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Problematic smartphone use and gender differences in vocational education and training

Uso problemático del móvil y diferencias de género en formación profesional

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RESUMEN

El uso del teléfono móvil entre la población estudiantil española ha sido ampliamente analizado, pero se ha centrado en muestras universitarias, de secundaria o de primaria. El objetivo del presente estudio es analizar el uso del teléfono móvil, sus diferencias de género y su relación con el trastorno por juego en Internet y por juego de azar en Internet en el alumnado de Formación Profesional (FP). Se realizó un estudio ex post facto retrospectivo en el que se evaluaron usos habituales del teléfono móvil, experiencias relacionadas con el mismo, el trastorno por juego en Internet y el juego patológico en línea. La muestra estuvo compuesta por 1107 estudiantes de FP (55.1% varones) con una edad media de 18.8 años. El 7.9% de la muestra hacía un uso problemático del móvil y el 28.6% un uso con problemas ocasionales. Se observaron diferencias de género, con un uso más problemático entre las mujeres. Según el análisis de regresión, usar el móvil en horas lectivas, ser mujer y usuaria de películas y videojuegos fueron las variables que mejor diferenciaban aquellos participantes que presentaron un uso problemático. Para aquellos participantes que empleaban el móvil con las finalidades de juegos de azar y videojuegos, ambos en Internet, la variable que mejor diferenciaba la presencia de problemas con el uso del teléfono móvil fue el uso del mismo para jugar a videojuegos en línea. Si bien la prevalencia de problemas frecuentes con el uso del móvil es relativamente baja, el porcentaje de alumnado en riesgo no debe dejar indiferente a la comunidad educativa. Se sugiere fomentar el uso adecuado de las tecnologías en el alumnado de FP prestando especial consideración a las diferencias de género encontradas.

Palabras Clave: formación profesional, diferencias de género, teléfono móvil, trastorno por juego en Internet, juego patológico, juego patológico en línea

ABSTRACT

Smartphone use by young Spanish students has been broadly explored, specifically among university, high school, and primary school students. The goal of this article is to analyze smartphone use, its gender differences, and its relationship with Internet gaming disorder and Internet gambling disorder in vocational education and training (VET) students. A retrospective ex post facto study was carried out in which habitual uses of the mobile phone, experiences related to it, Internet gaming disorder, and online pathological gambling were evaluated. The sample consisted of 1,107 VET students (55.1% male) with a mean age of 18.8 years. Problematic smartphone use was observed in 7.9% of the sample and 28.6% used it with occasional problems. Gender differences were obtained, with a higher presence of problematic use among females. According to the regression analysis, the variables that best differentiated participants who presented problematic smartphone use were using it in class, being female, and being a user of movies and videogames. Between videogames and gambling users, the variable that best differentiated participants who presented problematic smartphone use was videogame use. Although the prevalence of frequent problems with smartphone use is relatively low, the percentage of students at risk

must not be disregarded by the educational community. It is recommended to promote the appropriate use of technologies in VET students. The gender differences found in this study should be addressed with special consideration.

Keywords: vocational education and training, gender differences, smartphone use, internet gaming disorder, gambling disorder, online gambling disorder

INTRODUCTION

The mobile phone has become an indispensable device that makes people's daily lives easier. Although in the beginning, it was a device that facilitated communication, it is now a small computer with a permanent Internet connection that people use for innumerable tasks. This has implied that the way to approach the study on the use and abuse of technologies has changed. A decade ago, the use of the Internet and the mobile phone were analyzed separately, whereas nowadays, it makes no sense to differentiate them (Lee et al., 2018). In Spain, between 89.8 and 94.8% of youth aged between 14 and 16 have a mobile phone (Ballesteros & Picazo, 2019; Instituto Nacional de Estadística, 2019). The younger population uses it very versatilely and dedicates a lot of time to it (Ballesteros & Picazo, 2019).

The study of gender differences in the patterns of use of technologies has been the subject of study practically since the beginning of its universalization (Whitley, 1997). Throughout almost 30 years of study on this topic, the situation related to the acquisition of devices, their functionality and ability to access the Internet has changed substantially, in step with the evolution of technology itself (Grudin, 2017). The attempt to determine gender differences has not been exempt from this changing reality. The meta-analysis of Cai et al. (2017) obtained contradictory results, from disparate differences from one study to another to their absence. The variability according to gender in the use of these technologies is conditioned by other sociocultural factors that include educational level (the differences in the use of technology are blurred especially in samples of university students compared to high school students) or the perception of self-efficacy, among others.

Studies in Spain indicate that male adolescents spend more time on the Internet (Estévez et al., 2009), which is consistent with a recent systematic review (Twenge & Martin, 2020). This same review concludes that males use electronic devices (including peripherals, tablets) more in general and that they use them to play video games. Females, on the other hand, have more access to the computer and the mobile phone and connect more to social networks. In this case, this coincides with other Spanish studies that conclude that boys access, above all, video games, whereas girls prefer communication and social networks (Fernández-Montalvo et al., 2015; García-Jiménez et al., 2013).

The excessive use or abuse of smartphones is associated with a multitude of negative consequences (Busch & McCarthy, 2021). These range from increased psychopathological symptomatology (Beranuy et al., 2009), sleep problems (Sohn et al., 2019; Xie et al., 2018), depression and anxiety (Elhai et al., 2017; Sohn et al., 2019), to deterioration of family relationships (Roser et al., 2016).

To calculate the prevalence of problematic mobile phone use, most of the studies do so with young or adolescent population. According to the meta-analysis of Sohn et al. (2019), the prevalence of problematic mobile phone use among children and young people was estimated to be between 14.0 and 31.2%, internationally. For young Spaniards, these figures vary between 2.4 and 20% (García-Oliva et al., 2017; Jenaro et al., 2007; López-Fernández et al., 2012; Muñoz-Miralles et al., 2016). On the one hand, rigorous research is needed with validated and comparable instruments that allow us to determine the prevalence of this problem in the affected population (Pedrero et al., 2012). On the other hand, it is worth mentioning that, as in other countries, most of the studies carried out in Spain have focused on university students (Carbonell et al., 2018; García del Castillo et al., 2008), Secondary and high school students (García-Jiménez et al., 2013; Moral & Suárez, 2016; Muñoz-Miralles et al., 2016) or Primary Education students (Fernández-Montalvo et al., 2015). Research in Vocational Education and Training (VET) in Spain is scattered and insufficient, as Echeverría y Martínez (2021) have recently pointed out. Data from the Ministry of Education and Vocational Training of the Government of Spain (2020) show a clear upward trend in the number of people enrolled in VET in the last ten years, which reflects the growing interest of the Spanish population in this type of training.

In addition, the heterogeneous profile of the VET population deserves attention, which leads some researchers to point out the need to develop online training modalities to facilitate family-work reconciliation (Renés & Castro, 2013). To this, we must add that risky online behaviors occur mainly among students of training cycles (Gairín & Mercader, 2018), so the need to design studies that analyze the use of mobile phones in these students becomes evident.

Among the problems related to technology, the need to study technological (Griffiths, 1995) or digital addictions (Carbonell, 2020) has emerged. The concepts of addiction to mobile phones and/or the Internet have lost relevance because both technologies are only the pathway through which applications that could be problematic or addictive are accessed (Panova & Carbonell, 2018). According to the researchers, it is more useful to focus on the online activities that people carry out than on the device they use (mobile, tablet, computer, etc.) (Carbonell et al., 2018; Lowe-Calverley & Pontes, 2020). Despite the controversies (Kardefelt-Winther et al., 2017), it is considered that video games could develop an addiction, as included in the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (American

Psychiatric Association, 2013) and the International Classification of Diseases-11 (World Health Organization, 2019).

In another direction, the growing concern about online gambling is highlighted, especially among young people, who are the ones with the necessary skills to engage in this type of behavior (Buil et al., 2015). Thus, the smartphone is a gateway to gambling. Notwithstanding the differences, a parallel could be established between what the cigarette implied for the spread of the smoking habit and what the mobile represents for the popularization of sports betting among the younger population.

Therefore, the main objective of this work is to analyze the use of the mobile phone in VET students. For this purpose, the following specific objectives were established: a) to describe the habitual use of the mobile phone in VET students; b) to study gender differences in mobile phone use; c) to explore problematic mobile phone use according to the usual classification (non-problematic use, use with occasional problems, and use with frequent problems); and d) to relate it to the internet gaming disorder and internet gambling.

MATERIAL AND METHOD

Design and participants

Using a quantitative methodology, a retrospective ex post facto design was carried out. The selection of the proposed participant VET centers was carried out with non-probabilistic convenience sampling.

The final sample was composed of 1107 students from 17 VET centers (14 public and 3 concerted) in the autonomous community of Navarre (Spain). The distribution of the students participating in the study was as follows: 609 boys (55.1%) and 498 girls (44.9%), with a mean age of 18.83 years (*SD* = 3.5). The distribution of participants by studies and courses was as follows: a) 222 (20.0%) of Basic VET of whom 152 (68.4%) were in the first year, and 70 (31.6%) in the second year; b) 501 (45.2%) of Intermediate Vocational Training, of whom 444 (88.6%) were in first grade, and 57 (11.4%) in second grade; and (c) 384 (34.7%) of Higher Degree VET of whom 343 (89.3%) were in the first year, and 41 (10.7%) were in the second year.

Instruments

Participants provided information on sociodemographic variables such as sex, age, grade, and school. They also provided information about their habitual use of the mobile phone (calls, messaging service, social networks, information, shopping, video games, sports betting, other gambling, videos, music, banks, pornography,

academic activities, document editing, leisure, maps and navigation, health, and calendar) through items such as "Do you use your mobile to send emails and messaging: *Whatsapps*, *Telegram*, etc.?" Using such apps more than once a day was considered "regular use." In addition, for the analysis of the rest of the target variables, the following instruments were used:

The Mobile Phone Related Experiences Questionnaire *(*CERM*; Beranuy et al., 2009; Carbonell et al., 2012)*, which contains 10 items (e.g., "Do you get angry or irritated when someone bothers you while you are using your phone?") rated on a 4-point Likert-type scale, ranging from 1 (*almost never*) to 4 (*almost always*). It assesses two factors related to mobile phone use: conflicts related to mobile abuse and problems due to the emotional and communicational use of the mobile. Total scores range from 10 to 40, with higher scores indicating a higher level of problems. It has a Cronbach alpha between .81 and .75 in Spanish teenagers and young people. In this study, the value of this indicator was between .64 and .66.

The Spanish version of the Internet Gaming Disorder Scale – Short-Form (IGDS9-SF*; Beranuy et al., 2020) is a tool that evaluates the internet gaming disorder according to the criteria of the DSM-5 (APA, 2013). It has 9 items (e.g., "Do you feel the need to spend more and more time playing for satisfaction or pleasure?") and the answers are rated on a 5-point Likert ranging from 1 (*never*) to 5 (*very often*). Total scores can range from 9 to 45, with higher scores indicating a higher level of problems. It presented an Cronbach alpha of .85 in Spanish adolescents, as well as in this study.

The Online Gambling Disorder Questionnaire (OGD-Q*; González-Cabrera et al., 2020). The tool is composed of 11 items (e.g., "Have you ever felt that online gambling has had negative consequences at a personal, social, family, or academic/work level, and yet you've continued to gamble?") and evaluates online pathological gambling following the DSM-5 traditional gambling criteria (APA, 2013) and the ICD-11 criteria for predominantly online pathological gambling. Total scores can range from 11 to 55, with higher scores indicating a higher level of pathological online gambling. The questionnaire is validated for a Spanish sample of adolescents and presented a Cronbach alpha of .94, and of .93 in this study.

Procedure

We contacted the 27 VET centers (22 public and 5 concerted) in the autonomous community of Navarre, of which the managers of 17 agreed to participate. After acceptance by the management, the Guidance Department was responsible for data collection, in contact with the research team. The questionnaires were digitized and administered through the Survey Monkey© platform. The students completed the battery of questionnaires in the different computer rooms coordinated by the

counselors and under the supervision of the classroom tutor with the motto of answering truthfully and not pausing excessively at any specific question. The time needed to fill out the questionnaires ranged between 15 and 25 minutes, depending on students' age and reading comprehension.

Data analysis

Descriptive analyses were performed for all variables. Bivariate analyses were performed using chi-square or Student's t-test for independent samples, depending on the nature of the variables analyzed, and effect sizes were provided by the Phi coefficient (ϕ), Cohen's *d*, or eta squared (η²). Based on the items of the CERM, a cluster analysis (K-means) was carried out to determine the existence of homogeneous groups related to the problematic use of the mobile. Subsequently, the groups obtained through an analysis of variance (ANOVA) were compared, and the homogeneity of variances was verified using the Levene statistic. To identify between which groups these differences exist, the Bonferroni or Tamhane multiple comparison tests were used, depending on the variance homogeneity or its lack.

In addition, two logistic regression analyses were carried out to determine which variables were the most relevant to differentiate students with frequent problems with mobile phone use. For this purpose, the dependent variable was dichotomized into frequent problems versus absence of problems or occasional problems. The use (habitual or not) of different mobile applications for the first and second analysis model (calls, messaging service, social networks, information, shopping, video games, sports betting, other gambling, videos, music, banks, pornography, academic activities, document editing, leisure, maps and navigation, health, and calendar) were established as categorical independent variables. In both models, the independent variables that were included were those that were significant in the previous bivariate comparisons. For the second model, an analysis was performed only with participants who used video games and online gambling. To the above variables, the following were added: the IGDS9-SF and OGD-Q scores. The variable entry criterion was set to .05, and the variable retention criterion to .10. In addition, the Hosmer-Lemeshow test was used to assess the goodness of fit of these models. A difference of $p < .05$ was considered significant. All statistical analyses were performed with SPSS software (version 25.0).

Ethical considerations

The study was approved by the Research Ethics Committee of the Public University of Navarre (PI:008/2019) and was reported to the Department of Education of

the Government of Navarre. Once the different educational center managers had agreed to participate, they contacted the families of the students through the official communication channels and sent a passive consent informing them about the purpose of the study, its characteristics, and their right not to participate. The legal guardians or the students who did not want to participate returned the informed consent by signing said refusal. This occurred in less than 1% of the sample. There were no exclusion criteria, except for refusal to participate in the study.

RESULTS

Description of the habitual and problematic use of the mobile as a function of gender and the target variables

Of the participants, 92.5% *(n = 1024)* used the mobile for messaging services, 87.0% (*n* = 963) for social networks, and 78.5%(*n* = 869) to listen to music. Gender differences were observed for most mobile phone uses. Females used more services such as calling, messaging, social media, music, academic activities, document edition, leisure, maps and navigation, health, and calendar. Males used the mobile more to search for information, play video games, online gambling, make sports bets, and view pornography. On another hand, 87.1% *(n = 962)* of the participants used the mobile phone in the VET center, with greater use by females (χ^2 = 7.0, *df* = 1, *p* = .008). Table 1 shows the descriptive results of mobile phone use and the differences according to gender.

Table 1
Mobile phone use as a function of gender

Habitual use of the mobile phone	Total N = 1107		Males (*n* = 609)		Females (*n* = 498)		χ2	(*df*)	*p*	Phi
	N	(%)	*n*	(%)	*n*	(%)				
Calls	274	(24.8)	129	(21.2)	145	(29.1)	9.2	(1)	.002	.091
Messenger service	1024	(92.5)	546	(89.7)	478	(96.0)	15.8	(1)	.000	.120
Social networks	963	(87.0)	517	(84.9)	446	(89.6)	5.3	(1)	.022	.069
Information	397	(35.9)	251	(41.2)	146	(29.3)	16.8	(1)	.000	.123
Shopping	69	(6.2)	32	(5.3)	37	(7.4)	2.2	(1)	.136	.045
Videogames	283	(25.6)	220	(36.1)	63	(12.7)	79.3	(1)	.000	.268

	Total N = 1107		Males (n = 609)		Females (n = 498)					
Habitual use of the mobile phone	N	(%)	n	(%)	n	(%)	χ2	(df)	p	Phi
Sports betting	51	(4.6)	44	(7.2)	7	(1.4)	21.0	(1)	.000	.138
Other gambling	39	(3.5)	31	(5.1)	8	(1.6)	9.7	(1)	.002	.094
Videos	502	(45.3)	278	(45.6)	224	(45.0)	0.1	(1)	.824	.007
Music	869	(78.5)	465	(76.4)	404	(81.1)	3.6	(1)	.055	.058
Banks	91	(8.2)	48	(7.9)	43	(8.6)	0.2	(1)	.650	.014
Pornography	105	(9.5)	94	(15.4)	11	(2.2)	55.8	(1)	.000	.225
Academic activities	204	(18.4)	62	(10.2)	142	(28.5)	61.2	(1)	.000	.235
Document editing	258	(23.3)	92	(15.1)	166	(33.3)	50.9	(1)	.000	.214
Leisure	213	(19.2)	101	(16.6)	112	(22.3)	6.1	(1)	.013	.075
Maps and navigation	175	(15.8)	83	(13.6)	92	(18.5)	4.8	(1)	.028	.066
Health	98	(8.9)	44	(7.2)	54	(10.8)	4.4	(1)	.035	.063
Calendar	200	(18.1)	78	(12.8)	122	(24.5)	25.3	(1)	.000	.151
Mobile use in the VET* center										
In the center	962	(87.1)	516	(84.7)	446	(90.1)	7.0	(1)	.008	.012
In class	569	(51.7)	310	(51.2)	259	(52.3)	0.2	(1)	.700	.080

*VET: Vocational and Educational training.

Participants obtained a mean of 6.9 (SD = 4.3) in the CERM. The females presented greater problematic use of the mobile (t = 3.7, df = 1105, p < .000), as well as greater problems related to the emotional and communicational use of the mobile (t = 4.4, df = 1105, p < .000) (Table 2).

A three-cluster solution for problematic mobile use (CERM) was obtained: "No problem" with a range of 0 to 7 points (63.5%; n = 703), "Occasional problems" with a range of 8 to 13 points (28.6%; n = 317), and "Frequent problems" with a range of 14 to 30 points (7.9%; n = 87). Differences were obtained between males and females, with more "Occasional problems" and "Frequent problems" for females and more "Absence of problem" for males (χ^2 = 15.6, df = 2, p < .000). The uses of the mobile depending on the cluster to which each participant belongs and their differences are presented in Table 3.

Table 2
Problematic use of the mobile phone as a function of gender

	Total N = 1107		Males (n = 609)		Females (n = 498)		t	(df)	p	d
	Mean	(SD)	Mean	(SD)	Mean	(SD)				
CERM* (Problematic Mobile Usage)	6.9	(4.3)	6.4	(4.2)	7.4	(4.3)	3.7	(1105)	.000	.222
Conflicts related to mobile phone use	2.1	(2.1)	1.9	(2.2)	2.2	(2.0)	1.9	(1105)	.065	.111
Problems due to the emotional and communicational use of the mobile	4.8	(2.7)	4.5	(2.6)	5.2	(2.8)	4.4	(1105)	.000	.263

*CERM = Cuestionario de Experiencias Relacionadas con el teléfono móvil (Mobile Phone-Related Experiences Questionnaire).

The overall mean score of the IGDS9-SF was 14.1 (SD = 5.6) and that of the OGD-Q was 17.0 (SD = 7.7). The students who showed higher scores in the IGDS9-SF presented "Frequent problems" with the use of the mobile (F = 67.6, df = 2, $p <$ .000). The students who obtained higher scores in the OGD-Q presented "Frequent problems" with the use of the mobile (F = 12.2, df = 2, $p <$ 0.000; (Table 4). Regarding gender differences, males had a higher score in the IGDS9-SF than females (t = 2.5, df = 536, p = .011).

Variables related to the presence of frequent problems with the mobile

The first logistic regression model (which includes all the participants) showed that the variables associated with a higher probability of presenting "Frequent problems" with the mobile were the use of the mobile in class (OR = 2.3, p = .001), use of the mobile to play video games (OR = 2.2, p = .001), being female (OR = 2.0, p = .003), and the use of the mobile to watch movies (OR = 1.7, p = .017) (Table 5). These variables explained 8% of the variance and correctly classified 92.2% of participants with "Frequent Problems" *(*Hosmer & Lemeshow's χ^2 = 1.3, df = 7, p = .989).

Table 3

Regular use of the mobile phone as a function of the CERM cluster

Habitual use of the mobile phone	No problem (NP) (n = 703)		Occasional problems (OP) (n = 317)		Frequent problems (FP) (n = 87)		χ2	(df)	p	Phi	Post-hoc
	n	(%)	n	(%)	n	(%)					
Calls	153	(21.8)	95	(30.0)	26	(29.9)	9.0	(2)	.011	.091	PO>AP
Messenger service	648	(92.2)	298	(94.0)	78	(89.7)	2.1	(2)	.345	.044	
Social networks	586	(83.4)	294	(92.7)	83	(95.4)	22.9	(2)	.000	.144	(PO, PF)>AP
Information	259	(36.8)	108	(34.1)	30	(34.5)	0.8	(2)	.667	.027	
Shopping	35	(5.0)	24	(7.6)	10	(11.5)	6.2	(2)	.043	.079	PF>AP
Videogames	169	(24.0)	79	(24.9)	35	(40.2)	10.7	(2)	.005	.099	PF>(AP, PO)
Sports betting	22	(3.1)	20	(6.3)	9	(10.3)	10.6	(2)	.005	.105	PF>AP
Other gambling	15	(2.1)	20	(6.3)	4	(4.6)	11.5	(2)	.003	.102	PO>AP
Films	288	(41.0)	160	(50.5)	54	(62.1)	18.6	(2)	.000	.130	(PO,PF)> AP
Music	539	(76.7)	258	(81.4)	72	(82.8)	3.8	(2)	.137	.059	
Banks	56	(8.0)	26	(8.2)	9	(10.3)	0.5	(2)	.761	.023	
Pornography	62	(8.8)	35	(11.0)	8	(9.2)	1.2	(2)	.540	.034	
Academic activities	134	(19.1)	57	(18.0)	13	(14.9)	0.9	(2)	.627	.029	
Document Editing	158	(22.5)	83	(26.2)	17	(19.5)	2.4	(2)	.297	.047	
Leisure	128	(18.2)	67	(21.1)	18	(20.7)	1.3	(2)	.514	.035	
Maps and navigation	97	(13.8)	58	(18.3)	20	(23.0)	6.6	(2)	.036	.079	PF>AP
Health	58	(8.3)	29	(9.1)	11	(12.6)	1.7	(2)	.419	.041	
Calendar	129	(18.3)	60	(18.9)	11	(12.6)	2.0	(2)	.353	.042	
Mobile use in the center	(n = 701)		(n = 316)		(n = 87)						
In the center	599	(85.4)	287	(90.8)	76	(87.4)	5.9	(2)	.052	.071	
In class	332	(47.4)	176	(56.1)	61	(70.9)	20.4	(2)	.000	.136	PF>PO>AP

NP = no problem; OP = occasional problems; FP = frequent problems.

Table 4

Problematic use of video games and gambling as a function of the CERM cluster

	No problems (NP) (*n* = 343)		Occasional problems (OP) (*n* = 151)		Frequent problems (FP) (*n* = 44)						
	Mean	(*SD*)	Mean	(*SD*)	Mean	(*SD*)	*F*	(*df*)	*p*	η^2	Post-hoc
IGDS9-SF	12.5	(3.8)	15.7	(5.3)	21.0	(9.7)	67.6	(2)	.000	.202	PF>PO>AP
	(*n* = 69)		(*n* = 39)		(*n* = 13)						
OGD-Q	14.9	(5.5)	18.0	(7.4)	25.3	(12.2)	12.2	(2)	.000	.171	PF>AP

IGDS9-SF=Internet Gaming Disorder Scale–Short-Form; OGD-Q=Online Gambling Disorder Questionnaire; NP=no problem; OP=occasional problems; FP=frequent problems.

Table 5

Variables related to the presence of frequent problems with mobile phone use

Logistic regression			
Dependent variable = CERM CLUSTER; 0 = NP and OP; 1 = FP			
Variables	OR	*p*	95% CI
Model 1 (*n* = 1107)			
Mobile use in class	2.3	.001	(1.4 – 3.8)
Use of mobile phone for video games	2.2	.001	(1.3 – 3.7)
Gender (female)	2.0	.003	(1.2 – 3.3)
Use of mobile phone to watch movies	1.7	.017	(1.1 – 2.8)
Constant	0.2	.000	
Nagelkerke's adjusted R^2			.080
% correctly classified			92.2
Model 2 (*n* = 93)			
IGDS9-SF Score	1.2	.001	(1.1 – 1.3)
Constant	0.0	.000	
Nagelkerke's adjusted R^2			.450
% correctly classified			91.4

NP=No problem; OP=Occasional problems; FP=Frequent problems; IGDS9-SF=Internet Gaming Disorder Scale–Short-Form.

The second logistic regression model (which only includes people who play video games and gambling) showed that the variable associated with a higher probability

of presenting "Frequent problems" with the mobile in participants who play video games and gambling was a higher score in the IGDS9-SF (OR = 1.2, *p* = .001). This variable explained 45% of the variance and correctly classified 91.4% of these participants*(*Hosmer & Lemeshow's χ^2 = 4.9, *df* = 7, *p* = .669).

DISCUSSION

The first objective of this study was to describe the use of the mobile phone in VET students. In this regard, approximately 80% use the mobile for communication (messaging and social networks) and entertainment (listening to music). These data are comparable with the rates of mobile phone use of other samples in adolescents, which are above 90% and whose use is mainly focused on communication purposes and social networks (García-Jiménez et al., 2013). The use of the mobile by these students is very versatile, like in the rest of the young people, and presents a high dedication of time (Ballesteros & Picazo, 2019). Almost 90% of the sample uses the mobile phone in the educational center, and one out of two does so during classes, a much higher percentage than that observed by Fernández-Montalvo et al. (2015) of 14.6% among schoolchildren. This may be because the limits on the use of technological devices are much more restrictive in schools than in VET centers, where it is not prohibited, although it is recommended that the use be minimal.

Concerning the type of use, almost 8% of the sample presents frequent problems, a percentage that is in the range of other studies carried out with young Spaniards, which varies between 2.4% and 20% (Carbonell et al., 2018; Jenaro et al., 2007; López-Fernández et al., 2012; Muñoz-Miralles et al., 2016). Internationally, the prevalence of problematic mobile phone use among children and young people is estimated to be between 14% and 31.2% (Sohn et al., 2019). Likewise, in the general Spanish population (from 16 to 65 years old), the prevalence of problematic mobile use is 5.1% (De Sola, 2018). It is reasonable to find a greater problematic and at-risk use of the mobile in VET students when taking into account the age distribution of this sample and that the greatest problematic use of the mobile is found in the young population compared to those over 40 years old (De Sola, 2018). In our country, we found no studies on the problematic use of technology in VET students, so it is necessary to resort to the international literature to compare similar data in students of the same type of training. According to Haug et al. (2015), smartphone addiction took place in 16.9% of VET students in Switzerland, which is well above the prevalence of the problematic use obtained in this study. The fact that these researchers analyzed the phenomenon as an addiction could explain the difference in prevalence. Almost 30% of the sample had occasional problems with the mobile, a percentage clearly higher than that found by De Sola (2018) of 15.4% in the general Spanish population and by Carbonell (2012) of 16.8% in Spanish secondary school students.

Concerning the second objective of this study, the main gender differences were reflected in males' greater use of video games, sports betting, and pornography, which coincides with the common use manifested by young people and adolescents in different Spanish studies (Carbonell et al., 2018; Carbonell, Chamarro et al., 2012; Fernández-Montalvo et al., 2015; García-Jiménez et al., 2013). On another hand, females have shown the general tendency manifested in the scientific literature of using applications more than males for communicative purposes and social networks (Fernández-Montalvo et al., 2015; García-Jiménez et al., 2013; Yang et al., 2018). In the present study, there were also differences in other uses. Coinciding with university women (Carbonell et al., 2018), VET students used the mobile phone more to carry out academic activities, edit documents, and manage the calendar. Likewise, the females presented a greater problematic use of the mobile, with more problems due to the emotional and communicational use of the mobile, in line with the findings of other studies (Jenaro et al., 2007; Moral & Suárez, 2016).

Concerning the third objective, the main applications in which VET students manifested a problematic use of the mobile were social networks, video games, gambling, sports betting, and viewing movies and/or series. All of them are applications that have also been related to the problematic use of mobile phones in other studies (Carbonell et al., 2018; Muñoz-Miralles et al., 2016). As for the greater problems detected, we observed how students who have frequent problems with the use of mobile phones have higher scores in the instruments that evaluate the Internet gaming disorder and the Internet gambling disorder.

Finally, of all the factors studied, those that may be part of the risk factors for problematic mobile phone use are: being female, using one's mobile phone during classes, using it to play video games or watch movies and/or series. Within the student users of video games and online gambling, a high score in the IGD-S9 best differentiates those with problematic mobile use from those who do not have frequent problems with the mobile phone.

The need to delve into the characteristics of mobile phone use in general, and especially in the young population, has been highlighted previously (López-Fernández et al., 2012; Nikhita et al., 2015). The profile found in this research (female, user of video games and movies, who uses it during school hours) and its relationship with problematic use of the mobile phone can help to develop educational strategies and detect potentially pathological cases. Although the prevalence of frequent problems with mobile phones is relatively low, the percentage of students at risk of developing them cannot leave the educational community indifferent. Approximately 30% of VET students have a pattern of risky mobile phone use.

This research has a number of limitations that are worth commenting on. First, the instruments used are self-reports, so the effects of students' response biases and social desirability cannot be completely ruled out. This could be improved in

the future by developing objective complementary measures such as applications, as well as qualitative measures, as they would complement outcomes that may be influenced by each gender's self-perception. Secondly, instruments were used that referred to gender in a binary way (woman/man), a circumstance that limits the analysis from that point of view. For future studies, other item response possibilities will be added to examine this aspect in more depth. Third, caution is suggested when extrapolating the prevalence rates reported in the present study, considering them as a first approximation to the problem, given the size and nature of the sample of this research. Finally, the size of the sample used to analyze the involvement of video games and gambling in the use of mobile phones was small, as these uses are not very extended in this population. In this sense, caution should be exercised when generalizing the results to other VET samples. Other studies should be carried out to corroborate the results found in this research.

In conclusion, this research suggests promoting the adequate use of technologies in VET students, paying special attention to gender differences in mobile phone use. Likewise, considering the percentage of VET students who present or are at risk of presenting problems with the use of the mobile phone and the use they make of it in the classrooms, it is worth highlighting the importance of the development of protocols to promote healthy use, taking into account gender differences. For this purpose, future lines of research are needed that shed more light on the VET population's use of mobile phones, both problematic and non-problematic. Likewise, it is necessary to delve into the implications of such use by paying attention to the growth of some phenomena such as online gambling.

CONFLICT OF INTEREST

The authors declare they have no conflict of interest.

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