



Article

# Factors Contributing to Mobile Phone Dependence Amongst Young People—Educational Implications

Isabel Martínez-Sánchez <sup>1</sup>, Rosa M. Goig-Martínez <sup>1</sup>, José Álvarez-Rodríguez <sup>2</sup> and Manuel Fernández-Cruz <sup>3,\*</sup>

<sup>1</sup> Department of Research Methods and Diagnosis in Education, Faculty of Education, National University of Distance Education (UNED), 28040 Madrid, Spain; [imsanchez@edu.uned.es](mailto:imsanchez@edu.uned.es) (I.M.-S.); [rmgoig@edu.uned.es](mailto:rmgoig@edu.uned.es) (R.M.G.-M.)

<sup>2</sup> Department of Pedagogy, Universidad de Granada, 18071 Granada, Spain; [alvarez@ugr.es](mailto:alvarez@ugr.es)

<sup>3</sup> Department of Didactic and School Organization, Universidad de Granada; 18071 Granada, Spain

\* Correspondence: [manuelfernandezcruz@ugr.es](mailto:manuelfernandezcruz@ugr.es); Tel.: +34-958-240-610

Received: 28 February 2020; Accepted: 21 March 2020; Published: 24 March 2020



**Abstract:** The use of mobile devices facilitates access to knowledge and is at the base of the education of the future. Although the digital society has contributed a number of benefits, it has also been associated with worrying behaviors. The study design consisted of a quantitative approach that was descriptive, inferential and ex post facto in nature. Its purpose was to better understand the opinion of young people regarding smartphone use and describe dependence deriving from regular use. The sample was formed of 420 students from the Faculty of Education at the University of Granada. Results indicate that mobile phone use has displaced use of other technologies such as the television and is associated with communication and recreational activities. In addition, a profile was identified for young people at greater risk of developing a dependence on their mobile devices. This profile constituted female smartphone users with recreational motives and individuals who exceeded mobile phone use by more than six hours a day. To improve the educational use of smartphones, prevention and intervention plans must be designed which ensure correct management of this device, taking advantage of the benefits they offer, while avoiding problems derived from inappropriate use.

**Keywords:** information and communication technology; mobile phones; dependence; youth

## 1. Introduction

Information and communication technologies (ICT) have expanded at a dizzying speed within young people across the world, having an important impact on their habits. From the year 2000 onwards, popularization of the Internet led to coining of the new term “digital natives”. This term refers to the youth population born in the 21st century who employ new technologies in a natural way [1]. Transcendence of ICT in contemporary society is such that it has led to the emergence of new dynamics in communication and access to information. These practices have transformed social relations and production, causing a rethink of the way an individual interacts in all spheres within which they exist [2–6].

The quantitative scope of these changes has been documented by Santana, Gómez and Feliciano [7] who reported that 92.4% of the population, aged between 10 and 15 years, had incorporated such changes into their daily life for communicative and academic purposes [4]. Within this phenomenon, an availability factor has been outlined, with the number of homes in Spain with access to the Internet in 2019 being higher than 91% (International Telecommunication Union). Cloquell [2] posits that, given this backdrop, it is useful to evaluate the impact of ICT and, especially, Internet access amongst

young people and the social imperative its use may invoke. On the back of this, pros and cons can be identified, which may strengthen or detract from outcomes, respectively.

Nowadays, Internet access is fundamentally provided through mobile devices. Amongst these, telephones are the most commonly used [7]. Mobile phone use has expanded for a number of purposes, principally, those that are professional and communicative in nature [8–10]. Europe is the continent in which this technology is most embedded at all age ranges [11]. For this reason, contemporary society is referred to as a “smartphone society” [12], characterized by the fact that 93% of the population has access to a personal smartphone. Mean usage of these devices exceeds 20 h a week in the Western world. In agreement with [13], smartphone use as a personal device is typically initiated in Spain at ten years old and is completely integrated into adolescents’ routines by the age of thirteen. From there, use progressively increases with age.

In agreement with Herrera, Gil and Acuña [8], smartphone use has led to a break with traditional processes of interaction and socialization. This generates what Polo, Mendo, León and Felipe [14] identify as “virtual spaces”, constituting a phenomenon that needs to be investigated in order to understand what other possible changes could arise. Such changes could include the substitution of communicative elements for emotions or the sub-culture associated with technology use. Along the same lines, Ruiz [13] explains that mobile phones are associated with a differentiated use of the applications available through technological devices. These include social networks and games, and their use differentiates the kind of leisure engaged in by contemporary youth, from that of previous generations.

Positive aspects connecting smartphone use, such as the ubiquity of information access and infinite communicative possibilities, have given it a central role in multiple daily processes: purchasing, training, other [12,15]. Nevertheless, use of this tool is not free from debate due to the risk factors it entails. There is an existing social concern regarding the development of pathological behaviors. Such risks include addiction to this device and problems associated to excess use or other dangerous practices of technology use [11,12,16].

In accordance with Carbonell et al. [16], concern about the potential addiction that can be generated by inappropriate mobile phone use has been a troubling problem in research for more than a decade. This coincides with the point at which studies began to investigate the prevalence of problematic use. Amongst the various risk behaviors, the most harmful consists of feelings of dependence and addiction towards the smartphone. Despite interest in investigating this phenomenon further in adolescents and young people as they constitute the population most exposed to this technology, the majority of studies have focused on the adult population [16].

Authors such as Kuss et al. [12] suggest that there are a number of reasons for investigating potential dependence behaviors developed by individuals, however, one of the most important is the need to better understand which characteristics may constitute problematic use. From this, research will be able to articulate evidence for appropriate prevention.

## 2. Methods

### 2.1. Aims

The present study centers on smartphone use amongst young university students. A quantitative approach was taken which was descriptive, inferential and ex post facto in nature. This permits us to study a broad set of individuals and analyze each one of the proposed variables in both an isolated and combined way [17]. An instrument was designed for the present study through which to deepen understanding of young peoples’ opinions about mobile phone use, while also detecting potential dependence behaviors derived from its use.

In relation to smartphone usage patterns, the following personal characteristics of students were analyzed: gender, age, qualification being undertaken and registered year of study. In respect to these characteristics, the following usage patterns were analyzed: Mobile phone use for videogames,

problems derived from using the mobile phone to consult the Internet or visit social networks, places and situations in which mobiles can be used, frequency of use and responsibility for paying the service bill.

The objectives of the present study were to determine factors associated with smartphone dependence in young university students and estimate the risk potential of each factor. To achieve this, a binary logistic regression model was estimated following a two-step process. First, a stepwise logistic regression model was constructed according to statistical likelihood ratios. This identified factors which significantly influenced the likelihood of having mobile phone dependence. Secondly, a hierarchical logistic regression model was developed to establish the contribution of each factor to the aforementioned probability.

## 2.2. Participants

Data were produced from a sample which was formed by 420 students from the Faculty of Education Sciences and the University of Granada. The sample was recruited through probabilistic intentional sampling [18], this enabled us to select accessible cases who agreed to be included in the study.

The sample is constituted by 84.8% females and 15.2% males. These gender differences correspond to the elevated presence of females within the reference population. Average age of the young participants in the present sample was 20.83 years, with the youngest being 17 years and the oldest being 44 years old. Standard deviation was 3.391.

Attending to the studies being undertaken by respondents, percentages were distributed as presented below (Table 1):

**Table 1.** Frequencies for the variable describing the qualification being undertaken.

	Programme	Frequency	Percentage	Valid Percentage
Valid	Primary education	50	11.9	11.9
	Infant education	47	11.2	11.2
	Pedagogy	172	41.0	41.0
	Social education	114	27.1	27.1
	Master	37	8.8	8.8
	Total	420	100.0	100.0

The qualification with the greatest representation is pedagogy, with this being undertaken by 41% of participants, followed by social education with 27.1% and, finally, teaching in primary education and infant education, with similar percentages (11.9% and 11.2%, respectively).

The 79% are students undertaking the first year of their course, while 21% were enrolled on the fourth year of their course.

## 2.3. Instrument

An ad hoc questionnaire was elaborated for data collection by selecting and adapting items from other previously standardized instruments. Fourteen items came from the instrument developed by Labrador and Villadangos [19]; 9 from the instrument of Ordóñez, Urbano and Esparrell [20]; and, the 12 remaining items were taken from the instrument described by Roberts [21]. Thus, our instrument included a total of 35 items, of which only 31 scale items were considered for the validation process.

In order to ensure content validity of the instrument, opinions of a group of nine professionals were taken into consideration. All professionals were experts in research methodology and the ambit of information and communication technology: two women and seven men; all with more than 10 years of academic experience; each of them associated with a different Spanish university.

As nine experts were consulted, a numerical rating scale with a degree of adjustment was used. The scale ranged from 1 to 4, with 1 being “nothing” and 4 being “totally”. Thus, the highest score that

could be obtained from the items was  $9 \times 4 = 36$ . We established the cut-point of  $9 \times 3 = 27$ , considering 1 and 2 as negative and 3 and 4 as positive. Of the 31 items subjected to validation by the expert panel, 3 were eliminated, leaving 28 in the final version of the instrument. Respondents were required to respond to these items along a four-point Likert scale: Never, sometimes, frequently and always.

Internal consistency of the questionnaire was calculated via the reliability Cronbach alpha coefficient, obtaining a value of  $\sigma = 0.92$ . Analysis confirmed that, in all cases, the reliability coefficient values observed were sufficiently high to validate the inferences and conclusions made in the present research study.

Finally, four identification variables were added to the instrument, these being: gender, age, qualification undertaken and course year.

#### 2.4. Procedure

Participants were informed about the purpose of the research, with participation being entirely voluntarily. All members of the sample were provided with a link to Google docs. in order to fill out an online application. Anonymity of participants was respected and ethical principles of social science research were followed.

Completed questionnaires were collected and we proceeded to digital coding, sorting and recording of responses in a database for its later statistical treatment. Following this, analysis of quantitative results was performed through the statistical analysis program SPSS.

### 3. Results

#### 3.1. Behavioral Patterns

We found that 99.3% of respondents use an Internet diary. The same percentage also used a smartphone diary to consult social networks. Nevertheless, only 46.5% of those surveyed reported watching the television every day and 9.3% of participants played video consoles or videogames every day.

Above all, Internet use was considered to be a problematic activity by participants at least some of the time. It was considered problematic sometimes by 43.1%, frequently by 14.3% and always by 5.2%. A total of 9% reported the problems sometimes occurred when playing the console, 1.4% said they occurred frequently and only 0.5% stated that problems always occurred. In contrast, 16.7% of the sample considered the television to sometimes be problematic, 4.5% of the sample considered related problems frequently, with 2.6% perceiving it to always be problematic.

Some 19% of the sample reported that they always spent more time than necessary surfing the Internet, 33.1% reported this to occur frequently and 42.4% stated this only sometimes.

Of the participants, 50% sometimes felt bad when they could not use the Internet, while 12.4% reported this malaise frequently and 6.9% reported always feeling bad because of Internet use. A total of 17.4% sometimes had discussions with their friends about Internet use, while 8.6% sometimes lied to their family or friends about the number of hours they spent using the Internet. A total of 29.5% sometimes stopped doing another activity in order to use the Internet, while 4.8% did so frequently and 0.7% always abandoned other activities to use the Internet.

Some 56.7% of the sample reported relaxing some of the time when they used the Internet, 16.7% reported relaxing frequently and 5.7% reported always relaxing. Nevertheless, 30.1% sometimes feel nervous when they cannot use the Internet, 7.2% frequently do so and 0.5% always feel nervous without the Internet.

Only 21.7% of participants paid their smartphone bill with their own resources.

Some 89.3% used the Internet more than six hours a week, 36.5% used it more than six hours a day, followed by 28.6%, who used it between five and six hours a day. A total of 86% of the sample used a mobile phone more than six hours a week, 30% used it more than six hours a day and 25% invested between five and six hours a day using a mobile phone.

Some 39% always check their mobile phone to see if somebody has written to them or called them, with 37.1% doing so frequently. A total of 24.5% lose all notion of time when they are connected, with 11% of the sample stating that this always occurs. A total of 20.3% frequently feel bad for investing too much time into being online, with 8.6% always feeling bad for the same reason. A total of 11.7% report having reduced their smartphone use frequently because they believed they were addicted, with 4% always limiting their use for the same reason.

Some 33.7% of those surveyed reported frequently using their mobile phone in class, with 18.4% always using it in class. A total of 12.6% believe that it is frequently easier to express their emotions with emoticons, with 7.4% stating this to always be the case.

Some 56.4% interact with their mobile phone as soon as they wake up. A total of 18.3% report frequently considering that they invest increasingly more time into their mobile phone, with 7.4% feeling that they always do this. A total of 8.8% of the sample reports frequently being anxious if they do not use their mobile phone, with 1.4% always having this feeling. A total of 14% of participants report sometimes using their mobile phone while driving, 2.9% do so frequently and 0.7% report always engaging in this behavior.

### 3.2. Logistic Regression

Results obtained through stepwise logistic regression indicated that sociodemographic factors had little influence on the likelihood of having a dependence on mobile phones, with gender being the only variable to be statistically significant ( $p = 0.04$ ). Factors associated with the places and situations in which young people employ their mobile phones were also discarded. With respect to factors related to smartphone use and the problems derived from this, a significant influence was found with the use of these devices to play ( $p = 0.014$ ) and problems created by them when consulting networks ( $p < 0.001$ ). With regards to the frequency of use, the number of daily hours spent with the mobile phone was found to be significant ( $p < 0.001$ ). Whether the young person themselves—or their parents—paid the telephone bill did not demonstrate any relationship with device use or dependence. Following this, a hierarchical logistic regression model was estimated in which variables were introduced in three blocks: sociodemographic (gender), different types of use and the problems derived (mobile phone use for playing, problems created by mobile phone use for consulting social networks) and frequency of use (number of daily hours). In this way, the extent to which each block explains the probability of smartphone dependence could be estimated. The following table shows the results from this hierarchical logistic regression model. The end of the table also includes results from the tests of model fit for each block, alongside the Nagelkerke  $R^2$  and the Cox and Snell  $R^2$ . This outlines the contribution of each factor type to the final model.

Interaction terms between variables were not identified. As can be observed from the Table 2, important changes were not produced in the magnitude or direction of the odds ratio as each factor was introduced into each block.

**Table 2.** Hierarchical logistic regression. Risk factors for mobile phone dependence.

Factors	Model 1		Model 2		Model 3	
	Odd Ratio (CI 95%)	<i>p</i>	Odd Ratio (CI 95%)	<i>p</i>	Odd Ratio (CI 95%)	<i>p</i>
Gender Female	2.649 (1.023–6.863)	0.045	3.420 (1.229–9.522)	0.019	3.172 (1.122–8.972)	0.030
Mobile phone use for playing <sup>a</sup>						

Table 2. Cont.

Factors	Model 1		Model 2		Model 3	
	Odd Ratio (CI 95%)	<i>p</i>	Odd Ratio (CI 95%)	<i>p</i>	Odd Ratio (CI 95%)	<i>p</i>
Sometimes			2.414 (1.202–4.845)	0.013	2.477 (1.202–5.104)	0.014
Frequently/always			2.784 (1.313–5.903)	0.008	3.059 (1.403–6.673)	0.005
Problems from mobile phone use for consulting social networks <sup>a</sup>						
Sometimes			1.754 (0.841–3.659)	0.134	1.682 (0.789–3.586)	0.178
Frequently/always			7.696 (3.656–16.202)	<0.001	8.569 (3.911–18.778)	<0.001
Num. daily hours of mobile phone use <sup>b</sup> More than 6 h a day					4.061 (2.268–7.272)	<0.001
Chi-squared model	5.027		49.567		72.510	
Sig. Change –2 log. verisimilitude	0.025		<0.001		<0.001	
Cox y Snell R <sup>2</sup>	0.012		0.112		0.159	
Negelkerke R <sup>2</sup>	0.020		0.167		0.246	

Source: developed by the authors. <sup>a</sup> Reference category: never; <sup>b</sup> Reference category: 1 to 6 h a day.

From the aforementioned results, a profile can be deduced of young people at greater risk of developing dependence on smartphones, it is as follows:

- Female (3 times more likely than males).
- Mobile phones are used always or frequently to play (3 times more likely than those who respond that they never use a mobile phone to this end).
- Daily device usage greater than 6 h (4 times more likely than those who use mobile phones for between 1 and 6 h).
- Frequently or always has problems due to using a telephone to consult social networks (8.5 times more likely than those who respond that they never have this type of problem).

The set of factors studied is capable of explaining approximately between 16% and 25% of the probability of suffering from a dependence on mobile phones. The factors with greatest weight in this explanation were those related with the type of use attributed to mobile phones and the problems associated with this. These in themselves explained only between 10% and 16% of variance in the dependent variable. The factor with the second greatest importance was frequency of smartphone use, with this contributing between 4.7% and 7.9% to the explanatory capacity of the model. In contrast, gender was the only sociodemographic variable that showed an association with dependence on mobile phones, though it only explained between 1.2% and 2% of the likelihood of young people developing mobile phone dependence.

#### 4. Discussion

In relation to Internet use, it is notable that 19% of young people considered that they always spent more time than necessary online, while 16.7% considered themselves to frequently use the Internet for a more prolonged time than necessary. The 42.2% only sometimes admitted to this extensive technology use. Of all participants, 24.5% referred to sometimes losing track of time when navigating the web and 11% reported never being aware of the length of their usage whenever they used their device. In line with research conducted by Ruiz [13] these data highlight that usage plays a hugely important role in the life of young people. Nevertheless, this does not mean that all use is concerning and, as stated by Ruiz [13], smartphone use is controlled in the majority of cases and does not invoke harmful behavior.

In quantifying this usage, we see that 89.3% of the sample were situated in the category of surfing the Internet on mobile devices for more than six hours a week. This being said, attention must be drawn to the fact that 28.6% engage in this practice for more than six hours a day. This is more than seven times the average weekly use of participants overall. These young people are engaging in a potentially abusive use of technology in that they reflect a far greater investment of time in smartphone use than their peers. For this reason, they must constitute the focus of interest from a prevention perspective. This result is consistent with the study by Marín et al. [22] who found that 28% of their sample presented risk behavior. It was also consistent with other complementary studies conducted in the same or similar settings [23,24].

These data are somewhat different from those obtained by Aljomaa et al. [25] who reported that 48% of students participating in their study were addicted to their mobile phone. Faced with these data, our study identified a risk profile which was characteristic of a much smaller proportion of the present sample. This could be explained by the different methods employed in both studies and the different research context.

Another aspect that catches attention is the finding that 50% of participants sometimes feel bad when they do not have any possibility of accessing the Internet. This dropped to 12.4% of participants, who indicated frequently feeling bad when faced with this situation and 6.9% who stated always.

Of all participants it was further detected that 17.4% tended to have discussions with others about their Internet use, while 8.6% sometimes lied about their Internet use, tending to under-represent the hours of their use when discussing it with relatives or friends. On the other hand, another notable aspect was that 29.5% of participants had stopped engaging in some other activity on at least one occasion in order to use the Internet, while 4.8% frequently did so and 0.7% reported always doing so.

Of those surveyed, 56.7% sometimes feel relaxed when they use the Internet. The 16.7% frequently relaxed online and, finally, 5.7% always relaxed surfing the web. These data contrast with the feelings expressed by the remaining participants in relation to Internet use: 30.1% sometimes feel nervous when there is no Internet connection available, 7.2% is frequently nervous when this occurs and 0.5%, always. Further, 8.8% admit frequently feeling anxious when they do not use their mobile phone and 1.4% always feel this sensation. In agreement with Samaha and Hawi [26], these data highlight a link between mobile phone use and variables related with mental health. These variables should be measured in other similar research studies, alongside others that are implicated in the prevalence of emotional disorders amongst university students.

As another aspect, the study outlines elevated mobile phone use amongst participants. The daily rate of mobile phone use exceeded averages reported in other research studies [11,12] which could indicate a rising trend towards this behavior in the present day. In accordance with authors such as Rahim et al. [27] and Herrera, Gil and Acuña [8], a new trend regarding technology consumption that connects this overuse of mobile phones amongst young people must be considered. This trend has been documented and implies that, for university students, the acquisition of mobile technologies is one of the most characteristic consumption behaviors of contemporary society.

Further, according to Demirci, Akgönül and Akpınar [28], it is necessary to offer a detailed examination of mobile phone use amongst young people because potential addiction is correlated with sleep problems, anxiety and behavioral disorders. This requires an approach that is directed by

a multi-disciplinary perspective, in which the health and educational systems participate in order to achieve better results. The desired result is full control over the potential pathologies that may be suffered as an outcome of technology use. In connection with this, Gökçeşlan et al. [29] have explained that it is necessary for educational institutions to delegate time to better understand the various profiles of mobile phone use amongst their students. From this context, they will then be able to design proposals for more appropriate interventions.

The present study evidences that mobile phone use has seen an increase in detriment to other technologies, such as the television and videogames. For the young people surveyed, it is a reference device in their daily lives. This, in agreement with Herrera, Gil and Acuña [8], brings with it a new need which must be satisfied—the need to acquire new smartphones with increasing functionality and stimuli, in this way quenching the thirst for interaction. Of all participants, 39% always check their telephone to see whether they have new notifications, with this action being frequently carried out by 37.1% of participants. In line with these data and in agreement with Vorderer, Krömer and Schneider [30], it is highlighted that it is more important to young people that they are connected than to use the functionalities of their devices. In other words, they use the telephone as a means to demonstrate social availability towards others, for this reason they are constantly updating their connections. This situation leads to a great deal of worry in cases where young people find that their device cannot connect to the network for a number of reasons [30].

In accordance with this research, mobile telephone use by young university students exceeds leisure time, thus also being carried out during their class schedule, with 33.7% reporting frequently engaging in this practice and 18.4%, always. Dependence on different daily actions for young people with regards to this device is also evident while driving, with 2.9% referring to frequently using their phone while driving and 0.7%, always. Although these rates are not very high, it must be considered that it concerns a legally sanctioned behavior in Spain and can have very serious consequences, thus, ideally, this percentage should be zero. In accordance with Ruiz [13], this behavior may show compulsive mobile phone use, characterized by an absence of physical barriers to the use of this resource. In this way, individuals will register identical behavior relating to their mobile phone in the various spaces in which they find themselves throughout the day. In agreement with Ruiz [13], the low percentage of individuals using mobile phones in such circumstances is reassuring and implies that the majority of young people are conscious of the uses for which this device is designed.

When communicating with others, these young people seek emotional support in order to channel their emotions, with this modality being frequently or always considered by some (12.6% and 7.4%, respectively) as an easier route to achieve this.

The present study gives pause for thought in that participants do not typically pay their own Internet bills, with only 21.7% taking personal responsibility over this expense.

In relation to potential awareness regarding excessive use of these devices, 20.3% reported that they frequently feel bad for investing too much time in using their device and 8.6% stated that this was always the case. These data point to recognition on the part of users that they may be losing control in the management of their personal time due to technology, although this is not connected with other types of actions through which they could limit excessive use [31].

The present study identified a profile of young people at risk of developing dependence on their mobile device. This profile constitutes females, those using their smartphones for entertainment purposes and individuals who exceed a mobile phone use of more than six hours a day. Finally, a notable risk factor is the emergence of problems associated with using smartphones to consult social networks. This profile corroborates those identified by Ruiz [13] and Polo et al [14]. For these authors, despite there being no risk of having more problems from developing a mobile phone dependence *per se*, the existence of behavioral and emotional problems is a variable that influences this dimension. Given that prevalence of these disorders is higher in females, we predict that females are likely to face a greater chance of using this technology in a maladaptive way as it offers users a new route through



which they can connect with others and establish affective relationships, which may not be possible in another setting.

For Polo et al. [14] risk is more notorious within university students of a younger age (18 to 20 years). This is because communicative and emotional conflicts are stronger and the smartphone is now considered to offer a route through which these challenges can be overcome.

On the other hand, Aljomaa et al. [25] add the status of being single as another risk factor. For these researchers, this is a component that conditions abusive technology use, with this being evidenced by both a higher number of daily hours of usage (this exceeding 4 h) and more money being invested in technology.

In consideration of the characteristics of young people at greater risk and in agreement with Boumosleh and Jaalouk [32], interventions and prevention plans should be designed which ensure correct management of this device, while enabling individuals to take advantage of its benefits without suffering problems derived from mobile phone misuse. Kim and Kim [33] highlight that, together with behavioral and emotional problems, musculoskeletal problems associated with telephone use should also be tackled. This should begin with a thorough analysis which, in practice, remains a neglected aspect in research despite its obvious interest.

## 5. Conclusions

The most relevant factors leading to dependence of young people on smartphone use were identified. These related to the type of mobile phone use practiced (for playing games and consulting social networks) and problems resulting from this, in addition to another factor that was related with the frequency of use. Finally, gender, to a lesser extent, was found to be another component in the explanation of the likelihood of young people developing a dependence on mobile phones.

We consider education to constitute a route through which individuals can be supplied with full knowledge about the potential uses of the tools at their disposition, equipping them to comprehend the opportunities and risks within their reach. ICT has revolutionized communicative, training and work processes [34]. It is an auspicious ally for accessing information and resources which are highly positive for the individual and, with suitable control, can make the “mobile phone society” a social setting unmatched in history with regards to knowledge concerns.

Teachers should offer this type of training to students with the aim of enabling them to consciously optimize their resources and, in this way, steer them away from problematic and risky behaviors [35–37]. This will also offer them a route through which to report potential harmful use or request help when necessary. As a consequence, responsible technology use requires knowledge of its dangers and the possibility of it impacting upon problem prevention, leading to a completely secure digital space.

**Author Contributions:** Conceptualization, J.Á.-R.; methodology, I.M.-S. and R.M.G.-M.; writing—review, editing and supervision, M.F.-C. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Davies, H.C. Learning to Google: Understanding classed and gendered practices when young people use the Internet for research. *New Media Soc.* **2018**, *20*, 2764–2780. [[CrossRef](#)]
2. Cloquell, A. Usos sociales de internet entre los adolescentes españoles. *Rev. Sobre Infanc. Adolesc.* **2015**, *8*, 1–14. [[CrossRef](#)]
3. Espinar, E.; González, M.J. Uso de Internet y prácticas políticas de los jóvenes españoles. *Convergencia* **2015**, *22*, 13–38. [[CrossRef](#)]
4. Fernández, J.; Peñalva, A.; Irazabal, I. Hábitos de uso y conductas de riesgo en Internet en la preadolescencia. *Comun. Rev. Científica Iberoam. Comun. Educ.* **2015**, *44*, 113–120.

5. Haug, S.; Castro, R.; Kwon, M.; Filler, A.; Kowatsch, T.; Schaub, M. Smartphone use and smartphone addiction among young people in Switzerland. *J. Behav. Addict.* **2015**, *4*, 299–307. [CrossRef]
6. De la Villa, M.; Suárez, C. Factores de riesgo en el uso problemático de Internet y del teléfono móvil en adolescentes españoles. *Rev. Iberoam. Psicol. Salud.* **2016**, *7*, 69–78.
7. Santana, L.E.; Gómez, A.M.; Feliciano, L. Adolescents problematic mobile phone use, Fear of Missing Out and family communication. *Comunicar* **2019**, *27*, 39–47. [CrossRef]
8. Herrera, K.; Gil, L.; Acuña, M. Motivación de jóvenes universitarios hacia el uso de teléfonos celulares. *Encuentros* **2017**, *15*, 91–105.
9. Simó, C.; Martínez, A.; Ballester, M.L.; Domínguez, A. Instrumentos de evaluación del uso problemático del teléfono móvil/smart phone. *Salud Drog.* **2017**, *17*, 5–14.
10. Veytia, M.G.; Gómez, J.; Morales, M.B. Competencias investigativas y mediación tecnológica en doctorando de Iberoamérica. *Int. J. Educ. Res. Innov.* **2019**, *12*, 1–19.
11. López-Fernández, O.; Kuss, D.J.; Romo, L.; Morvan, Y.; Kern, L.; Graziani, P.; Rousseau, A.; Rumpf, H.J.; Bischof, A.; Gässler, A.K.; et al. Self-reported dependence on mobile phones in young adults: A European cross-cultural empirical survey. *J. Behav. Addict.* **2017**, *6*, 168–177. [CrossRef] [PubMed]
12. Kuss, D.J.; Kanjo, E.; Crook-Rumsey, M.; Kibowski, F.; Wang, G.Y.; Sumich, A. Problematic mobile phone use and addiction across generations: The roles of psychopathological symptoms and smartphone use. *J. Technol. Behav. Sci.* **2018**, *3*, 141–149. [CrossRef] [PubMed]
13. Ruiz, C. Perfil de uso del teléfono móvil e internet en una muestra de universitarios españoles: Usan o abusan? *Bordón. Rev. Pedagog.* **2016**, *68*, 131–145. [CrossRef]
14. Polo, M.I.; Mendo, S.; León, B.; Felipe, E. Abuso del Móvil en Estudiantes Universitarios y Perfiles de victimización y agresión. *Adicciones* **2017**, *29*, 245–255. [CrossRef] [PubMed]
15. Kanbul, S. The opinions of pedagogic formation students concerning the application of mobile devices and mobile communication applications in education. *J. Educ. Teach. Train.* **2018**, *9*, 126–137.
16. Carbonell, X.; Chamarro, A.; Oberst, U.; Rodrigo, B.; Prades, M. Problematic use of the internet and smartphones in university students: 2006–2017. *Int. J. Environ. Res. Public Health* **2018**, *15*, 475. [CrossRef] [PubMed]
17. García, J.L.; González, M.A.; Ballesteros, B. *Unidad Didáctica de Pedagogía: Introducción a la Investigación en Educación*; Universidad Nacional de Educación a Distancia: Madrid, Spain, 2001.
18. Mantilla, F. *Técnicas de muestreo. Un enfoque a la investigación de mercados*; ESPE: Quito, Ecuador, 2015; Available online: <http://repositorio.espe.edu.ec/xmlui/handle/21000/10177> (accessed on 22 March 2020).
19. Labrador, F.J.; Villadangos, S.M. Menores y nuevas tecnologías: Conductas indicadoras de posible problema de adicción. *Psicothema* **2010**, *22*, 180–188.
20. Ordóñez, B.; Urbano, E.; Esparrell, J.A. Tecnoadicciones: Una propuesta de intervención para prevenirlas en el aula. *Rev. Digit. Investig. Educ. Conect@2* **2013**, *3*, 111–129.
21. Roberts, J.A. *Shiny Objects: Why We Spend Money We Don't Have in Search of Happiness We Can't Buy*; Harper One: New York, NY, USA, 2011; Available online: <https://www.goodreads.com/book/show/10607041-shiny-objects> (accessed on 22 March 2020).
22. Marín Díaz, V.; Vega Gea, E.; Sampedro Requena, B. Uso problemático del Smartphone en estudiantes universitarios. *Rev. Española Drog.* **2018**, *43*, 62–76.
23. Marín Díaz, V.; Vega Gea, E.; Passey, D. Determinación del uso problemático de las redes sociales por estudiantes universitarios. *Rev. Iberoam. Educ. Distancia* **2019**, *22*, 135–152. [CrossRef]
24. Romero, J.M.; Aznar, I. Análisis de la adicción al teléfono inteligente en estudiantes universitarios. *Rev. Educ. Distancia* **2019**, *19*, 1–12. Available online: <https://revistas.um.es/red/article/view/396051> (accessed on 22 March 2020).
25. Aljomaa, S.S.; Qudah, M.F.A.; Albursan, I.S.; Bakhiet, S.F.; Abduljabbar, A.S. Smartphone addiction among university students in the light of some variables. *Comput. Hum. Behav.* **2016**, *61*, 155–164. [CrossRef]
26. Samaha, M.; Hawi, N.S. Relationships among smartphone addiction, stress, academic performance, and satisfaction with life. *Comput. Hum. Behav.* **2016**, *57*, 321–325. [CrossRef]
27. Rahim, A.; Safin, S.Z.; Kheng, L.K.; Abas, N.; Ali, S.M. Factors influencing purchasing intention of smartphone among university students. *Procedia Econ. Financ.* **2016**, *37*, 245–253. [CrossRef]
28. Demirci, K.; Akgönül, M.; Akpınar, A. Relationship of smartphone use severity with sleep quality, depression, and anxiety in university students. *J. Behav. Addict.* **2015**, *4*, 85–92. [CrossRef] [PubMed]

29. Gökçearslan, Ş.; Mumcu, F.K.; Haşlamam, T.; Çevik, Y.D. Modelling smartphone addiction: The role of smartphone usage, self-regulation, general self-efficacy and cyberloafing in university students. *Comput. Hum. Behav.* **2016**, *63*, 639–649. [[CrossRef](#)]
30. Vorderer, P.; Krömer, N.; Schneider, F.M. Permanently online–Permanently connected: Explorations into university students’ use of social media and mobile smart devices. *Comput. Hum. Behav.* **2016**, *63*, 694–703. [[CrossRef](#)]
31. Parasuraman, S.; Sam, A.T.; Yee, S.W.K.; Chuon, B.L.C.; Ren, L.Y. Smartphone usage and increased risk of mobile phone addiction: A concurrent study. *Int. J. Pharm. Investig.* **2017**, *7*, 125–131. [[CrossRef](#)]
32. Boumosleh, J.M.; Jaalouk, D. Depression, anxiety, and smartphone addiction in university students-A cross sectional study. *PLoS ONE* **2017**, *12*, e0182239. [[CrossRef](#)]
33. Kim, H.J.; Kim, J.S. The relationship between smartphone use and subjective musculoskeletal symptoms and university students. *J. Phys. Ther. Sci.* **2015**, *27*, 575–579. [[CrossRef](#)]
34. Vázquez-Cano, E.; León Urrutia, M.; Parra-González, M.E.; López-Meneses, E. Analysis of Interpersonal Competences in the Use of ICT in the Spanish University Context. *Sustainability* **2020**, *12*, 476. [[CrossRef](#)]
35. Sevillano, M.L.; Vázquez-Cano, E. The impact of digital mobile devices in higher education. *Educ. Technol. Soc.* **2015**, *18*, 106–118.
36. Vázquez-Cano, E. Mobile distance learning with smartphones and apps in higher education. *Educ. Sci. Theory Pract.* **2014**, *14*, 1–16. [[CrossRef](#)]
37. Moreno, J.; López, J.; Pozo, S.; Fuentes, A. Influencia del context en el uso de dispositivos TIC en la Formación Profesional Básica. *Edmet. Rev. Educ. Mediát. TIC* **2019**, *9*, 149–169.



© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).