structured families (73.8%), has always approved (63.2%), and studies in urban centers (55.3%). In addition, it presents a balanced distribution in the four academic courses: first-year Compulsory Secondary Education -CSE- (25.5%), second-

year CSE (25.8%), third-year CSE (24.2%) and fourth-year CSE (24.6%).

### *Instruments*

To collect information, we use a survey (data about social factors at the school) and the Adolescent Victimization through Mobile Phone and Internet Scale (CYBVIC) (Buelga, Cava, & Musitu, 2012). The first tool, collects identification data (personal and educational center data) and the second instrument has 18 items to measure the range of response (*never, seldom, often and always*), victimization by mobile phone (8 items) and by internet (10 items). Originally, the internal consistency (Cronbach's alpha), was .92 (.76 for the mobile phone factor and .84 for internet).

### *Procedure*

The Research ethics committees of our institution approved the study. After selecting the sample and questionnaires, we contact the management team and the center counselors to explain the purpose and scope of the investigation, we also suggest their volunteer participation. When we have the consent of the center management, we hold an information meeting to let them know the investigation, to ensure the anonymity and to transfer it to the educational community. Teachers participation is volunteer and unpaid. At the same time, we inform parents about the research and we also ask their consent for their children participation in this research.

### *Data analysis*

We used quantitative, descriptive, inferential and confirmatory analysis techniques dealing with the information collected, through SPSS 22 program. Firstly, we analysed the technical characteristics of the measuring instrument (CYBVIC): exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and the reliability analysis (Cronbach's Alpha). Secondly, we did the descriptive and inferential analysis: Frequency and percentage analysis, statistical average and standard deviation, analysis of variance (ANOVA), and multiple comparisons retrospectively (Scheffé's method).

## Results

### *Factor structure and reliability of the survey CYBVIC*

Prior to factor extraction, the Kaiser-Meyer-Olkin (KMO) analysis resulted in an index of 0.892 and a significant BTS (Bartlett’s Test of Sphericity)  $\chi^2_{(153)} = 4377.396; p < .001$ . Based on the principal component analysis via varimax rotation (Exploratory Factor Analysis), results reveal that there is a

factorial structure formed by two main factors or components that together, explain 50.35% of the total variance. Then, by AMOS program, we confirm the scale two-dimensional, comparing our two-factors adjustment model (2FM) with the obtained by Buelga, Cava, & Musitu (2012). The results (table 1) show a lower adjustment than the original, but an appropriate goodness of fit index ( $\chi^2/df < 3; CFI \geq .90; RMSEA \leq .05$ ).

Table 1. Goodness of fit index of two-models [Original Model (O2FM) and Evaluated Model (E2FM)] of the CYBVIC scale, the total number of the sample is ( $N = 749$ )

| Model | $\chi^2$ | df  | p    | $\chi^2/df$ | CFI | RMSEA (CI 90%) |
|-------|----------|-----|------|-------------|-----|----------------|
| O2FM  | 359.11   | 131 | .000 | 2.74        | .91 | .03 (.02-.03)  |
| E2FM  | 1112.65  | 398 | .000 | 2.79        | .90 | .05 (.03-.06)  |

$\chi^2$ : Chi-square; df: Degrees of Freedom; p: Calculated Probability; CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation; CI: Confidence Interval; O2FM: Two-factor Model Original; E2FM: Two-factor Model Evaluated.

When the two-dimensional scale was identified, we analyzed the correlation (criterion-related validity) between the total score in CYBVIC and the two external criterions. The evidence associated these external criterions and cyberbullying. The correlation between both dimensions (mobile phone and internet) was .71 (Pearson’s correlation), so the result confirmed the high relation between factors. Finally, the reliability scale in terms of internal consistency (Cronbach’s Alpha) was analyzed. The alpha for the total scale was .87 (good), with a value of .75 for the mobile phone and .79 for internet.

### *Prevalence of mobile phone or internet in adolescent cyberbullying*

First, we did a descriptive analysis through the total percentage of cyberbullying items (Figure 1). We deduced that there is 18.6% mobile harassment, front 12% internet harassment in adolescents. Likewise, the 84.7% of youth never did cyberbullying, 11.6% did it sometimes and 3.7% did it usually. The Results obtained, also indicate that 15.3% of teenagers consider that this type of bully exists.

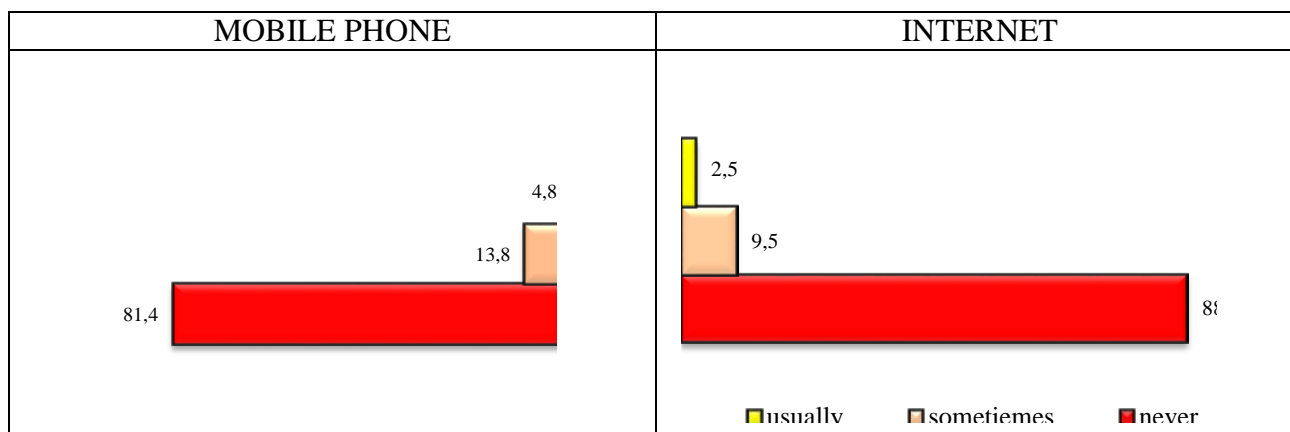


Figure 1. Cyberbullying percentage via mobile phone and internet



If we focus on the forms of cyberbullying [mobile phone (MP) and internet (I)], we highlight denigration (lies or false rumors were told about me. MP: 39%; I: 25%) and intimacy violation (my secrets were shared with others. MP: 31%; I: 19%). On the contrary, harassment (with treats, I was forced to do things that I didn't want. MP: 4%; I: 3%) and identity theft (pictures and videos about me or my family were given or

manipulated without my permission. MP: 6%; I: 6%), are less usual.

*Descriptive and inferential analysis of personal variables*

The effect of cyberbullying through mobile phone and internet is measured below, regarding the age, sex, and family structure. So, we studied the statistical averages, standard deviations and the significance level (Table 2).

Table 2. Statistical averages, standard deviations and analysis of variance, regarding age, sex and type of family

| PERSONAL VARIABLES      | MOBILE PHONE |      |      |             | INTERNET |      |      |             |
|-------------------------|--------------|------|------|-------------|----------|------|------|-------------|
|                         | Mean         | SD   | F    | p           | Mean     | SD   | F    | p           |
| <b>AGE</b>              |              |      |      |             |          |      |      |             |
| 12 yr                   | 9.32         | 2.39 |      |             | 10.68    | 1.94 |      |             |
| 13 yr                   | 10.16        | 2.78 | 4.26 | <b>.005</b> | 11.67    | 3.23 | 6.26 | <b>.000</b> |
| 14 yr                   | 9.89         | 2.34 |      |             | 11.59    | 2.54 |      |             |
| 15 yr                   | 10.29        | 2.91 |      |             | 11.93    | 2.99 |      |             |
| <b>SEX</b>              |              |      |      |             |          |      |      |             |
| female                  | 10.16        | 2.69 | 3.48 | <b>.049</b> | 11.66    | 2.54 | 1.05 | .306        |
| male                    | 9.80         | 2.71 |      |             | 11.45    | 3.08 |      |             |
| <b>FAMILY STRUCTURE</b> |              |      |      |             |          |      |      |             |
| Two-parents             | 9.85         | 2.61 | 5.33 | <b>.021</b> | 11.47    | 2.79 | 2.42 | .120        |
| Single-parent           | 10.37        | 2.94 |      |             | 11.83    | 2.83 |      |             |

The information obtained, shows us that the probability of cyberbullying via mobile phone and internet, is higher in fifteen years old students ( $M_{MP} = 10.29$ ;  $M_I = 11.93$ ), women ( $M_{MP} = 10.16$ ;  $M_I = 11.66$ ), and with a single-parents family ( $M_{MP} = 10.37$ ;  $M_I = 11.83$ ). Nevertheless, young with a less probability to suffer cyberbullying by mobile phone and internet are men ( $M_{MP} = 9.80$ ;  $M_I = 11.45$ ), twelve years old ( $M_{MP} = 9.32$ ;  $M_I = 10.68$ ), and who live in a structured family ( $M_{MP} = 9.85$ ;  $M_I = 11.47$ ). Likewise, the analysis of variance shows that variables of age [ $F_{(3, 745)} = 4.26$ ;  $p < .01$ ], sex [ $F_{(1, 747)} = 3.48$ ;  $p < .05$ ], and structured family [ $F_{(1, 747)} = 5.33$ ;  $p < .05$ ], are significant variable source regarding cyberbullying variable through mobile phone and internet. Whereas, only the age variable [ $F_{(3, 745)} = 6.26$ ;  $p < .01$ ] is more significant than cyberbullying variable via internet.

When ANOVA results are confirmed, we do an analysis with the significant variables by

Scheffé exam. Thus, there are significant differences (cyberbullying by mobile phone) regarding the variable of age, between teenagers in their 13 and 15 years old and those on their 12 years old ( $\eta^2 = 0.500$ ); regarding sex, between women and men ( $\eta^2 = 0.500$ ); and in familiar structure, the difference is between a two-parents and a single-parents ( $\eta^2 = 0.500$ ). There are also significant differences (cyberbullying by internet) in the age, between students in their 13, 14 and 15 years old and pupils 12 years old ( $\eta^2 = 0.632$ ). These results suggest a bigger probability of cyberbullying via mobile phone in adolescents in their 13 and 15 years old, who live in a two-parents family. Internet cyberbullying is also higher in adolescents with more age.

*Descriptive and inferential analysis of scholar variables*

Therefore, we proceed to measure the effect of cyberbullying by mobile phone and internet respect the educational center, scholar

course and academic performance. For it, we studied the statistical average, standard deviation and significance level (Table 3).

**Table 3.** Statistical average, standard deviation and analysis of variance, regarding the center location, course, and academic performance

| SCHOLAR VARIABLES           | MOBILE PHONE |      |       |             | INTERNET |      |      |             |
|-----------------------------|--------------|------|-------|-------------|----------|------|------|-------------|
|                             | Mean         | SD   | F     | p           | Mean     | SD   | F    | p           |
| <b>CENTER LOCATION</b>      |              |      |       |             |          |      |      |             |
| Village                     | 10.41        | 3.03 | 14.37 | <b>.000</b> | 11.91    | 2.76 | 8.71 | <b>.003</b> |
| City                        | 9.65         | 2.35 |       |             | 11.29    | 2.83 |      |             |
| <b>SCHOLAR COURSE</b>       |              |      |       |             |          |      |      |             |
| First-year CSE              | 9.69         | 2.56 | 2.43  | <b>.047</b> | 11.18    | 2.41 | 2.67 | <b>.040</b> |
| Second-year CSE             | 10.17        | 2.82 |       |             | 11.65    | 3.05 |      |             |
| Third-year CSE              | 9.78         | 2.37 |       |             | 11.46    | 2.55 |      |             |
| Fourth-year CSE             | 10.32        | 2.99 |       |             | 11.97    | 3.12 |      |             |
| <b>ACADEMIC PERFORMANCE</b> |              |      |       |             |          |      |      |             |
| pass                        | 9.81         | 2.63 | 3.22  | <b>.041</b> | 11.35    | 2.56 | 4.06 | <b>.018</b> |
| failed some                 | 10.43        | 3.11 |       |             | 12.06    | 3.88 |      |             |
| Repeate                     | 10.21        | 2.52 |       |             | 11.84    | 2.45 |      |             |

With the data obtained in means, we see that the biggest cyberbullying probability via mobile phone and internet is in villages ( $M_{MP} = 10.41$ ;  $M_I = 11.91$ ), in the fourth-year CSE ( $M_{MP} = 10.32$ ;  $M_I = 11.97$ ), and with some subject failed ( $M_{MP} = 10.43$ ;  $M_I = 12.06$ ). Contrary, adolescents who live in cities ( $M_{MP} = 9.65$ ;  $M_I = 11.29$ ), in first-year CSE ( $M_{MP} = 9.69$ ;  $M_I = 11.18$ ) and always passed courses ( $M_{MP} = 9.81$ ;  $M_I = 11.35$ ), have a less cyberbullying probability by mobile phone and internet. The variability analysis, show that the center location [ $F_{(1, 747)} = 14.37$ ;  $p < .01$ ;  $F_{(1, 747)} = 8.71$ ;  $p < .01$ ], scholar course [ $F_{(3, 745)} = 2.43$ ;  $p < .05$ ;  $F_{(3, 745)} = 2.67$ ;  $p < .05$ ], and academic performance variables ( $F_{(2, 746)} = 3.22$ ;  $p < .05$ ;  $F_{(2, 746)} = 4.06$ ;  $p < .05$ ) are significant variables sources, regarding cyberbullying variable via mobile phone and internet.

When ANOVA results are confirmed, we do an analysis with the significant variables by Scheffé exam. Thus, there are significant differences (cyberbullying by mobile phone and internet) in the variable of center location. The difference is between those who study in

villages and those who study in cities ( $\eta^2 = 0.392$ ).; in the variables of scholar course, between who are in the fourth-year CSE and who are in the first-year CSE ( $\eta^2 = 0.500$ ).; and in the variables of academic performance, between adolescent with some subject failed and adolescents who always passed all their subjects ( $\eta^2 = 0.392$ ). These results, indicate a bigger probability of cyberbullying via mobile phone and internet in villages, higher courses (first-year CSE), and with some subject failed.

## Discussion

On the basis of a large and dynamic concept, cyberbullying is understood as a new form of bullying. It involve the use of mobile phone, internet or others information and communication technologies to harass, threaten or intimidate someone deliberately (Baruch, 2005; Calmaestra, 2011). Cyberbullying can be focused on the way of harassment is produced (Dehue, Bolman, & Vollink, 2008; Perren, Dooley, Shaw, & Cross, 2010) or by the conduct realized (Buelga, Cava, & Musitu, 2010), for this

study we selected the first one. Moreover, its rapid development and expanding, specially in adolescents, generated the necessity of its study. So, the purpose of this investigation was to know the cyberbullying phenomenon, for that the frequency of use and the medium (mobile phone and internet) was identified. This helps us to understand the problem, whose importance in educational centers is indisputable.

The investigation confirmed the validity and reliability of Adolescent Victimization through Mobile Phone and Internet Scale (CYBVIC) with empirical evidences. The theoretical structure defined by two related factors, was confirmed through factorial exploratory analysis and ratified by factorial confirmatory Analysis. In both case, the model is in accordance with data (similar to the original). We also obtained validity evidences because all correlations are statistically significant ( $p \leq .001$ ), and with positive signs. Finally, the reliability analysis value is .87, indicate a really good intern consistence and also the applicability of tools in other contexts. Consequently, the CYBVIC scale presents suitable psychometric proprieties. They make it advisable to apply in adolescent community (Buelga, Cava, & Musitu, 2012).

We obtain a similar percentage in the first general descriptive analysis, but harassment acts by mobile phone are bigger (18.6%) than by internet (12%) in teenagers. Maybe the combination of both (smartphones), justified it (Álvarez-García, Dobarro, & Núñez, 2015). These results support Smith Mahdavi, Carvalho, & Tippett (2006) and Guarini, *et al.* (2009) studies, affirm a bigger frequency of attacks by mobile phone. Nonetheless, it disproves Li (2007) and Wright, Burnham, Inman, & Ogorchok (2009) studies, because to them the frequency of attacks is bigger via internet. Furthermore, in both cases: via mobile phone and internet, the more common forms of aggression more common are vilification and intimacy violation. On the other hand, harassment and identity theft are less common.

Secondly, data indicates that the adolescents with more predisposition to suffer cyberbullying by mobile phone or internet, are girls in their 13 and 15 years old and with an unstructured family. By the same token, Burgess-Proctor, Patchin, & Hinduja (2009), Wade, & Beran (2011), and Garaigordobil, & Aliri (2013) essays, claim that girls are more victimized than boys. However, studies as Calvete, Orue, Estévez, Villardón, & Padilla (2010), Yilmaz (2011), and Pelfrey, & Weber (2013), affirm that boys are more victimized. In other ways, cyberbullying via internet is bigger in older adolescents, but regarding mobile phone isn't important. This corresponds with the investigation of Ortega, Calmaestra, & Mora-Merchán (2008). They don't consider significant the variable of age. On the other hand, adolescents with less cyberbullying probability by mobile phone and internet are men, in their 12 years old and with a two-parents family.

Finally, the biggest probability of cyberbullying through mobile phone and internet in relation with scholar variables, is in village centers (more than 10.000 habitants), higher courses (fourth-year CSE), and in students with some subject failed. In this point, the investigation presents contradictory results with other studies, which affirm that first courses of secondary education are more victimized (Buelga, Cava, & Musitu, 2010; Buelga, Musitu, Murgui, & Pons, 2008; Díaz-Aguadó, 2005). However, adolescents with a less cyberbullying probability through mobile phone and internet live in cities (more than 100.000 habitants), are in first-year CSE and they always passed their subjects.

It is important to work on the immediate prevention and intervention, we have to intensify the surveillance to minimize the impact (Ruiz, Riuró, & Tesouro, 2015). To conclude, we have to assume with caution the results of the study, because of the social desirability, bias and self-report mainstreaming effects. Despite these restrictions, the study invites to deepen in this cyberbullying issue. It is considered like a

new type of violence in adolescent's socialization.

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