Mobile Abuse in University Students and Profiles of Victimization and Aggression

Abuso del móvil en estudiantes universitarios y perfiles de victimización y agresión

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Abstract

The vast majority of young people have mobile phones. This has become a must-have item in their lives, with traditional socialization spaces displaced by virtual ones. They use their mobile phones for many hours a day, to the detriment of their psychological and social functioning, showing greater vulnerability to abusive or excessive use, and more likely to become problematic or addicted users. This paper aims to study the impact of mobile phone abuse in a sample of college students, assessing the social, personal, and communicational realms and deepening understanding of the different cyberbullying profiles, analyzing who has more personal and social problems using mobiles: victims or aggressors. Whether the number of hours of mobile phone use has an effect on these problems will also be explored. The sample (1,200 students) was selected by multistage cluster sampling among the faculties of the University of Extremadura. Data were obtained through Victimization (CYB-VIC) and Aggression (CYB-AGRES) through the mobile phone scales, and the Questionnaire of Experiences related to Mobile (CERM). The results show that mobile phone abuse generates conflicts in young people of both sexes, although girls have more communication and emotional problems than boys. In addition, age, field of knowledge, victim/aggressor profile, and hours of mobile phone use are crucial variables in the communication and emotional conflicts arising from the misuse of mobile.

Keywords: Abuse mobile; Profiles *ciberacoso*; Aggressor; Victim and university students.

Resumen

La gran mayoría de jóvenes disponen de teléfono móvil, convirtiéndose en un objeto imprescindible en su vida, que ha desplazado los espacios de socialización tradicionales por espacios virtuales. Es utilizado por ellos, durante muchas horas, en detrimento de su funcionamiento psicológico y social, mostrando mayor vulnerabilidad a su uso abusivo o excesivo, y mayor propensión a convertirse en un uso problemático o adictivo. En este trabajo se pretende estudiar las repercusiones sociales, personales y comunicacionales del abuso del móvil de los estudiantes universitarios, y profundizar en los diferentes perfiles del ciberacoso, analizando quién presenta más problemas personales y sociales con el uso del móvil: ¿víctimas o agresores? También si el número de horas de uso del móvil tiene un efecto sobre dichos problemas. La muestra (1200 estudiantes) fue seleccionada mediante muestreo polietápico por conglomerados de entre las distintas Facultades de la Universidad de Extremadura. Los datos fueron obtenidos a través de las Escalas de Victimización (CYB-VIC) y Agresión (CYB-AGRES) a través del Teléfono Móvil y el Cuestionario de Experiencias relacionadas con el Móvil (CERM). Los resultados muestran que el uso abusivo del móvil genera conflictos en los jóvenes de ambos sexos; aunque las chicas manifiestan más problemas comunicacionales y emocionales que los chicos. Además, la edad, el campo de conocimiento, el perfil víctima/agresor y las horas de uso del móvil son variables determinantes sobre los conflictos comunicacionales y emocionales derivados del uso abusivo del móvil.

Palabras clave: Abuso del móvil; Perfiles de ciberacoso; Agresor; víctima; Estudiantes universitarios

The use of Information Technology and Communications (ICT) is an essential aspect of modern societies. Access to such tools is increasingly easy and their use is not problem-free. Among ICTs, the mobile phone (smartphone) is the most popular. The intensive use of smartphones has been a cause of concern to researchers and institutions alike (Gómez, Rial, Braña, Varela & Barreiro, 2014). While their use does not in itself pose a problem, the problematic relationship established with them does (Chóliz, 2010; Echeburúa, Labrador & Becoña, 2009) because their use over a large number of hours a day or in an uncontrolled manner can condition social relationships (Bianchi & Phillips, 2005; Kamibeppu & Sugiura, 2005).

There is no agreement on what constitutes a borderline between overuse and problematic or pathological use, since the term ICT "addiction" has not yet been officially recognized by international organizations such as the American Psychiatric Association (APA) or the World Health Organization (Labrador, Villadangos, Crespo & Becoña, 2013; López-Fernández, Honrubia-Serrano & Freixa-Blanxart, 2012). However, there is evidence of the onset of behavioral, emotional and social problems related to mobile phone use, especially among adolescents and young people (Pedrero, Rodriguez & Ruiz, 2012).

College students and the adolescent population are the age groups considered to be at highest risk (Weare, 2004); the mobile phone is of much greater importance for them than for other age groups (Kubey, Lavin & Barrow, 2001; Morahan-Martin & Schumacher, 2000; Treuer, Fabián & Friredi, 2001). The vast majority of young people have one and it is turning into a must-have item in their lives and leisure time. The mobile is fundamentally a relational tool (Aguado & Martínez, 2006) that provides the user with the necessary processes of communication and socialization (Ellwood-Clayton, 2003; INE, 2014; Taylor & Harper, 2003) to the extent that it has displaced traditional socialization spaces, giving rise to virtual spaces with an important social function (Díaz-Gandasegui, 2011). Being permanently connected seems to satisfy a great need for constant contact with peers (Kuss & Griffiths, 2011). Once young people have a mobile they appear unable to do without it, using it for many hours to the detriment of their psychological and social functioning (Pedrero, Rodríguez & Ruiz, 2012), showing greater vulnerability to overuse (Ruiz-Olivares, Lucena, Pino & Herruzo, 2010) and a higher likelihood of becoming problematic or addictive users (Walsh, White & Young, 2008). Boys are more prone to the intensive use of mobiles for games and technology functions for leisure or entertainment (Chóliz & Villanueva, 2011; Chóliz, Villanueva & Chóliz, 2009; Pedrero, Rodriguez & Ruiz, 2012). For them the mobile is an element that helps them advance their social position within the group (Ling, 2002). For girls, on the other hand, mobile phone use has aspects that are more emotional (Beranuy, Chamarro, Graner & Carbonell, 2009; Chóliz, Villanueva & Chóliz, 2009; Ling, 2002; Mante & Piris, 2002), relational and social, showing a preference for written messages (Pedrero, Rodriguez & Ruiz, 2012) and spending more hours talking on the phone (Ruiz-Olivares et al., 2010) in order to maintain interpersonal relationships, promote bonding and boost intimacy in communications (Colás, González & de Pablos, 2013; Costa, 2011; De Haro, 2010).

The mobile phone is ubiquitous on university campuses and often used in environments where learning takes place (Lepp, Barkley & Karpinski, 2015; Tindell & Bohlander 2012). In addition to recreational purposes (Barkley & Lepp, 2013), university students use mobile phones to find information about their studies, communicate, organize and collaborate with peers (Organista-Sandoval, McAnally-Salas & Lavigne, 2013). In these areas, certain differences in the frequency or type of use in terms of gender, age and field knowledge of university students have been noted (Ruiz-Olivares et al., 2010). As a result, studying the differences in the emotional and communicational impact of mobile phone abuse in terms of these variables is important.

Currently, the exponential rise in the use of ICTs, as well as the mastery and familiarity of young people (the interactive generation) with these technologies has meant that traditional forms of bullying have changed over time, with the appearance of more specific phenomena in which ICTs are used to harass the victim (Smith, Mahdavi, Carvalho & Tippett, 2006). This new form of abuse, called cyberbullying, consists of intentional and repeated aggression by a group or an individual continuously using digital forms of social contact (mainly Internet, mobile phones and online video games) on a victim who cannot defend him/herself (León, Felipe, Fajardo & Gómez, 2012).

Cyberbullying is a variation on conventional types of abuse (physical, verbal and social-relational), but also has certain characteristics that set it apart (Heirman & Walrave, 2009; Li, 2008; Ortega, Calmaestra & Mora-Merchan, 2008; Slonge & Smith, 2008; Ybarra & Mitchell, 2004): in cyberbullying there are no safe places to be, which creates greater insecurity in the victim; the fact that bullying can even take place inside your own home causes feelings of helplessness and vulnerability. Harassment is made public and can be observed indefinitely and by a large number of people. Physical strength or size do not play a role because digital stalkers do not need to be stronger than their victims. Finally, the aggressors can hide behind a cloak of anonymity, which creates a sense of helplessness among the victims.

The increasing use of mobile telephones and the overexposure to social networks catch our attention and cause social alarm, particularly since it was discovered that young people and adolescents are exposed to cyberbullying (Gá-

mez-Guadix, Orue, Smith & Calvete, 2013), either as aggressors or victims. The mobile phone is the device most commonly used to harass, torment and intimidate others deliberately and repeatedly (Del Río, Bringué, Sádaba & González, 2009). Sádaba and Bringué (2010) have defined it as "the screen that never goes out". Having a mobile phone at hand at all times means being able to participate in bullying others at any time and anywhere, and also to be continuously exposed to bullying for most of the day. A study by Giménez, Maquilón and Arnaiz (2015) affirms that internet access via smartphone is significantly associated with participation in episodes of cyberbullying. They show that 94.2% of cyber attackers have their own mobile phones, and 80.2% access the internet through it, compared with 94.7% of cyber victims. Among the mobile technology applications principally used by both sides are "WhatsApp", voice calls (Giménez, Maquilón & Arnaiz, 2014) and social networks.

Going to university is a transition period which in many cases involves becoming independent of the family, experiencing stress in the new situation or looking for new friends, circumstances that can lead to a change in internet use (Fernandez-Villa et al., 2015). All of this, alongside young people's exposure to cyberbullying, means that university students are a population of special interest for the study of behaviors related to cyberbullying.

This paper aims to study the social, personal and communicational repercussions of mobile phone abuse in terms of gender, age, field of knowledge and number of hours of mobile use of college students, and to deepen our knowledge of the different profiles of cyberbullying, analyzing who has greater personal and social problems using mobile phones: victims or aggressors. Furthermore, we will investigate whether the number of hours of mobile phone use affects these problems, given the negative effects that technological harassment has on victims and aggressors at emotional, academic and psychosocial levels.

Method

Participants
The inclusion criterion for participants was being enrolled in the University of Extremadura for the 2014-2015 academic year. The participant sample consisted of 1,200 students. Average age was 20.95 years (SD = 3.430; range 18-32); 58.4% (n = 700) were women and 41.6% (n = 500) men. Students were enrolled in the first (50.9%), second (25%), third (17.5%) and fourth (5.8%) years of different degree courses in the University of Extremadura. The number of participants was determined by the number of students enrolled in the 2014-2015 academic year, given a sampling error of 3% and a confidence level of 95.5%. Student selection was carried out using multistage cluster sampling and random selection of degree and year of students

in the University of Extremadura faculties. Not all students reported their age and field of scientific knowledge, with the result that 120 and 88 cases respectively were lost in the analyses of age and field of knowledge,.

Measurement Tools

Sociodemographic questionnaire, specifically developed for research, containing questions about students' age, gender, field of scientific knowledge and their subjective perception of hours of daily mobile use.

Victimization through mobile phone scale, CYB-VIC (Buelga, Cava & Musitu, 2010). This scale aims to determine the number of victimizations sustained during the past year through the mobile phone and occurring in a particular context. The victimization scale consists of 10 items assessing behaviors which involve aggression: 1) Harassment "They have insulted or ridiculed me with messages or calls"; 2) persecution "They have threatened me, with the intention of scaring me"; 3) vilification "They have told false rumors or lies about me"; 4) violation of privacy "They have shared my secrets with others"; 5) social exclusion "They have called me/told me to be online/but did not speak or meet me"; 6) identity theft "They have pretended to be me in order to say or do bad things online". Responses were made on a four-point Likert scale, with the following options: 1 = never, 2 = rarely, 3 = often 4 = always. The validation of the Buelga, Cava and Musitu scale (2012), yielded a Cronbach alpha reliability coefficient (α) of 0.85. With our participants the following indices were obtained: α = 0.75, composite reliability (CR) = 0.79, with an average variance extracted (AVE) of 0.50. These indices indicate an adequate overall level of reliability.

Aggression through mobile phone scale, CYB-AGRES (Buelga & Pons, 2012). This scale attempts to establish the number of cyber aggressions committed during the past year using the mobile phone. The scale consists of 10 items assessing behaviors which involve aggression: 1) harassment "I have insulted or ridiculed people with messages or calls"; 2) persecution "I have threatened people in order to frighten them "; 3) vilification "I have told lies or false rumors about someone"; 4) violation of privacy "I have told other people's secrets in order to annoy them"; 5) social exclusion "I made calls and did not speak, or I told people to be online and did not meet them there"; 6) identity theft "I have pretended to be someone else in order to say or do bad things by mobile phone or internet." Responses were made on a four-point Likert scale (never, rarely, often and always). The α reliability coefficient of the scale obtained in the Buelga and Pons study (2012) was 0.88. With our participants, the scale yielded an α of 0.82, FC = 0.85, and AVE = 0.52.

Questionnaire of Experiences related to Mobile, CERM (Beranuy et al., 2009). This questionnaire is designed to examine the degree of "addiction" to the mobile phone among the participants of the study. This questionnaire also has 10 four-point Likert items, ranging from 1 to 4 in increasing order of intensity (1 = not at all, 2 = a little, 3 = somewhat and 4 = rather). It consists of two factors: conflicts and communication/emotional use. The "*conflicts*" factor refers to the personal and social impact of mobile phone abuse (Beard & Wolf, 2001; Young, 2007): "Have you been at risk of losing a significant relationship, job or educational opportunity because of mobile phone use? ". The "*communication and emotional use*" factor assesses the communicational and emotional repercussions resulting from mobile phone abuse: "Do you think life without a mobile is boring, empty and sad?".

The scale has good reliability, with an α of 0.80 (Beranuy et al., 2009). With our participants, scores of 0.80 α, FC = 0.80, AVE = 0.50 were obtained. Furthermore, the dimensions or factors of the questionnaire yielded acceptable reliability and AVE ≥ 0.50 [conflicts (α = 0.67, FC = 0.78, VME = 0.50); communication and emotional use (α = 0.72, FC = 0.80, VME = 0.50)].

Procedure

The different tools were applied to students during the 2014/2015 academic year. The American Psychological Association's ethical guidelines (APA, 2009) concerning the informed consent of participants were followed, despite this being an investigation that causes no harm, given that it researches methods of classroom management in an educational context. The confidentiality of data obtained and their use exclusively for research purposes was guaranteed. Questionnaires were completed within the context of the classroom and under the presence of the researcher, who was trained to clear up any doubts arising with regard to the questions. Participation was entirely voluntary, no compensation was offered. The questionnaires were completed in 20 to 25 minutes.

Data analysis

The data analysis techniques used were of a quantitative type, using SPPS (version 21) to apply statistical techniques such as Student t test, ANOVA and MANOVA. The data were subjected to the Kolmogorov-Smirnov, Rachas and Levene tests. Given that $p > 0.05$ in all tests, the assumptions of normality, randomization and homoscedasticity were verified, which in turn justified the use of parametric tests.

Results

Mobile phone abuse and differences by students' gender, age and field of scientific knowledge.

Table 1 shows the results of the Student t test. We found significant differences in the "*communication and emotio-*

nal use" factor associated with the gender variable. Girls appear to have more communication and emotional problems through mobile phone use than boys (t = 6.160, p <0.001, r = 0.18).

The ANOVA test (Table 2) yielded significant differences among the mean scores of age groups in the two factors. The goodness of fit test for Bonferroni multiple comparisons shows that the differences found in the first factor, "*conflicts*", are only significant among the 18 to 20 group, compared with the over 25 group (p = 0.008). Regarding the second factor, " *communication and emotional use*", the differences are significant among the youngest group (18 to 20), compared with the other groups (p = 0.001), with the 21 to 24 group (p <0.001) and over 25 group.

Table 3 displays the data from the ANOVA test, which shows that there were significant differences concerning students' scientific field in the scores for the "*communication and emotional use*" factor. Students from the scientific and technical knowledge areas obtained lower scores than the other students.

The goodness of fit test for Bonferroni multiple comparisons of shows that there are no significant differences between scientific fields: health sciences, judicial and social sciences and humanities. However, significant differences were found between the technical sciences area and the other scientific fields: p < 0.001 with the field of health sciences; p < 0.001 with the judicial and social sciences field; p = 0.017 with the humanities.

Mobile phone abuse and victim and aggressor profiles.

In order to select those students who had experienced the roles of victim and aggressor on a greater number of occasions and with greater intensity, the 75th percentile value was calculated for the scores on the *victimization through mobile phone scale* (CYB-VIC) and the *aggression through mobile phone scale* (CYB-AGRES). These scales record student responses regarding their participation by the number of victimizations sustained or cyber aggressions committed over the past year using mobile phones.

The descriptive and percentiles scores for each of the profiles were: victims (M = 12.69, SD = 2.75, 75th percentile: 14), aggressors (M = 11.67, SD = 2.99 75th percentile: 12). Subgroups were selected from the final sample and it was found that there were students who could be included in several possible combinations within these roles, so that finally the following profile subgroups were established: victims (n = 110), offenders (n = 184), victim/aggressor (n = 217) and without profile (n = 605).

In the next step, we investigated the possible influence of the student's profile when being harassed by mobile phone, as well as the hours of mobile use, on the scores for factors in the *questionnaire of experiences related to mobile,* CERM. A multivariate analysis of variance (MANOVA) was carried out with the hours of mobile phone use (up to two hours a

Table 1. *Gender differences in mobile phone experiences.*

CERM Factors	Male (n=500)		Female (n=700)		Student *t* test		
	M	*SD*	*M*	*SD*	*t*	*p*	*r*
Conflicts	6.79	2.36	6.66	1.94	-.946	0.344	0.03
Communication and emotional use	9.42	2.94	10.50	2.84	6.16	0.000	0.18

Table 2. *Age group differences in mobile phone experiences.*

	Intervalos de edad							
CERM factors	18 - 20 (n=623)		21 - 24 (n=354)		25 - 32 (n=103)		ANOVA	
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*
Conflicts	6.85	2.14	6.63	2.12	6.17	1.77	4.95	0.007
Communication and emotional use	10.44	2.93	9.72	2.84	8.95	2.79	15.51	0.000

Table 3. *Differences among fields of knowledge in mobile phone experiences.*

	Fields of knowledge									
	HS (n=246)		JSS (n=550)		TC (n=232)		H (n=84)		ANOVA	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*
Conflicts	6.84	2.05	6.80	2.12	6.48	2.20	10.28	2.81	1.953	0.119
Communication and emotional use	10.28	2.81	10.48	2.93	8.86	2.64	9.95	3.23	17.94	0.000

Note. HS=Health Sciences; JSS=Judicial and Social Sciences; TS=Technical Sciences; H=Humanities.

Table 4. *Means and standard deviations for the "Conflictos" and "Communicative y Emotional Use" factors according to hours of mobile use and cyberbullying abuse profile.*

		Cyberbullying profile							
CERM Factors	Daily hours of mobile use	Victim		Aggressor		Victim / aggressor		No profile	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Conflicts	up to 2 hours	5.94	1.21	6.10	1.63	7.34	3.70	5.65	1.21
	3-5 hours	6.78	2.36	7.00	2.39	8.16	2.42	6.21	1.59
	6-10 hours	6.91	1.75	7.23	1.64	7.98	2.31	6.46	2.02
	11 or more hours	9.06	2.33	7.25	1.68	8.07	2.92	6.74	1.69
Communication and emotional use	up to 2 hours	7.89	2.05	8.95	2.36	10.50	3.63	7.70	2.12
	3-5 hours	10.25	3.26	10.4	2.66	11.50	2.44	9.82	2.75
	6-10 hours	11.20	2.74	10.85	2.63	11.70	2.10	10.20	2.50
	11 or more hours	12.47	3.30	12.77	2.63	12.70	2.34	10.90	2.63

day, three to five hours, six to ten hours and more than eleven hours) and the four defined profiles (victim, aggressor, victim/aggressor and no profile) were used as fixed factors, and the two factors of "*conflicts*" and "*communication and emotional use*" from the *questionnaire of experiences related to mobile*, CERM, were employed as dependent variables. The Wilks Lambda (λ) value was used to test for the existence of significant differences, and the partial eta-squared (h²) value was used as an index of effect size. Table 4 shows the means and standard deviations of the "*conflicts*" and "*communication and emotional use*" factors for hours of mobile phone use and profiles of harassment by mobile.

The results obtained highlight significant differences depending on the participant profiles (Wilks λ = 0.894, $p < 0.001$, $\eta^2 = 0.055$), the hours of mobile phone use (Wilks λ = 0.891, $p < 0.001$, $\eta^2 = 0.056$), and the interaction between the profiles and hours of use mobile (Wilks λ = 0.967, $p = 0.013$, $\eta^2 = 0.017$).

In terms of the participant profiles, statistically significant differences were found in the two factors "*conflicts*" ($F(3, 1200) = 29.60$, $p < 0.001$, $\eta^2 = 0.081$) and "*communication and emotional use*" ($F(3, 1200) = 25.57$, $p < 0.001$, $\eta^2 = 0.071$), with a higher score on average for students with the victim/aggressor and aggressor profiles (see Table 4).

With regard to the "*conflicts*" factor, Bonferroni multiple comparisons show that the largest significant differences are found among victim/aggressor subgroups, followed by the victim profile, compared to participants with no profile or not involved in the mobile phone harassment. The greatest significant differences related to the factor "*communication and emotional use*" were found in the victim/aggressor subgroups, followed by the aggressor profile, compared to participants with no profile. There are differences in both factors among all pairs of different profiles comparisons, except between the victim and aggressor profiles.

Regarding the number of hours of mobile phone use, the results also show statistically significant differences in the factors "*conflicts*" (F (3, 1200) = 12.21, p < 0.001, η² = 0.035) and "*communication and emotional use*" (F (3, 1200) = 40.16, p <0.001, η² = 0.107). Bonferroni multiple comparisons show that for the "*conflict*" factor the greatest significant differences appear among students who use the mobile more than eleven hours a day, and those who use it for two hours. There are no differences between the subgroups using mobiles for over eleven hours and six to ten hours. For the "*communication and emotional use*" factor, the biggest significant differences exist between the over-eleven-hours subgroup compared with the two-hours subgroup. Significant differences are found among all subgroups, and mean scores are higher in students with more hours of daily mobile use.

Finally, in terms of the interaction between the participant profiles and hours of mobile phone use, statistically significant differences were found only in the "*conflicts*" factor (F (9, 1200) = 2.083, p < 0.028, η² = 0.018). These were found between students who use the mobile more than eleven hours a day and those who use them for up to two hours in the victim and aggressor profiles and those with no profile, while no significant interaction exists in the victim/aggressor profile.

Discussion

The mobile phone has become the most popular technology among young people, and an indispensable tool in their daily lives, but one which at times gives rise to problematic or addictive use (Chóliz, 2012), and which is also the device most used to harass and intimidate others (Del Rio, et al., 2009). The purpose of this study was thus to analyze the social, personal and communicational impact of mobile phone abuse among college students, and deepen our knowledge of different profiles of cyberbullying.

Mobile phone abuse and differences by student gender, age and field of scientific knowledge

Regarding gender, the misuse of mobile phones generates conflicts in young people of both sexes equally, with girls reporting more communicational and emotional problems than boys. These results are consistent with other studies that show that women are more likely than men to suffer negative consequences of maladaptive of mobile use (Beranuy, Oberst, Carbonell & Chamarro, 2009; Takao, Takahashi & Kitamura, 2009). The mobile allows an emotional connection with others (Aguado & Martínez, 2006), resulting in increased use especially among girls (Sánchez-Martinez & Otero, 2009), who use it to maintain this emotional closeness, and to deal with unpleasant emotional states (Chóliz, Villanueva & Chóliz, 2009).

In terms of age, results confirm that the younger participants (18 to 20) had greater communicational and emotional conflicts arising from the use of mobile phones than the older age groups (21 to 24 and over 25). This matches the results of a study by De la Villa and Súarez (2016), who concluded that the problems related to emotional and communication use of mobile phones, as well as conflicts generated by such use, increased during middle adolescence with respect to preadolescence. Thus, the youngest in our study, those who are coming out of adolescence (18 to 20) view the mobile as something natural, while "older" young people (the 21 to 24 and over 25 groups) use mobile phones more professionally and less for leisure, and thus with fewer negative consequences (Beranuy, Chamarro, Graner & Carbonell, 2009). This is also confirmed by certain other studies (Derbyshire et al., 2013), and probably due to the fact that they are increasingly aware of the problem of excessive time spent using mobiles and the possible negative consequences (Labrador & Villadangos, 2010).

Age is therefore an important factor influencing the way people behave and socialize when using the mobile phone. First access to such technology takes place at increasingly early ages, and the availability of mobile phones is significantly higher above age 10, reaching 100% over the age of 17 years (INE, 2015). The younger the users, the greater the percentage of people with high rates of problematic mobile use. The prevalence among Spanish adolescents (12 to 18) is between 15 and 20% (Flores, Jenaro, González, Martín & Poy, 2013; Jenaro, Flores, Gómez-Vela, González-Gil & Caballo, 2007; Labrador & Villadangos, 2010; López-Fernández, Honrubia-Serrano & Freixa-Blanxart, 2012; Sánchez-Martínez & Otero, 2009) and 7.99% in the university population (Jenaro et al, 2007). Rather than being linked to the use of mobiles, these age-related results are more closely connected to the developmental stage of adolescence, characterized by low levels of life experience, difficulty in recognizing subtle addictions and a sense of normality when engaging in risky behaviors (Castellana, Sánchez- Carbonell, Graner & Beranuy, 2007) as well as deficits in delayed gratification, planning and considering future consequences (Corona & Peralta, 2011). It is a stage in which adolescents are more easily influenced and have lower impulse control (Muñoz-Rivas & Agustín, 2005).

With regard to "*communication and emotional use*" students from technical science fields of knowledge score

lower than other students (health sciences, judicial and social sciences and humanities). Two possible hypotheses can help interpret these results: the difficulty of technical degrees on the one hand, and gender bias on the other. With regard to the first of these, among the scientific and technical degrees during the 2014-15 academic year the average number of credits gained, the level of academic performance (measure by credits gained ratio compared to credits enrolled) and the average grades of academic records are the lowest compared to other scientific fields (Ministry of Education, Culture and Sport, 2015). The students perceive technical degrees as being more difficult, and social sciences degrees as easier. The greater demands of technical degrees undoubtedly condition the use of mobile phones by students enrolled on them. They tend to use them more for academic tasks such as accessing the schedule of activities of the different courses on the virtual campus, accessing digital library services, university web-mail platform, etc., rather than intensively for recreational, communication and social purposes.

In terms of gender bias, during the 2014-15 academic year the percentage of men enrolled in technical scientific degrees was 74.1%, as against 25.9% women. In other fields, the percentage of women is higher than men. In our sample from the technical science field, 72% were male vs. 28% female. As we noted earlier when analyzing the gender variable, our results show that girls have more communicational and emotional problems than boys. The differences found in the "*communication and emotional use*" factor between students from the scientific and technical knowledge field and those from other fields, could be due to the imbalance between the number of men and women.

Mobile abuse and victim and aggressor profiles

According to the results, the victim/aggressor profile is the subgroup with more *conflicts* with mobile use, followed by the victim profile. A characteristic behavior exhibited by both profiles is the constant checking of messages received via mobile phone, which can carry threatening and harassing remarks made about them by others (Li, 2008; Mason, 2008; Slonje & Smith 2008). This could lead to an increase in personal and interpersonal conflicts. With regard to this, some studies conclude that cyberbullying generates feelings of anxiety, depression, low self-esteem, irritability and sleep disorders in victim and victim/aggressor (Garaigordobil, 2011), which in turn lead to excessive of mobile phone use and increased problematic Internet use (Ehrenberg, Juckes, White & Walsh, 2008; Gámez-Guadix et al, 2013.). Thus, both victims and victim-aggressors change their social and work/academic habits, tend to isolate themselves, and see their mobile as a refuge to help them look for more supportive virtual relationships, and as social substitute for face-to-face relationships with friends

(García del Castillo et al, 2008; Giménez et al, 2015; Kuss & Griffiths, 2011).

With regarding to *communication and emotional use*, it is the victim/aggressor subgroup, followed by the aggressor profile, which has the greatest communicational (increased aggressive behaviors, lower impulse control) and emotional effects (restlessness, anxiety, anger and irritation) as a consequence of mobile phone misuse in comparison to participants with no profile. These results are consistent with other studies (Garaigordobil, 2011;. Giménez et al, 2015) which confirm the existence of aggressive behaviors, change of interests and high levels of anxiety among these participants in cyberbullying.

Hours of mobile use

As for the hours of use of mobile, results highlight that students who use mobile phones more than eleven hours a day have more conflicts with its use, and this "use" has a more communicative and emotional angle than for those who use it for two hours. According to Echeburúa and de Corral (2010), people can talk on the phone for profit or pleasure, while an addicted person seeks to relieve the emotional distress (boredom, loneliness, anger, nervousness, etc.). In this regard, some studies have concluded that it is the aggressors who have higher daily mobile consumption than the victims or those not involved (Giménez et al., 2015), to the extent that they risk becoming addicted, especially if we consider that students often underestimate their daily mobile use, claiming to spend between one and four hours, when in reality it has been confirmed that this is considerably higher (Aslanidou & Menexes, 2008; Garmendia, Garitaonandia, Martínez & Casado, 2012; Hunley et al ., 2005).

Finally, regarding the interaction between the participant profiles and hours of mobile use (victim, aggressor and no profile), is was found that those who use mobile phones more than eleven hours a day have greater conflicts compared to those who use it up to two hours. This, however, is not the case with the victim/aggressor profile, where the number of hours does not determine conflicts. Here, one can understand that when responding aggressively, the victims display intrapersonal and interpersonal problems more strongly which arise from mobile phone use. Various studies show that subjects who assume the complex role of victim/aggressor report greater symptoms and higher rates of distress compared to the other bullying profiles (Felipe, León & Fajardo, 2013, Haynie et al. 2001; Kaltiala-Heino, Rimpelä, Rantanen & Rimpelä, 2000; Kim, Leventhal, Koh, Hubbard & Boyce, 2006; Stein, Dukes & Warren, 2007).

Limitations

The present study has several limitations, such as the use of self-reports as the only method of data gathering for the

evaluation of both cyberbullying situations and mobile phone abuse. In addition, differences in the number of cases in each of the roles described means that the results should be considered with caution until they can be expanded in number: victims (n = 110), aggressors (n = 184), victim/aggressor (n = 217) and without profile (n = 605). Furthermore, it should be remembered that the sample is only representative of the university population, so the results cannot be generalized to the non-university population.

Conclusions

On the one hand, it is necessary to highlight the teaching of values for children, young people and adults in order to achieve a positive, harmless and responsible use of communication technologies. These are increasingly available at any time and in any place, and in many cases - mostly among minors - without adequate control or supervision, which exposes children and young people to a considerable number of risk situations. Schools have the obligation and the opportunity to create social spaces and to change attitudes towards the use of these important technologies, provide teachers with resources to prevent undesirable attitudes and tackle the different forms of harassment.

On the other hand and in line with the above, there is a need for implementing prevention programs beyond school, given the importance of eradicating situations where harassment and/or cyberbullying can take place. The aim of such measures is that young people identify with the values of respect, empathy and non-violence, which should prevail at university level. The importance of research is highlighted in order to identify all forms of harassment, with special emphasis on those produced by new technologies, deepening our knowledge of the positive uses and the consequences of abuse by promoting responsible use and healthy enjoyment as strategies which can prevent digital violence.

Acknowledgments

Conflict of interests

The authors declare that they have no conflict of interests.

Reference

Aguado, J. M. & Martínez, I. J. (2006). El proceso de mediatización de la telefonía móvil: de la interacción al consumo cultural. *Estudios de Comunicación (ZER), 11*, 319-343.

American Psychological Association (APA) (2009). Report of the Ethics Committee, 2008. *American Psychologist, 64*, 464-473.

Aslanidou, S. & Menexes, G. (2008). Youth and the internet: Uses and practices in the home. *Computers & Education, 51*, 1375-1391. doi:10.1016/j.compedu.2007.12.003.

Beard, K. W. & Wolf, E. M. (2001). Modification in the proposed diagnostic criteria for Internet addiction. *Cyberpsychology & Behavior, 4,* 377-383 doi: 10.1089/109493101300210286.

Beranuy, M., Chamarro, A., Graner, C. & Carbonell, X. (2009). Validación de dos escalas breves para evaluar la adicción a internet y el abuso del móvil. *Psicothema, 21,* 480-485.

Beranuy, M., Oberst, U., Carbonell, X. & Chamarro, A. (2009). Problematic Internet and mobile phone use and clinical symptoms in college students: The role of emotional intelligence. *Computers in Human Behavior, 25,* 1182-1187. doi:10.1016/j.chb.2009.03.001.

Bianchi, A. & Phillips, J. G. (2005). Psychological Predictors of Problem Mobile Phone Use. *Cyberpsychology & Behavior, 8,* 39-51. doi: 10.1089/cpb.2005.8.39.

Buelga, S. & Pons, J. (2012). Agresiones entre Adolescentes a través del Teléfono Móvil y de Internet. *Psychosocial Intervention, 21*, 91-101. doi:10.5093/in2012v21n1a2.

Buelga, S., Cava, M. J. & Musitu, G. (2010). Cyberbullying: victimización entre adolescentes a través del teléfono móvil y de Internet. *Psicothema, 22,* 784-789.

Buelga, S., Cava, M. J. & Musitu, G. (2012). Validación de la escala de victimización entre adolescentes a través del teléfono móvil y de internet. *Pan American Journal of Public Health 32,* 36-42. doi:10.1590/S1020-49892012000700006.

Castellana, M., Sánchez-Carbonell, X., Graner, C. & Beranuy, M. (2007). El adolescente ante las tecnologías de la información y la comunicación: Internet, móvil y videojuegos. *Papeles de Psicólogo, 28,* 196-204.

Chóliz, M. (2010). Mobile phone addiction: a point of issue. *Addiction, 105, 373-374.* doi: 10.1111/j.1360-0443.2009.02854.x.

Chóliz, M (2012). Mobile-phone addiction in adolescence: The Test of Mobile Phone Dependence (TMD). *Progress in Health Sciences, 2,* 33-44.

Chóliz, M., Villanueva, V. & Chóliz, M. C. (2009). Ellas, ellos y su móvil: Uso, abuso (¿y dependencia?) del teléfono móvil en la adolescencia. *Revista Española de Drogodependencias, 1,* 74-88.

Chóliz, M. & Villanueva, V. (2011). Evaluación de la adicción al móvil en la Adolescencia. *Revista Española de Drogodependencias, 36,* 165-184.

Colás, P., González, T. & de Pablos, J. (2013). Juventud y redes sociales: Motivaciones y usos preferentes. *Comunicar, 40,* 15-23. doi:10.3916/C40-2013-02-01.

Corona, H. F. & Peralta, V. E. (2011). Prevención de conductas de riesgo. *Revista Médica Clínica Las Condes, 22,* 68-75. doi: 10.1016/S0716-8640(11)70394-7.

Costa, J. (2011). Los jóvenes portugueses de los 10 a los 19 años: ¿qué hacen con los ordenadores?. *Education in the Knowledge Society (EKS), 12*, 209-239.

De Haro, J. J. (2010). *Redes Sociales para la educación*. Madrid: Anaya.

Derbyshire, K. L., Lust, K. A., Schreiber, L. R., Odlaug, B. L., Christenson, G. A., Golden, D. J. & Grant, J. E. (2013). Problematic Internet use and associated risks in a college sample. *Comprehensive Psychiatry, 54*, 415-422. doi.10.1016/j.comppsych.2012.11.003.

Del Río, J., Bringué, X., Sádaba, C. & González, D. (2008). Cyberbullying: un análisis comparativo en estudiantes de Argentina, Brasil, Chile, Colombia, México, Perú y Venezuela. En *V Congrés Internacional Comunicació i Realitat* (pp. 307-316). Barcelona, ES: Universitat Ramon Llull.

De la Villa, M. & Suárez, C. (2016). Factores de riesgo en el uso problemático de Internet y del teléfono móvil en adolescentes españoles. *Revista Iberoamericana de Psicología y Salud, 7*, 69-78. doi:10.1016/j.rips.2016.03.001.

Díaz-Gandasegui, V. (2011). Mitos y realidades de las redes sociales. Información y comunicación en la Sociedad de la Información. *Prisma Social, 6*, 1-26.

Echeburúa, E. & de Corral, P. (2010). Adicción a las nuevas tecnologías y a las redes sociales en jóvenes: Un nuevo reto. *Adicciones, 22*, 91-96. doi:10.20882/adicciones.196.

Echeburúa, E., Labrador, F. J. & Becoña, E. (2009). *Adicción a las Nuevas Tecnologías*. Madrid: Pirámide.

Ellwood-Clayton, B. (2003). Virtual strangers: Young love and texting in the Filipino archipelago of cyberspace. In K. Nyíri (Ed.), *Mobile Democracy: Essays on Society, Self, and Politics* (pp. 225-239). Vienna, Austria: Passagen Verlag.

Ehrenberg, A., Juckes, S., White, K. M. & Walsh, S. P. (2008). Personality and self-esteem as predictors of young people's technology use. *Cyberpsychology & Behavior, 11*, 739-741. doi:10.1089/cpb.2008.0030.

Felipe, E., León, B. & Fajardo, F. (2013). Perfiles psicopatológicos en participantes en situaciones de acoso escolar en Educación Secundaria. *Psicología Conductual, 21*, 475-490.

Fernández-Villa, T., Alguacil, J., Almaraz, A., Cancela, J., Delgado-Rodríguez, M., García-Martín, M., … Martín, V. (2015). Uso problemático de internet en estudiantes universitarios: factores asociados y diferencias de género. *Adicciones, 27*, 265-275. doi:10.20882/adicciones.751.

Flores, N., Jenaro, C., González, F., Martín, E. & Poy, R. (2013). Adicción al móvil en alumnos de secundaria: efectos en la convivencia. *European Journal of Investigation in Health, Psychology and Education, 3*, 215-225. doi:10.1989/ejihpe.v3i3.44.

Gámez-Guadix, M., Orue, I., Smith, P. K. & Calvete, E. (2013). Longitudinal and reciprocal relations of cyberbullying with depression, substance use, and problematic internet use among adolescents. *Journal of Adolescent Health, 53*, 446-452. doi:10.1016/j.jadohealt2013.03.030.

Garaigordobil, M. (2011). Prevalencia y consecuencias del cyberbullying: una revisión. *International Journal of Psychology and Psychological Therapy, 11*, 233-254.

García del Castillo, J. A., Terol, M. C., Nieto, M., Lledó, A., Sánchez, S., Martín-Aragón, M. & Sitges, E. (2008). Uso y abuso de Internet en jóvenes universitarios. *Adicciones, 20*, 131-142. doi:10.20882/adicciones.277.

Garmendia, M., Garitaonandia, C., Martínez, G. & Casado, M. A. (2012). Los menores en internet. Usos y seguridad desde una perspectiva europea. *Quaderns del CAC, 15*, 37-544.

Giménez, A. M., Maquilón, J. J. & Arnaiz, P. (2014). Acceso a las tecnologías, rendimiento académico y cyberbullying en escolares de secundaria. *Revista Iberoamericana de Psicología y Salud, 5*, 119-133.

Giménez, A. Maquilón, J. J. & Arnaiz, P. (2015). Usos problemáticos y agresivos de las TIC por parte de adolescentes implicados en *cyberbullying. Revista de Investigación Educativa, 33*, 335-351. doi: http://dx.doi.org/10.6018/rie.-33.2.199841.

Gómez, P., Rial, A., Braña, T., Varela, J. & Barreiro, C. (2014). Evaluation and early detection of problematic Internet use in adolescents. *Psicothema, 26*, 21-26. doi:10.7334/ psicothema2013.109.

Haynie, D. L., Nansel, T., Eitel, P., Davis-Crump, A., Saylor, K., Yu, K. & Simons-Morton, B. (2001). Bullies, victims, and bully/victims: Distinct groups of atriskyouth. *Journal of Early Adolescence, 21*, 29-49. doi: 10.1177/0272431601021001002.

Heirman, W. & Walrave, M. (2009). Asseing Issues and Concerns about the Mediation of Technology in Cyberbullying. *Trípodos Extra 1*, 317-329.

Hunley, S. A., Evans, J. H., Delgado-Hachey, M., Krise, J., Rich, T. & Schell, C. (2005). Adolescent computer use and academic achievement. *Adolescence, 40*, 307-318.

Instituto Nacional de Estadística [INE] (2014). *Encuesta sobre Equipamiento y Uso de Tecnologías de Información y Comunicación en los Hogares (TIC-H)*. Madrid: Instituto Nacional de Estadística. Recuperado de http://www.ine.es/prensa-/np864.pdf

Instituto Nacional de Estadística [INE] (2015). *Encuesta sobre Equipamiento y Uso de Tecnologías de Información y Comunicación en los Hogares (TIC-H)*. Madrid: Instituto Nacional de Estadística. Retrieved from http://www.ine.es/prensa-/np933.pdf

Jenaro, C., Flores, N., Gómez-Vela, M., González-Gil, F. & Caballo, C. (2007). Problematic Internet and cellphoneuse: Psychological, behavioral, and health correlates. *Addiction Research and Theory, 15*, 309-320. doi:10.1080/16066350701350247.

Kaltiala-Heino, R., Rimpela, M., Rantanen, P. & Rimpela, A. (2000). Bullying at school: An indicatorof adoles-

cents at risk for mental disorders. *Journal of Adolescence, 23*, 661-674. doi:10.1006/jado.2000.0351.

Kamibeppu, K. & Sugiura, H. (2005). Impact of the mobile phone on junior high-school students´ friendships in the Tokio metropolitan area. *Cyberpsychology & Behaviour, 8*, 121-130. doi:10.1089/cpb.2005.8.121.

Kim, Y. S., Leventhal, B. L., Koh, Y. J., Hubbard, A. & Boyce, W. T. (2006). School bullying and youth violence: causes or consequences of psychopathologic behavior?. *Archives of General Psychiatry, 63*, 1035-1041. doi:10.1001/archpsyc.63.9.1035.

Kubey, R. W., Lavin, M. J. & Barrows, J. R. (2001). Internet use and collegiate academic performance decrements: early findings. *Journal of Communication, 51,* 366-382. doi:10.1111/j.1460-2466.2001.tb02885.x.

Kuss, D. J. & Griffiths, M. D. (2011). Online Social Networking and Addiction - A Review of the Psychological Literature. *International Journal of Environmental Research and Public Health, 8*, 3528–3552. doi:10.3390/ijerph8093528.

Labrador, F. J. & Villadangos, S. M. (2010). Menores y nuevas tecnologías: conductas indicadoras de posible problema de adicción. *Psicothema, 22*, 180-188.

Labrador, F. J., Villadangos, S. M., Crespo, M. & Becoña, E. (2013). Design and validation of the new technologies problematic use questionnaire. *Anales de Psicología, 29*, 836-847.doi:10.6018/analesps.29.3.159291.

León, B., Felipe, E., Fajardo, F. & Gómez, T. (2012). Cyberbullying in a sample of secondary students: modulating variables and social networks. *Electronic Journal of Research in Educational Psychology, 10*, 771-788.

Lepp, A., Barkley, J. E. & Karpinski, A. C. (2015). The relationship between cell phone use and academic performance in a sample of US college students. *SAGE Open, 5*, 1-9. doi:10.1177/2158244015573169.

Li, Q. (2008). A cross-cultural comparison of adolescents experience related to cyberbullying. *Educational Research, 50*, 223-234. doi:10.1080/00131880802309333.

Ling, R. (2002). Chicas adolescentes y jóvenes adultos varones: dos subculturas del teléfono móvil. *Estudios de Juventud, 57*, 33-46.

López-Fernández, O., Honrubia-Serrano, M. & Freixa-Blanxart, M. (2012). Adaptación española del "Mobile Phone Problem Use Scale" para población adolescente. *Adicciones, 24*, 123-130. doi:10.20882/adicciones.104.

Mante, E. & Piris, D. (2002). El uso de la mensajería móvil por los jóvenes en Holanda. *Estudios de Juventud, 57*, 47-58.

Mason, K. L. (2008). Cyberbullying: A preliminary assessment for school personnel. *Psychology in the School, 45*, 323-348. doi: 10.1002/pits.20301.

Ministerio de Educación, Cultura & Deporte (2015). *Datos y cifras: Curso escolar 2015/2016.* Madrid: Secretaría General Técnica. Subdirección General de Documentación y Publicaciones.

Morahan-Martin, J. & Schumacher, P. (2000). Incidence and correlates of pathological Internet use among college students. *Computers in Human Behavior, 16*, 13-29. doi:10.1016/S0747-5632(99)00049-7.

Muñoz-Rivas, M. J. & Agustín, S. (2005). La adicción al teléfono móvil. *Psicología Conductual, 13*, 481-493.

Organista-Sandoval, J., McAnally-Salas, L. & Lavigne, G. (2013). El teléfono inteligente (smartphone) como herramienta pedagógica. *Apertura, 5*, 6-19.

Ortega, R., Calmaestra, J. & Mora-Merchán, J. A. (2008). Cyberbullying. *International Journal of Psychology and Psychologic al Therapy, 8*, 183-192.

Pedrero, E., Rodríguez, M. T. & Ruíz, J. M. (2012). Adicción o abuso del teléfono móvil. Revisión de la literatura. *Adicciones, 24*, 139-152. doi:10.20882/adicciones.107.

Ruiz-Olivares, R., Lucena, V., Pino, M. & Herruzo, J. (2010). Análisis de comportamientos relacionados con el uso/abuso de Internet, teléfono móvil, compras y juego en estudiantes universitarios. *Adicciones, 22,* 301-310. doi:10.20882/adicciones.171.

Sádaba, C. & Bringué, X. (2010). Niños y adolescentes españoles ante las pantallas: Rasgos configuradores de una generación interactiva. *CEE Participación Educativa, 15*, 86-104.

Sánchez-Martínez, M. & Otero, A. (2009). Factors associated with cell phone use in adolescents in the community of Madrid (Spain). *Cyberpsychology & Behavior, 12*, 131-137. doi:10.1089/cpb.2008.0164.

Slonje, R. & Smith, P. K. (2008). Cyberbullying: Another main type of bullying?. *Scandinavian Journal of Psychology, 49*, 147-154. doi:10.1111/j.1467-9450.2007.00611.x.

Smith, P. K., Mahdavi, J., Carvalho, M. & Tippett, N. (2006). *An investigation into cyberbullying, its forms, awareness and impact, and the relationship between age and gender in cyberbullying.* Research Brief No. RBX03-06. London: DfES

Stein, J. A., Dukes, R. L. & Warren, J. I. (2007). Adolescent male bullies, victims, and bully-victims: A comparison of psychosocial and behavioral characteristics. *Journal of Pediatric Psychology, 32*, 273-282. doi:10.1093/jpepsy/jsl023.

Takao, M., Takahashi, S. & Kitamura, M. (2009). Addictive personality and problematic mobile phone use. *Cyberpsychology & Behavior, 12*, 501-507. doi:10.1089=cpb.2009.0022

Taylor, A. S. & Harper, R. (2003). The gift of the gab? A design oriented sociology of young people's use of mobiles. *Journal of Computer Supported Cooperative Work, 12*, 267-296.

Tindell, D. R. & Bohlander, R. W. (2012). The use and abuse of cell phones and text messaging in the classroom: A survey of college students. *College Teaching, 60*, 1-9. doi:10.1080/87567555.2011.604802.

Treuer, T., Fabian, Z. & Furedi, J. (2001). Internet addiction associated with features of impulse control disor-

der: Is it a real psychiatric disorder?. *Journal of Affective Disorders, 66,* 266-283.

Walsh, S. P., White, K. M. & Young, R. M. (2008). Over-connected? A qualitative exploration of the relationship between Australian youth and their mobile phones. *Journal of Adolescence, 31,* 77-92. doi: 10.1016/j.adolescence-.2007.04.004.

Weare, K. (2004). What impact is having information technology on our young people's health and well-being? *Health Education, 104,* 129-131. doi: 10.1108/09654280410544963.

Ybarra, M. & Mitchell, K. (2004). Youth engaging in on-line harassment: Associations with caregiver-child relationships, Internet use, and personal characteristics. *Journal of Adolescence, 2,* 319-336. doi:10.1016/j.adolescence.2004.03.007.

Young, K. (2007). Cognitive behavior therapy with internet addicts: Treatment outcomes and implications. *Cyberpsychology & Behavior, 10,* 671-679. doi:10.1089/cpb.2007.9971.