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Maladaptive use of ICT in adolescence: Profiles, supervision and technological stress

Uso desadaptativo de las TIC en adolescentes: Perfiles, supervisión y estrés tecnológico

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ABSTRACT

ICT use during adolescence is now commonplace. Its power of attraction and the vulnerable condition of adolescents are giving rise to growing concern, aggravated by the imminent consequences of such synergy. In order to deepen understanding of this relationship, the following research objectives were formulated: a) Analyze the frequency of ICT use; b) Examine family supervision; c) Identify stress associated with the use of ICTs; d) Establish profiles of ICT use. The sample consisted of 1,101 adolescents of 10 educational centers in Southeastern Spain. A descriptive analysis was performed and contingency tables, Chi Square, Cramer V, hierarchical cluster analysis and one-factor ANOVA were used. The results show that more than 60% of adolescents use ICTs without supervision and that 1 out of 3 feel stressed in the absence of the Internet. In addition, statistically significant relationships were found between the frequency of ICT use and stress, as well as with family supervision. A solution of three groups or profiles of use was obtained. 45% of the subjects display maladaptive use or signs of it. The study concludes by stressing that the relationship between adolescents and ICTs is far from ideal and warns of the urgent need to train adolescents and parents in the responsible use of ICTs.

RESUMEN

El uso de las TIC durante la adolescencia es un hecho normalizado en la actualidad. Su poder de atracción y la condición de vulnerabilidad de los púberes están suscitando una creciente preocupación, agravada por las consecuencias inminentes de tal sinergia. Con la finalidad de profundizar en esta relación, se formulan los siguientes objetivos de investigación: a) Analizar la frecuencia de uso de las TIC; b) Examinar la supervisión familiar; c) Identificar estrés asociado al uso de las TIC; d) Establecer perfiles de uso de las TIC. La muestra estuvo compuesta por 1.101 adolescentes de 10 centros educativos del Sureste Español. Se realizó un análisis descriptivo y se emplearon tablas de contingencia, Chi Cuadrado, V de Cramer, análisis de clúster jerárquico y ANOVA de un factor. Los resultados arrojan que más del 60% de los adolescentes usa las TIC sin supervisión y que uno de cada tres se siente estresado ante la ausencia de Internet. Además, se encontraron relaciones estadísticamente significativas entre la frecuencia de uso de las TIC y el estrés, así como con la supervisión familiar. Se obtuvo una solución de tres grupos o perfiles de uso. El 45% de los sujetos tiene un uso desadaptado o indicios del mismo. Se concluye subrayando que la relación entre adolescentes y TIC dista mucho de la deseada y se alerta de la imperiosa necesidad de formar a adolescentes y a progenitores en el uso responsable de las TIC.

KEYWORDS | PALABRAS CLAVE

ICT abuse, adolescence, family control, technological stress, video games, mobile, behavioral problems, secondary school.
Abuso de las TIC, adolescencia, control familiar, estrés tecnológico, videojuegos, móvil, problemas de conducta, educación secundaria.

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1. Introduction and state of the art

As with every big change, the sudden appearance of ICTs in everyday life has prompted a variety of opinions. Some praise their benefits and potential advantages (Agudo et al., 2013), while some others highlight the risks and threats implicit in their use (Giménez et al., 2014; Golpe et al., 2017).

The so-called "Generation Z", also known as the post-Millennial generation, is the first generation born within a completely technological society. From the day they were born, these teenagers have naturally lived alongside ICTs, incorporating their use as just another element in learning and socialization processes (Urosa, 2015, Maquilón-Sánchez et al., 2017). As a consequence, a gap has appeared between parents and their children, referred to as the "digital divide" (Alfaro et al., 2015). In this regard, the appropriate frequency of use is still unknown, and a set of best practices with suggestions and guidance to have as support and reference regarding how to use ICTs optimally is also lacking.

Various researchers emphasise the key role of families in teaching and preventing inappropriate uses of ICTs (Bartau-Rojas et al., 2018, Villanueva-Blasco & Serrano-Bernal, 2019). In the meantime, parents show a growing concern about how frequently their children use ICTs, who also experience anxiety if they cannot use them (Labrador & Villadangos, 2009). Exposure to screens, access to inappropriate content, and contact with strangers online are also worrisome (Alfaro et al., 2015). Regarding these, recent studies reveal that more than 95% of parents affirm they need training in the use of ICTs and on-line safety (Gairín-Sallán & Mercader, 2018). This approach has allowed for the conceptualization of maladaptive uses of ICTs as actions such as abandoning personal, family, educational and social obligations to spend time online and playing videogames; reducing academic performance; preferring to socialize in a virtual world instead of the real world; feeling anxious when they do not get messages or calls; suffering from sleep alterations to continue using their phones; feeling aggressive or irritable when they are interrupted while using devices, etc. Along these lines, Bartau-Rojas et al. (2018) identified some mediation strategies: the establishment of rules, organisation time-space limits, supervision and support. However, even though ICTs could inherently be used to supervise and control (Santana-Vega et al., 2019), in the last study conducted by Gairín-Sallán et al. (2018) it was found that 63.5% of minors between 15 and 17, and 71.8% of minors between 12 and 14, have no supervision regarding the time spent, neither content, nor resources accessed when using ICTs.

Nevertheless, it is clear that ICTs have become essential resources for youth. According to the data gathered by the INE in 2017, 98.1% of boys and 97.7% of girls between 16 and 24 years old use their mobile phone, play videogames and use the internet regularly. It would be ideal if a more educated, critical and reflective society would emerge from the advantages offered by ICTs. As it is claimed by Benítez (2019), a rational use of ICTs in some subjects has a positive correlation with an improvement in academic performance. However, not everyone is ready to exploit the possibilities offered by ICTs in a beneficial manner. Adolescence is a uniquely vulnerable stage in which ICTs are used without any previous training (Bartau-Rojas et al., 2018). It has been found that certain psychological, physical, school, personal and family disorders are associated to maladaptive use of ICTs: nomophobia (Bragazzi & Del-Puente, 2014), FoMO (fear of missing out) (Oberst et al., 2017; Syahniar et al., 2018), feelings of anxiety (Rodríguez et al., 2012), digital obesity (Díaz & Aladro, 2016), behavioral alterations, impoverishment of social relationships (García et al., 2014), a decline in academic performance (Vilca y Vallejos, 2015), and other pathologies related to psychology such as depression, anxiety, nervousness (Oberst et al., 2017; Santana-Vega et al., 2019), insomnia (Jaradat, 2019) and technological stress (Villanueva-Blasco & Serrano-Bernal, 2019).

It is clear to us that an extensive use of ICTs among the youngest produces non-desirable effects in the educational, personal, social and family contexts (Díaz-Vicario et al., 2019), effects that are enlarged when it comes to teenagers, who use ICTs more often and more frequently, in a situation of social vulnerability (Melendro et al., 2016). A deeper study on the use of ICTs among young people is needed, paying special attention to family supervision as well as to the indicators of pathologies of psychological nature coming from the maladaptive use among teenagers. To do so, an investigation with the following aims was conducted: 1) Analyze frequency of use of ICTs among teenagers; 2) Examine family supervision, timetable or limitations to access ICTs; 3) Describe states of anxiety, stress and nervousness associated with the use of ICTs; 4) Identify group profiles of ICT use.

2. Materials and methods

2.1. Participants

The sample was comprised of a total of 1,101 participants, from which 47.8% were boys and 52.2% girls in the 1^{st} year of Compulsory Secondary Education (ESO for its initials in Spanish) (32.4%), 2^{nd} year of ESO (22.3%), 3^{rd} year of ESO (24.3%), and 4^{th} year of ESO (21%), with age ranges between 11 and 18 (17% between 11 and 12; 46.1% between 13 and 14, and 36.2% between 15 and 18). This sample, with a 95% confidence interval and a 5% margin of error, was obtained by probability sampling selecting 10 public centres among the 9 regions that make up the Region of Murcia. Because of the nature of this study, the establishment of exclusion criteria was not required.

2.2. Design

The study follows a nonexperimental quantitative research design. A transactional survey design was used; therefore, the timing of the study was set on a specific moment (Sáez-López, 2017).

2.3. Instruments

The questionnaire Ud-TIC maladaptive use of ICTs (α=.841), administered ad hoc from previously validated instruments for the teenage population in Spanish territory, was used; the scales CERI, CERM (Beranuy et al., 2009), CERV (Chamarro et al., 2014) and CHASO were also used (Caballo & Salazar, 2017). It consists of two dimensions: 1) Dimension 1, sociodemographic data: asks for personal data (age, gender, study year, and region), academic performance (marks in instrumental areas and 3 questions about attitudes towards studying and the interference of ICTs), family supervision (existent control, adults in charge of supervising, and timetable and availability of access to ICTs) and manifestation of stress and nervousness when ICTs are not present. 2) Dimension 2, Frequency of Use of ICTs is made up of 19 items, 3 related to frequency of use (mobile phone, the Internet and videogames) and 16 to experiences related to the use of mobile phones, the Internet and videogames.

2.4. Procedure

Complying with rule 8.2 of APA, a document requesting signed consent was distributed and the authorization of each parent of the participants was also solicited. Students were given a document of informed consent about the anonymity and voluntary nature of their participation. Both documents were previously validated by the Research Ethical Commission of the University of Murcia. The instruments were applied in paper form. Data collection took place during office hours and in the presence of the school tutor. Completing the questionnaire took approximately between 12 and 20 minutes.

3. Analysis and results

To begin, a descriptive analysis of the sample was conducted, calculating the central tendency averages (median and standard deviation). Next, the normality test Kolmogorov-Smirnov (K-S) was run, concluding that the sample did not follow normal or symmetric distribution ($p \leq .05$). However, considering that one of the limitations of this test is its conservative tendency by which in every situation (for n=1000 subjects) the non-normality hypothesis is accepted, the Lilliefors (K-S-L) test correction was applied, which allows for a certain percentage to reject the null hypothesis. However, in this case, the existence of an asymmetric distribution was reiterated, therefore the nonparametric tests Mann–Whitney U (for two groups) and Kruskal Wallis (for more than two groups) were applied. Contingency tables were used to establish correlations between variables and Pearson's Chi-squared test was used to determine the existence of significant relations. Cramer's V was conducted to assess the strength of statistically significant associations. Additionally, to examine the existence of different profiles in the data obtained, a hierarchical clustering analysis using Ward's method was also conducted. The appropriateness of this test was verified by running a one-way ANOVA.

3.1. First objective: the frequency of ICT use

Data analysis showed that 6.3% of students use a gaming console daily, followed by a 16% using it a few times weekly, a 17.4% only during the weekend, 25% rarely and 35% never, (M=2.32). Regarding gender,

boys use gaming consoles more, one out of ten use it daily and 26% use it a few times weekly, whereas only 1% of the girls use the gaming console daily and 6.4% a few times weekly (p>.01). Concerning study year, 1^{st} year ESO students are the ones using videogames more often, 7% affirm playing every day and 19% a few times weekly, followed by 2^{nd} year ESO students, with 7% playing every day and 17% a few times weekly, in 3^{rd} year ESO almost 5% of students play every day and 15% a few times weekly. 4^{th} year ESO students use the gaming console less often, 6.5% daily and 10.8% a few times a week (p=.005). Re: the use of mobile phones (Table 1), 1 out of 3 participants report using their mobile phones constantly, whereas 33.5% use it a lot, 25% frequently and 11% only when needed, and 2.9% never (M=3.72). Significant statistical differences were found for the variables gender (p=.003) and study year (p<.01).

Table 1. Frequency of use of the mobile phone according to study year

			Never	When I need	Frequently	A lot	Constantly
1st ESO	Frq	357	16	53	97	108	83
	%	100	4.5	14.8	27.2	30.3	23.2
2nd ESO	Frq	245	7	33	59	75	71
	%	100	2.9	13.5	24.1	30.6	29.0
3rd ESO	Frq	268	5	22	71	90	80
	%	100	1.9	8-2	26.5	33.6	29.9
4th ESO	Frq	231	3	13	48	96	71
	%	100	1.3	5.6	20.8	41.6	30.7

In regards to gender, girls use their mobile phones more, with one out of three using the phone constantly and 32.5% a lot. Moreover, 23.4% of the boys use it constantly, and 34.6% a lot. Concerning study year, a progressive increase in the use of mobile phones as they go onto the next study year is observed (Table 1). In reference to other gadgets with Internet connection, teenagers use these less often than mobile phones, although it is still high. Nevertheless, 13% of participants use other gadgets with Internet connection constantly, followed by 25.7% who use these a lot, 25.9% frequently, and 30.3% only when needed (M=3.13). Regarding gender, a similar tendency among boys (13.7% constantly and 27% a lot) and girls (13% constantly and 24.5% a lot) is perceived. In this way, there are no significant statistical differences (p=.447). Concerning study year, there is a stable tendency in the use of gadgets with Internet connection (p=.600); thus, in 1^{st} year ESO 13.2% of students use them constantly, with 23.2% using them a lot; in 2^{nd} year ESO 13.9% use it constantly and 25.7% use it a lot; in 3^{rd} year ESO 13.8% use it constantly and 27.6% a lot; in 4^{th} year ESO only 12.6% use it constantly and 27.3% a lot.

3.2. Second objective: the role that family supervision plays in the use of ICTs

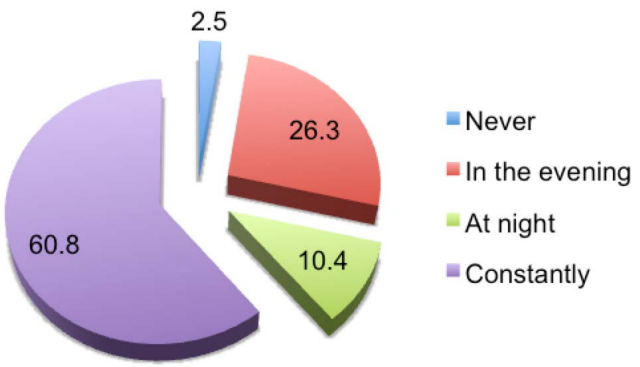
Three types of supervision were established: 1) supervising the use of the Internet and social networks; 2) supervising time spent playing with a gaming console; 3) supervising the type of videogames played. Regarding family supervision on the use of the Internet and social networks by teenagers, 56% of the students reported not having any type of family supervision while surfing the net; similarly, 4 out of 10 have no supervision of the time spent playing videogames, and 60% of parents do not supervise the type of videogames their children play.

Regarding gender, parents supervise girls more when using the Internet and social networks (45.4%). Boys are more supervised on the time they spend playing videogames (64.6%), whereas for girls it is only a 48.9%. This percentual difference is statistically significant when both groups are compared (p<.01).

With regards to study year, there is a progressive decrease in the supervision of the use of the Internet and social networks (62% 1^{st} year ESO, 43% 2^{nd} year ESO, 30% 3^{rd} year ESO and only 26% for students in 4^{th} year ESO) (p<.01). Concerning the time, they spend playing videogames, there is a similar tendency towards a decrease in supervision as students move onto the next study year; 69% of students in 1^{st} year ESO have supervision, 57.6% of 2^{nd} year students, 56% of 3^{rd} year students and only 36% of 4^{th} year ESO students (p<.01). Finally, supervising the type of games, there is a progressive decrease as students move onto the next study year; 62% of students in 1^{st} year have family supervision, 43.7% in 2^{nd} year, 32.8% in 3^{rd} year and only 26.4% in 4^{th} year ESO (p<.01). When students are asked about the parent in charge of the supervision, in most cases both are involved (31.8%), followed by only mothers (15.5%), only

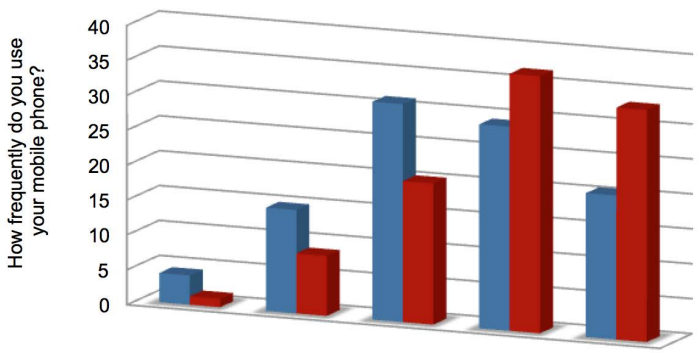
fathers (4.2%), grandparents (0.4%) and others (2.6%). Another measure of family supervision is related to the limiting of time spent online. In terms of the timetable of access to the Internet (Figure 1), 60% of teenagers have access to the Internet throughout the day, followed by 26% with access only in the evening, 10% only at night, and 2.5% never. Regarding gender, boys have more access to the Internet throughout the day (62.5%) than girls (59.3%), although these differences are not statistically significant (p=.262). Concerning age, older students (between 15 and 17) have more access to the Internet (80% constantly), and more than half of students between 13 and 14 have freedom to access the Internet whenever they want; in younger ages (11 to 12), 1 out of 4 have constant access to the Internet (p<.01).

Figure 1. Timetable to access the Internet



Within this same objective, frequency of use of ICTs and family supervision was analysed. Data suggests a statistically significant correlation between the frequency of use of gaming consoles and a lack of family supervision when using the Internet and social networks ($\chi^2$8=24.824, p≤.05, V=.22); it is worth mentioning that 80% of students using a console every day have no family supervision while playing online (Figure 2).

Figure 2. Relationship between supervision and frequency of use



	Never	Only when I need to	Frequently	A lot	Constantly
Yes	4.2	14.8	31.2	29.2	20.6
No	1.2	8.6	20.2	36.8	33.2

There is also a lack of family control in 60% of the participants using the gaming console a few times a week and in 45% of those playing videogames during the weekend. Additionally, 45% of teenagers playing videogames every day and 36% of those playing a few times a week do it without any time limitation from their parents ($\chi^2$8=69.581, p<.01, V=.21). In this line, seven out of ten youngsters use their mobile phones or gadgets with constant Internet access without any family supervision ($\chi^2$8=52.123, p<.01, V=.21).

3.3. Third objective: the relationship between access to ICTs and feelings of anxiety and nervousness of adolescents

It was found that 33% of the students feel stressed or nervous when they have no access to the Internet. Girls affirm feeling more nervous when they are forbidden access to the Internet (35%) than boys (27%). Regarding study year, the presence of stress is stable, although it diminishes partially in students in the 4^{th} year of ESO. Concerning frequency of use of ICTs, 52% of students using their phone constantly confess feeling stressed or nervous when they cannot connect to the Internet. The percentage of stressed students decreases when the frequency of use is less (29.5% of students using it a lot, 17.8% using it frequently, and 14% using it only when needed (χ^2(2)=100.87, p<.01, V=.30)). Those students playing videogames every day feel more stressed when they do not have access to the Internet (44.9%), followed by those who play a few times a week (29.4%), rarely (29.5%), and only the ones playing with the gaming console during the weekend are less stressed than the other groups (χ^2(4)=19.65, p=.001, V=.134). This tendency happens again when frequency of use of other gadgets with Internet connection and feelings of stress are correlated (χ^2(4)=25.029, p<.01, V=.151), with a slow increase between frequency of exposure to screens and stress when there is no connection; 44.2% of students using them constantly feel stressed, followed by 37% using them a lot and 26% frequently.

Table 2. Final centre of conglomerates among groups according to the profile of ICT use

Item	Cluster 1 Maladaptive use (n=118)	Cluster 2 Signs of maladaptive use (n=335)	Cluster3 Maladaptive use (n=648)	Total	F
1. Abandoning responsibilities to use the Internet	3.18	3.96	4.35	3.99	.752
2. Decrease of academic performance because of the use of the Internet	2.26	3.79	4.30	3.74	5.35***
3. Avoiding problems on the Internet	2.87	2.89	4.45	3.59	2.85**
4. Easier to socialise online	2.98	3.57	4.27	3.78	2.164*
5. Risk of losing academic or personal opportunities	4.04	3.57	4.27	3.78	3.32***
6. Decrease of academic performance because of mobile use	2.57	3.88	4.43	3.90	6.07***
7. Nervousness when not receiving messages or calls	3.89	4.41	4.72	3.86	.719
8.Staying up late to use mobile phone or gaming console	2.90	3.76	4.32	3.86	3.73***
9. Need to spend more time on the phone	3.57	4.32	4.75	4.38	2.068*
10. Anger or irritability when someone disturbs you while using the mobile phone	3.07	4.04	4.46	4.06	2.66**
11. Saying things on the phone you wouldn't say in person	3.47	4.01	4.43	4.10	1.466
12. Abandoning tasks to play videogames	3.16	3.52	4.72	4.00	.996
13. Decrease in academic performance because of videogames	2.55	4.41	4.44	4.09	2.93**
14. Anger or irritability when someone disturbs you while using the gaming console	3.11	4.22	4.55	4.17	3.11**
15. Need to spend more time to feel satisfied	3.45	4.58	4.86	4.50	2.90**

Teenagers who have family supervision when using the Internet and social networks show less stress when access to the Internet is absent or impossible (27.71%) compared to teenagers who have no supervision from their parents or other adults (34.03%) ($\chi^2$2=7.222, p=.027, V=.027). In the case of students without family supervision of time spent playing with the gaming console, they show more stress when these cannot be accessed (35.7%) compared to teenagers with supervision from their parents (28%) ($\chi^2$2=7.870, p=.02, V=.02). A statistically significant association between the limitation of time

spent accessing the Internet and the presence of states of stress ($\chi^2 2=727.658$, $p<.01$, $V=.158$) was also found; students feeling more stressed were those who have access to the Internet only at night (42.1%), followed by those who have no access (33.3%) and by those who have access throughout the day (31.3%). The participants that reported having the least stress when there was no access to the Internet were those who had access only during the evening (19.7%).

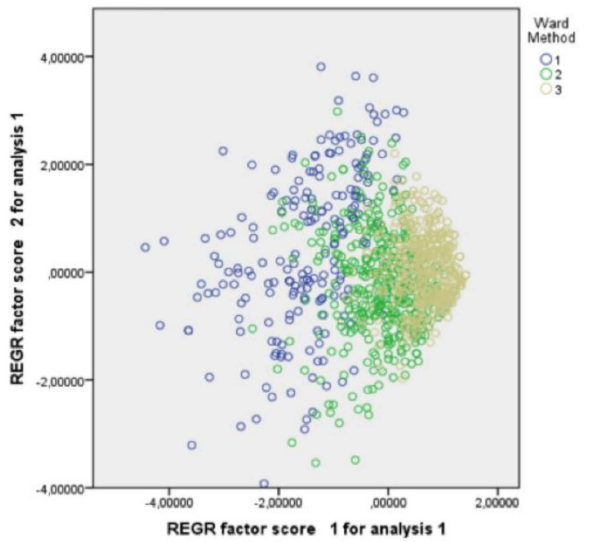
3.4. Fourth objective: identification of ICT usage profiles

To achieve this, a multivariate hierarchical cluster was used. An appropriate classification for three groups represented in the dendrogram was found (Figure 3). The hierarchical result of three groups was replicated with an ANOVA. The accumulated average distance between 1 and 2 was 4.059, whereas the average distance between 2 and 3 was 3.158. Average scores for grouping variables are included in Table 2.

Cluster 3 was coded "Adapted use of ICTs" (n=648) and included students showing an appropriate use of ICTs. Cluster 2, coded "Signs of maladaptive use of ICTs" (n=335) was characterized by showing average levels of experiences related to a maladaptive use of ICTs.

And Cluster 1 was coded "maladaptive use of ICTs" (n=118), which corresponds to 10.72% of students, characterized by showing a homogeneous profile of subjects that manifest a higher level of experiences related to the maladaptive use of ICTs, such as abandoning responsibilities to spend more time on the Internet and playing videogames, a decrease in academic performance because of the use of the Internet, the mobile phone or videogames, avoiding problems with the use of the Internet, showing more ability to socialize online than in person, nervousness when not receiving messages or calls, staying up late to spend time on their phones or the gaming console, feeling the need to spend more time on their phone or gaming console, frustration or anger when someone interrupts them while using their phones or gaming console, or saying things via their phone that they would not say in person.

Figure 3. Student dendrogram after hierarchical cluster analysis



4. Discussion and conclusions

The use of ICTs in teenagers is a generalized and normalized behaviour in society today. However, the great power of attraction that ICTs have and the condition of vulnerability during adolescence are two variables that, combined, require supervision from adults so that a healthy relationship between ICTs and teenagers can be created. In this regard, results indicate that two thirds of the participants show a

high or very high frequency of use of their mobile phones, and that a third part reports a high or very high frequency of use of other gadgets with Internet connection. The frequency of use of ICTs is notably greater than the rates found in studies by Villanueva-Blasco et al. (2019), who state that a third of students show a high frequency of Internet use.

Regarding gender, and in accordance with the findings of Giménez et al. (2017), girls use their mobile phones daily more often, but boys play more with gaming consoles. Similarly, coinciding with Conde (2018) and Santana-Vega et al. (2019), the frequency of use of the mobile phone increases with age, whereas the frequency of use of the gaming console seems to decrease as students move onto the next academic year. Considering gadget preference, in accordance with Díaz-Vicario et al. (2019), the mobile phone is the gadget most used among the young, followed by other devices with connection to the Internet and gaming consoles. It has been confirmed that more than half of teenagers use the Internet and social networks without supervision, and that two out of five play videogames without any type of supervision. The results obtained about family supervision and its relation with the age do not coincide with those published by Gairín-Sallán et al. (2018), who found a smaller rate of family supervision in early adolescents (12 to 14) In this respect, it seems that there is more control and supervision during the first years of ESO and a progressive decrease as students grow older. Frequency of use increases in the final years of ESO.

When the influence of gender was identified, results match those by Villanueva-Blasco et al. (2019), with girls dedicating more time to social networks and the Internet, and being more controlled and supervised by adults in their use; however, adults supervise boys more when it comes to time spent playing on gaming consoles. Adults in charge of supervision are mainly mothers or fathers, which coincides with results by Giménez et al. (2017). Considering these outcomes, it can be stated that family supervision is insufficient for this real problem, both regarding the use of the internet and social networks, and the type of videogames and the time spent playing games. Nevertheless, more than half of the teenagers surf the Internet without control, moderation or supervision. We coincide with Duerager & Livingstone (2012) in insisting on the fact that family control directly regulates exposure to online threats and is essential to face a problematic and maladaptive use of ICTs.

The present study concludes that more than a third of the teenagers participating feel stressed when they cannot use the Internet, results which match those found by Fondevila et al. (2014), who detected similar degrees of technological stress. A higher presence of stress is observed in participants with a higher use of ICTs, which establishes a direct correlation between stress and frequency of use of ICTs. In this respect, and according to what was claimed by Villanueva-Blasco et al. (2019), those teenagers who are more supervised by the adults responsible felt less stressed when they were not able to connect to the Internet. On the other hand, the limitation in the use of ICTs imposed by parents is more prevalent in the first years of ESO and decreases as students grow older, results that support conclusions by Alfaro et al. (2015), who found statistically significant differences between the variable "study year" and limitation of use. These authors found that limitations of use are greater in lower study years. Concerning the timetable to access the Internet, it is confirmed that limitations are insufficient to reduce stress levels. Proof can be found in the fact that participants having access only at night and those having access throughout the day are the most stressed; nevertheless, when frequency of use of the ICTs is lower, the number of stressed students is reduced.

With the obtained results it can be concluded that girls have a more problematic use of mobile phones, whereas boys have higher incidence of problems when using gaming consoles. The frequency of use of mobile phones increases progressively with the study year, something that does not occur with gaming consoles. It has been possible to identify three profiles of use of ICTs, and it is worth mentioning that half of the students have a maladaptive use of ICTs or show a dangerous number of signs of a maladaptive use, a particularly alarming finding because of the problems it entails.

It has been proven that the relation between teenagers and ICTs is far from desirable, and this study reveals a worrisome situation in which a high number of teenagers use technologies at all times, without any training or control from adults. Additionally, it is necessary to highlight that those adolescents who use ICTs more frequently are also those who show higher levels of stress because of continuous use or lack of access. The creation of preventive strategies and interventions to promote adequate use of the

Internet and to train teenagers in responsible and safe ICT use is urgently needed. Additionally, and in accordance with Bartau-Rojas et al. (2018), the main figures involved in these challenges should not be forgotten, namely families. Data in this area indicates that there is a need to intervene so that young people, as well as adults, are aware of the dangers of extended use of ICTs, and of the acceptance of threats such as contacting strangers or accessing inappropriate content, plus the already known negative impact on educational, personal, and social elements of one's life. Concerning limitations, there is the need to extend the sample of participants to other regions, include private educational centres, and search for and identify the most extreme cases to do qualitative analysis that allow for the identification, first hand, of the reasons and the negative effects that maladaptive use of ICTs has produced.

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