



## Adolescents and negligent social media use

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### ARTICLE INFO

#### Keywords:

Adolescence  
Social media  
Negligent use

### ABSTRACT

Digital technology has evolved very quickly in a very short space of time, to the point at which it is now a personal technology that manages the information and communications of users who access the different services offered over the Internet - users who are increasingly younger and at greater risk. Negligent technology use is understood as use linked to the management of social media accounts and mobile apps that, while not intentionally harmful, may nevertheless place the user and/or others at risk. The study of negligent digital technology use during adolescence is vital to preventing risk behaviours through education. These types of behaviours range from anxiety to cyberbullying, device addiction, problems with self-perceptions of one's own body and depression, among others. In this context, the aim of the present study is to analyse negligent digital technology use among adolescents on social media, and to explore the perceptions of this population group regarding the seriousness of these actions and the possible relationship between the two variables. Participants were 2529 students aged between 10 and 17 years from seven regions in southern Europe spread across three countries (Spain, Italy and Greece). The instrument used to collect the data was an ad hoc questionnaire designed to measure, among other things, actions indicating negligent use, excessive use of social media and perceptions of the seriousness of such social media behaviour. The results reveal that the most negligent actions carried out by minors are: arranging to meet people they met on a social media site; displaying personal information in their account; and giving their passwords to people other than their parents and/or teachers. The results also indicate that adolescents engage in those negligent actions that they perceive to be less serious more assiduously, and carry out those they perceive to be more serious more sporadically. One of the principal findings was the increase in negligent use among older adolescents, which suggests that education in this field needs to begin much earlier, ideally before the age of 12 years.

### 1. Introduction

The presence of digital technologies is an undeniable reality in the lives of adults, children and adolescents. According to Coeckelbergh [1], we live in a post-digital context in which these tools form an inherent part of society, a fact that requires us to gain a better critical understanding of the influence these technologies have on our social existence and relationships [2]. It is currently estimated that 59.5 % of the global population uses the Internet and that 64.6 % have mobile devices through which they can access it [3]. Nowadays, people use these technologies more than they watch television and in some Western countries, including Spain, their use has increased so much that the

mean time citizens spend on the Internet has tripled over the past ten years, increasing from 70 min a day in 2012 to 210 min a day in 2021. Children and adolescents are particularly affected by this trend, with 93.7 % of the Spanish population aged between 11 and 15 years having access to mobile digital technology [4].

The spread of technology use has been accompanied by the emergence of new problems among certain sectors of the youth population. At age 14 years, 15.7 % of adolescents engage in risky technology-related behaviours [5]. The factors involved in such behaviours include time spent on Internet-enabled devices, type of activity, investment and addiction [6]. The types of problematic situation identified in the literature are normally linked to sleep disorders,

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cyberbullying, anxiety, depression, problems with one's perception of one's body and fear of missing out [6–9], among others.

The problem goes beyond the devices themselves and is more linked to what is done with them. To put this into context, it is important to note that the increase in digital technology use has gone hand in hand with the development of what is now being referred to as *platformisation* [10,11], a model of social web infrastructures that has spread to all corners of the Internet. The model is based on data and involves highly complex processes that are outside the regulatory capacity of administrative bodies [12]. This means that a concerted effort must be made to understand the logic that impregnates technology and technology-related actions.

We are also witnessing another type of technology use in which data extraction is a fundamental piece of the puzzle; it involves subjects and draws them into new economic formulas within what is sometimes referred to as surveillance capitalism [13]. The stockpiling of these resources (data) places the focus of attention firmly on users and is common to all current media [14]. However, faced with this reality, people often find they lack the mechanisms they need to protect themselves against the smart persuasion systems used by these platforms [15]. Moreover, the wealth of different elements designed to capture users' attention often overcome our capacity for self-regulation, which is a limited personal resource [16].

Given this situation, it is understandable that some people will have difficulty managing the digital devices at their disposal, with children and adolescents being groups that are particularly vulnerable in this regard [17]. Schools and families (the two contexts responsible for raising and educating future generations) also often have trouble helping young people understand the risks posed by digital technology. As Van Dijck [12] states, the population lacks metaphors for understanding the reality they must manage in today's world. This is true also of the new environments that are emerging and which are at the heart of many of the difficulties and problems detected to date.

In this context, the social media are one of the principal environments in which adolescents and young people between the ages of 16 and 24 years spend a great deal of their time. Recent studies carried out worldwide report that girls and young women in this age range spend, on average, 3 h 11 min a day using social applications, with this figure being 2 h 46 min for their male counterparts [3].

In Western countries, use figures are even higher. For example, in one of the countries in which the present study was conducted (Spain), 94 % of young people aged between 18 and 24 years claim to use social media. Among those aged between 12 and 17 years, 92 % regularly use WhatsApp, 75 % TikTok and 74 % Instagram. Other social media sites and applications such as Facebook, Be Real, X (Twitter), Youtube and LinkedIn, etc., are also used, albeit to a lesser extent [18]. Videos and images are the most common elements accessed by this generation, known as Generation Alpha [19]; and exposure is not coincidental, since it is the platforms themselves that promote this kind of content [20].

The risks to which adolescents are exposed as a result of their activities on digital platforms require special attention and pose a new challenge for society. In this sense, it is important to distinguish between risk and harm: being exposed to a risk does not automatically lead to harm, understood as something that has a negative impact on the child or adolescent's emotional, physical or mental wellbeing [21]. The study by Livingstone and Stoilova [22] classifies online risks into different groups in order to enable a better understanding of adolescents' digital experiences and their potential consequences. Said study offers an update of a previous classification of the risks posed by the digital world [23] and focuses on the power of social and digital infrastructures to shape adolescent experiences. To the three risks identified previously (content, contact and conduct), a new one was added: contract risk, referring to the relationship established between users and digital service providers in terms of, for example, the use made of personal data.

The problem in relation to the implications of personal data arose as a result of the fact that children and adolescents have now been

incorporated into the market economy as economic objects, due to the data they generate in the digital platforms available to them [24–26]. These data are extremely valuable to companies since they can be used to generate client profiles that enable them to customise their products. Nevertheless, adolescents are often unaware of this [27] and ignore the implications of their participation in the digital world. Livingstone and Stoilova's proposal also included a set of cross-cutting risks that are potentially present in some of the 4Cs (content, contact, conduct and contract) and are linked to privacy, health, inequality and discrimination. All this is reflected in a new classification known as CO:RE ([22], p. 12).

Alongside the classification of risks to which young people and adolescents are exposed through their use of digital technology, another factor to bear in mind is how these risks are perceived by this population group. Over recent years, several different studies have observed that the level of gratification and benefit obtained is inversely proportional to the perception of the risk involved [28,29], and that adolescents are not truly aware of the risks involved in peer communications that take place over social media platforms [30].

Even more recently, other authors have shown that both age and gender influence young people's risk perception. For example, Lareki et al. [31] report that girls and younger adolescents have a stronger perception of the risks associated with the use of digital technology. Boys and older adolescents, on the other hand, have a weaker perception of these risks and engage in potentially more harmful actions. Another study [32] observed that, among the adult population, becoming a parent also increases an individual's perception of the risks associated with technology use, which explains the growing concern among this group regarding the increase in Internet and social media use.

In the framework of the present study, the term negligent use is used to refer to actions linked to the management of social media accounts that do not intentionally seek to cause harm, but which nevertheless may pose a risk to the user or (indirectly) a third party. Negligent use is therefore associated with the management of personal information and data published on social media platforms.

There are many examples of the failure to perceive the risks inherent to certain types of negligent use. For instance, the decision to disclose personal passwords in return for some kind of incentive is an example of what is sometimes referred to as the 'weakest link phenomenon', a concept first proposed by Ref. [33] that systematically highlights the lack of risk perception among users in relation to their management of this type of information. Over 20 years on, this practice is still commonplace [34].

Although some studies argue that general Internet activity is not, in itself, a predictor of risk, a series of actions have been identified that increase exposure to harm. These include access to and potential financial expenditure in pornography sites, forums and dating and gambling websites [35]. However, adolescents do not necessarily perceive the risks posed by these situations. According to Byrne et al. [36], low-risk actions include searching for information, reading news articles and surfing photograph repositories, travel websites and medical websites. Medium-risk actions include opening attachments or links contained in emails, selling on classified advertisement websites and downloading video games. High-risk actions include buying items from an unknown website, sharing passwords, online gambling, sharing entertainment files and downloading texts.

Beyond this type of analysis, Vandoninck et al. [37] argue that being aware of the risks enables young people to concentrate on how to avoid situations of this nature, an idea that serves to highlight the importance of training and education processes [38,39]. The implementation of educational programmes aimed at fostering digital literacy [40] and good family mediation [41] are therefore key to increasing adolescents' perception of the risks involved in certain actions carried out online and on the social media, and encouraging them to use their digital devices more responsibly [42,43], avoiding negligent use and establishing a healthier relationship with available technologies [44].

In light of this situation, the adolescent population is highly likely to engage in risk behaviours linked to the use of the digital technologies and platforms they have at their disposal. The studies analysed focus specifically on adolescents due to their high degree of vulnerability [5, 17] to a variety of different problems that may arise during this life stage [22]. This generates the need for further studies and research designed to establish a link between use factors [6], risk perception [42,32] and the potentially problematic areas identified in the literature, among which social media sites are particularly salient due to their strong impact on and assiduous use by adolescents. This avenue of research may serve to provide insight into the situation in which adolescents find themselves, as well as helping to develop training programmes designed to promote responsible use, develop protective mechanisms in highly complex contexts [15] and, in general, improve adolescent wellbeing [21].

In this context, the general aim of the present study is to analyse the possible negligent use made by adolescents of social media sites and their personal accounts, in relation to variables such as age, gender and geographical region of origin. As a complementary objective, the study also aims to identify any potential adolescent profiles that may emerge in relation to the development of risk exposure upon analysis of the social media digital platforms they use, the activities they carry out on them and their personal characteristics as users of these services. The findings of this study will help inform the training actions designed by schools and government administrations to prevent situations of risk during childhood and adolescence.

## 2. Material and methods

The study follows a descriptive, correlational and quantitative design. The study explores negligent technology use on the social media sites most commonly visited by children and adolescents under the age of 18. This piece of research has two principal aims: first, to study both the prevalence of negligent actions and perceptions of their seriousness, and second, to determine whether or not there is an association between negligent actions and excessive use of social media. Negligent use is therefore the study's investigative focus. To fulfil the aforementioned aims, the study analyses the situation from different perspectives using different instruments and technical resources. Two methodological strategies were used, one based on a questionnaire and the other on an analysis of the characteristics of minors who use social media in a negligent fashion.

### 2.1. Sample

Participants were a convenience sample of 2529 students aged between 10 and 17 years from schools located in the Basque Country (38.4 %), Navarra (15.4 %), Galicia (20.2 %), the Madrid Region (4.5 %) and Cantabria (6.0 %) in Spain; the Attica Region in Greece (11.5 %) and the Marche Region in Italy (4.0 %). Two criteria were followed when selecting the sample: (1) the interest evinced by schools to learn more about the negligent use made by their students of social media; and (2) the presence in each region of an expert researcher who was able to contact potential participating schools and supervise the data collection process. In all cases, the students surveyed were aged between 10 and 17 years (the age range established for the study). The sample group had an equal gender balance (49.9 % girls, 50.0 % boys and 0.1 % non-binary). Participants were aged between 10 and 17 years, although the highest percentage was observed for the 12–15 range. The age percentages were as follows: 10 years–7.6 %; 11 years - 12.5 %; 12 years - 20.0 %; 13 years - 18.3 %; 14 years - 17.5 %; 15 years - 16.4 %; 16 years - 5.5 % and 17 years - 2.1 %.

### 2.2. Variables

Data was collected regarding participants' age, gender and region of

origin. Other variables that directly affected the topic under study were also measured. The first was negligent use of social media, which was a composite variable encompassing: actions denoting negligent use, excessive use of social media and seriousness of the negligent actions carried out on social media platforms. The second variable analysed was linked to the social media platforms on which participants most commonly engaged in negligent use.

### 2.3. Instrument

The data collection instrument used was an ad hoc questionnaire containing a series of closed-ended questions. Questionnaires were completed online during school hours in the presence of one of the teachers at the school who was available to clarify any doubts. The data obtained were analysed quantitatively using the SPSS computer program. The questionnaire was piloted prior to this study and its psychometric properties were analysed. The variable *negligent use of social media* was measured using 7 items, with a reliability index of 0.703. The variable *excessive use of social media* was measured using 4 items, with a reliability index of 0.720. The items of these two variables were rated on a 4-point Likert-type scale: (1) never, (2) very rarely, (3) often and (4) always. The variable *perception of the seriousness of the actions carried out on social media* was measured using 6 items, with a Cronbach's Alpha of 0.913. These items were rated on a 3-point Likert-type scale: (1) slight risk, (2) medium risk, (3) serious risk. The reliability index for the entire questionnaire was 0.930. The instrument was validated by means of an Exploratory Factor Analysis (EFA) with principal component extraction and Varimax rotation. The total variance explained table reveals the presence of three principal factors [45]. The results presented in this manuscript were obtained as part of a new piece of research focused on two of these three factors, namely: habits that indicate excessive technology use and engagement in negligent actions on social media, from two perspectives (prevalence and perception of seriousness of the actions in question). The items and variables measured by the questionnaire are shown in Table 1.

### 2.4. Data analysis

The data collected using the questionnaire on negligent use of social media and perceptions of the seriousness of said actions were analysed using version 26.0 of the SPSS computer program. First of all, descriptive analyses were carried out and Pearson's  $r$  correlation coefficient was used to establish associations between the three variables. Moreover, a cluster analysis was performed to classify participants into different groups in accordance with the negligent use of social media variable. This last analysis enabled us to: (a) study the behaviour of each group in relation to the proposed variables; (b) identify some certain socio-demographic variables (gender and age); and (c) analyse the type of social media used by each group. To analyse negligent use in accordance with age, and to determine which social media platforms were used most frequently in this sense, the chi-squared statistic was calculated. To measure variables linked to negligent use and participants' perception of the seriousness of the different actions in accordance with cluster, Student's  $t$  tests were carried out and the corresponding effect sizes calculated. These data will enable researchers to adapt future training programmes to different digital technology user profiles.

## 3. Results

First, we observed that, in general, adolescents aged between 10 and 17 years did not often use social media in a negligent manner. On a scale of 1–4, the mean level of negligent use was 1.33, between options 1 (never) and 2 (very rarely) (see Table 2).

Although negligent use was in general very sporadic, accepting friend requests from strangers stood out as being more frequent than the rest, with a mean score of 1.61. The next three most frequent actions had

**Table 1**  
Variables, items and reliability index of the questionnaire.

| Variables  | Items   | Cronbach's Alpha |  |       |
|--|---|------------------|--|-------|
| Negligent use of social media  | I share my access codes with people who are not my parents/teachers.                                | 0.703            |  |       |
|  | In my profile, I share personal information, such as my surname, telephone number and address, etc. |                  |  |       |
|  | I share my location on social media.  |                  |  |       |
|  | My profile is open so that anyone can see what I post.  |                  |  |       |
|  | I accept friend requests from people I don't know.  |                  |  |       |
|  | I arrange to meet people I got to know on social media.   |                  |  |       |
|  | I talk about personal things (feelings, relationships, etc.) with people I don't know very well.    |                  |  |       |
|  | Excessive use of social media   |                  | I go on social media even though I don't have permission.  | 0.720 |
|  |   |                  | I go on social media without permission when I'm supposed to be doing something else (homework, sleeping, etc.). |       |
|  |   |                  | I spend more than 2 h a day of my free time on social media, playing or chatting with friends, etc.              |       |
| Perception of the seriousness of the actions carried out on social media | I go on social media for longer than I tell my parents and/or teachers.                             | 0.913            |  |       |
|  | I share my access codes with people who are not my parents/teachers.                                |                  |  |       |
|  | In my profile, I share personal information, such as my surname, telephone number and address, etc. |                  |  |       |
|  | I share my location on social media.  |                  |  |       |
|  | My profile is open so that anyone can see what I post.  |                  |  |       |
|  | I accept friend requests from people I don't know.  |                  |  |       |
|  | I arrange to meet people I got to know on social media.   |                  |  |       |
| I talk about personal things (feelings, relationships, etc.).            |   |                  |  |       |

mean scores of around 1.3: sharing your location on social media (1.39), leaving your profile open so that anyone can see what you post (1.38) and including personal information such as your telephone number or address in your profile (1.32). Next, scoring slightly lower than the mean for the composite variable, came arranging to meet people you got to know on social media (1.23) and talking about very personal things to people you do not know well (1.22). Finally, the least common action was sharing access codes with people other than parents and/or teachers (1.17).

After ordering the 7 actions that make up the composite variable

**Table 2**  
Descriptive statistics.

|  | N    | Min | Max | Engagement |      |       | Risk perception |      |       |
|--|------|-----|-----|------------|------|-------|-----------------|------|-------|
|  |      |     |     | Order      | M    | SD    | Order           | M    | SD    |
| I accept friend requests from people I don't know.   | 2489 | 1   | 4   | 1st        | 1.61 | 0.843 | 6th             | 2.01 | 0.822 |
| I share my location on social media.   | 2490 | 1   | 4   | 2nd        | 1.39 | 0.689 | 5th             | 2.07 | 0.856 |
| My profile is open so that anyone can see what I post.   | 2498 | 1   | 4   | 3rd        | 1.38 | 0.800 | 7th             | 2.00 | 0.825 |
| Composite variable. Negligent use of social media  | 2423 | 1   | 4   | -          | 1.33 | 0.394 | -               | 2.10 | 0.565 |
| I share personal information (telephone number, address, etc.) in my profile.                    | 2489 | 1   | 4   | 4th        | 1.32 | 0.625 | 2nd             | 2.17 | 0.854 |
| I arrange to meet people I got to know on social media.  | 2483 | 1   | 4   | 5th        | 1.23 | 0.552 | 1st             | 2.19 | 0.869 |
| I talk about personal things (feelings, relationships, etc.) with people I don't know very well. | 2482 | 1   | 4   | 6th        | 1.22 | 0.537 | 4th             | 2.12 | 0.844 |
| I share my access codes with people who are not my parents/teachers.                             | 2502 | 1   | 4   | 7th        | 1.17 | 0.480 | 3rd             | 2.16 | 0.872 |

negligent use in accordance with their respective risk perception scores (using in this case a scale of 1–3: low, medium and high), two clearly distinguishable groups were observed. Four variables scored higher than the mean for the compound variable: meeting people you got to know on social media (2.19); including personal information in your profile (2.17); sharing access codes with people other than your parents or teachers (2.16); and talking about very personal issues (2.12). The remaining three variables scored below the mean for the compound variable, indicating that participants considered them to be less risky: sharing your location on social media (2.07); accepting friendship requests from strangers (2.01) and leaving your profile open so that anyone can see what you post (2.00).

A certain trend was observed in these data, with negligent actions that were perceived as less serious being carried out more often, and those perceived as more serious being carried out more sporadically (with a notably lower mean).

To confirm the existence of this association, we calculated the Pearson correlation coefficient between the two composite variables (engaging in actions versus seriousness of said actions). As shown in Table 3, the results confirmed the existence of a significant inverse association between engagement in negligent actions and perception of the risk they pose (Pearson: -0.118; significance: 0.000).

Similarly, as shown in the same table, we analysed the correlation between engagement in negligent actions and excessive use. Prior to this, we formed a composite variable called excessive use, made up of four items from the questionnaire that refer to the use of digital devices: (item1) more than 2 h a day on leisure activities; (item 2) without permission of parents or teachers; (item 3) longer than admit; (item 4) when should be doing other things. It is important to note that the mean value of this variable (excessive use) on the 4-point scale used was 1.33 (standard deviation: 0.384), indicating that the young people interviewed have a very low level of excessive use of digital technologies.

**Table 3**  
Correlations.

|                                  |                     | Excessive use       | Negligent use of social media | Seriousness of negligent use |
|----------------------------------|---------------------|---------------------|-------------------------------|------------------------------|
| Excessive use                    | Pearson correlation | 1                   | 0.514*                        | -0.155 <sup>a</sup>          |
|                                  | Sig. (bilateral)    |                     | 0.000                         | 0.000                        |
|                                  | N                   | 2461                | 2371                          | 2238                         |
| Negligent use of social media    | Pearson correlation | 0.514*              | 1                             | -0.118 <sup>a</sup>          |
|                                  | Sig. (bilateral)    | 0.000               |                               | 0.000                        |
|                                  | N                   | 2371                | 2423                          | 2175                         |
| Seriousness of negligent actions | Pearson correlation | -0.155 <sup>a</sup> | -0.118 <sup>a</sup>           | 1                            |
|                                  | Sig. (bilateral)    | 0.000               | 0.000                         |                              |
|                                  | N                   | 2238                | 2175                          | 2255                         |

<sup>a</sup> Correlations are significant at level 0.01 (bilateral).



When this variable (excessive use) was correlated with engagement in negligent actions, a moderately positive and significant association was observed (Pearson:  $-0.514$ ; significance:  $0.000$ ). We can therefore deduce that those who tend to use digital technologies excessively also tend to engage in a higher number of negligent actions on social media. We also observed that those with higher scores for excessive use also perceived the negligent actions carried out on social media as being less serious and risky (Pearson:  $-0.155$ ; significance:  $0.000$ ).

Having analysed the level of engagement in negligent actions, risk perception and the association between the two variables and excessive use indicators, the next step was to determine whether different profiles exist in terms of engagement in negligent actions. To this end, we classified participants using a hierarchical cluster analysis, observing that, when they were grouped in accordance with their responses to the items that make up the composite variable negligent actions on social media, three clusters emerged, as shown in Table 4.

The first and largest cluster encompassed 78.4 % of the sample (1983 participants); the second smaller cluster encompassed 17 % (429 participants); and the third residual cluster encompassed just 0.4 % (11 participants). To answer the study questions, we next compared the sociological profile of the different clusters.

The chi-squared test revealed no significant gender differences (Pearson's Chi-Squared 1.660; significance 0.436). However, and as shown in Table 5, significant differences were observed between the clusters in terms of age, with Cluster 1 having a higher percentage of younger participants: 63.3 % were aged between 10 and 13 years, with the most frequent age being 13 (mode = 13 years). In Cluster 2, in contrast, 63.2 % of participants were aged between 14 and 17 years (mode = 15 years).

In order to determine whether Clusters 1 and 2 differed in terms of the specific variables under study here, Student's t tests were performed to compare the means for excessive use, negligent actions on social media and perception of the seriousness of said negligent actions.

As shown in Table 6, statistically significant differences were observed between the clusters in all three variables, with Cluster 1 scoring significantly lower for both excessive use of technology and negligent actions on social media. This cluster also had a stronger perception of the seriousness of negligent actions.

In terms of effect size, in two of the three variables (excessive use and negligent use of social media) the value was clearly over 0.8, indicating a large effect size, whereas in the third variable (seriousness of negligent actions) the effect size was medium, with a value of 0.414 [46].

Finally, we explored which of the two main clusters used social media more and which applications were most commonly used by those in the cluster that engaged in more negligent use (Cluster 2). As shown in Table 7, Cluster 2 used all social media and instant messaging services more than Cluster 1, with the differences being statistically significant in all cases, with an eta value that can be considered between low and medium.

A more detailed analysis revealed that the greatest difference was in the use of Instagram, since 93.9 % of the young people in Cluster 2 claimed to use this application, as opposed to 61.5 % of those in Cluster

1. Furthermore, and even though use levels were lower for both clusters, the young people in Cluster 2 used social media platforms such as Facebook and Twitter twice as much as their counterparts in Cluster 1.

#### 4. Discussion

The results described above offer a clear view of the excessive use of social media by adolescents, the degree of negligence involved in their management of their personal accounts and their perception of the risks involved, in a southern European context at a historical moment characterised by the pandemic that broke out in 2019. In relation to the three aspects mentioned above, we can conclude the following:

##### 4.1. Negligent social media use

When analysing young people's negligent use of social media, two clearly differentiated clusters emerged: a large one encompassing 81.1 % of our sample who used social media in a responsible manner; and a smaller one encompassing 17.7 %, characterised by more negligent and inappropriate use that increases exposure to the risks posed by these platforms and services. This leads us to conclude that the situation is fairly positive, at least in terms of use, with a high number of participants engaging in responsible behaviour. However, it is important to focus on the almost 20 % of the youth population who need to improve the way they use digital technology. These data are consistent with those reported in some of the other studies mentioned earlier [5], and indicate that the current situation regarding negligent use is concerning but not alarming, and that we should remain alert and continue to promote preventive education programmes in this area.

In relation to the other two variables studied, the results indicate a certain degree of negligence in the way young people display their location or keep their profile open so that anyone can see what they post. These negligent uses were identified over a decade ago, with Crescenzi et al. [47], for example, noting that adolescents posted their location in real time, an action that is linked to other risks (even more common nowadays) such as grooming, sextorsion and cyberbullying. In a more recent study, Hernández-Serrano et al. [48] observed that many young people shared their personal information without restrictions, with the percentage being particularly high among those aged between 12 and 14 (40.2 %) and between 17 and 18 (23.1 %). The prevalence of this variable in our study was 42.7 % for the entire sample, although only 13.1 % claimed to share this information always or often. Social relations are particularly important during adolescence. The feeling of belonging to a group and fitting in helps promote psychological wellbeing, creates a sense of identity and facilitates socialisation. Our interpretation of the results presented here is based on the concept of social expansion, which is so vital during adolescence, as well as a type of technology management that helps improve youngsters' relationships with others without perceiving the risks.

In terms of age, our results reveal that this practice increases as adolescents grow older, a finding which suggests that it is vital to start training and education at an early age, if possible prior to age 12, since it is from this moment on that young people start to use social media more negligently. It is also important to pay special attention to Instagram, Facebook and Twitter, since these are the social media platforms on which young people engage more frequently in negligent behaviour. In this sense, our findings are consistent with those reported by Martínez-de-Morentin et al. [49] in relation to the risks associated with posting content.

##### 4.2. Perception of negligent actions on social media

Perception is a superior psychological process that is commonly used in studies (such as this one) carried out in the fields of sociology and education. Traditional scales (such as the Likert scale) that are used to measure specific variables pose the problem of forcing respondents to

**Table 4**  
Average Linkage between clusters.

|         |           | Frequency | Percentage | Valid percentage | Accumulated percentage |
|---------|-----------|-----------|------------|------------------|------------------------|
| Valid   | Cluster 1 | 1983      | 78.4       | 81.8             | 81.8                   |
|         | Cluster 2 | 429       | 17.0       | 17.7             | 99.5                   |
|         | Cluster 3 | 11        | ,4         | 0.5              | 100.0                  |
|         | Total     | 2423      | 95.8       | 100.0            |                        |
| Missing | System    | 106       | 4.2        |                  |                        |
| Total   |           | 2529      | 100.0      |                  |                        |

**Table 5**  
Clusters 1 and 2 crossed with Age.

|         |   |   | 10  | 11   | 12   | 13   | 14   | 15   | 16   | 17  | Chi-squared | Sig.  | eta  |
|---------|---|---|-----|------|------|------|------|------|------|-----|-------------|-------|------|
| Cluster | 1 | N | 172 | 295  | 434  | 353  | 317  | 293  | 91   | 27  | 159.562     | 0.000 | ,257 |
|         |   | % | 8.7 | 14.9 | 21.9 | 17.8 | 16.0 | 14.8 | 4.6  | 1.4 |             |       |      |
|         | 2 | N | 6   | 8    | 56   | 88   | 102  | 106  | 43   | 20  |             |       |      |
|         |   | % | 1.4 | 1.9  | 13.1 | 20.5 | 23.8 | 24.7 | 10.0 | 4.7 |             |       |      |

**Table 6**  
Cluster statistics.

|  |  |  | Average Linkage between Clusters | N    | M      | SD      | Mean error dev. | Student's t-test | Sig.  | Cohen's d |
|--|--|--|----------------------------------|------|--------|---------|-----------------|------------------|-------|-----------|
| Excessive use                                  |  |  | 1                                | 1948 | 1.9103 | 0.63926 | 0.01448         | -20.606          | 0.000 | 1.116     |
|  |  |  | 2                                | 412  | 2.6292 | 0.66280 | 0.03265         |                  |       |           |
| Negligent use of social media                  |  |  | 1                                | 1983 | 1.1810 | 0.19274 | 0.00433         | -70.753          | 0.000 | 3.765     |
|  |  |  | 2                                | 429  | 1.9667 | 0.26999 | 0.01304         |                  |       |           |
| Perception of seriousness of negligent actions |  |  | 1                                | 1730 | 2.1690 | 0.70510 | 0.01695         | 8.762            | 0.000 | 0.414     |
|  |  |  | 2                                | 373  | 1.8885 | 0.52447 | 0.02716         |                  |       |           |

**Table 7**  
Level of social media use.

|           | Use | Cluster |        | Chi-squared | Sig.  | Eta   |
|-----------|-----|---------|--------|-------------|-------|-------|
|           |     | 1       | 2      |             |       |       |
| Facebook  | Yes | 11.5 %  | 25.8 % | 58.156      | 0.000 | 0.157 |
|           | No  | 88.5 %  | 74.2 % |             |       |       |
| Twitter   | Yes | 12.7 %  | 26.3 % | 48.829      | 0.000 | 0.145 |
|           | No  | 87.3 %  | 73.7 % |             |       |       |
| Instagram | Yes | 61.5 %  | 93.9 % | 166.752     | 0.000 | 0.265 |
|           | No  | 38.5 %  | 6.1 %  |             |       |       |
| Tiktok    | Yes | 29.5 %  | 36.3 % | 7.448       | 0.006 | 0.056 |
|           | No  | 70.5 %  | 63.7 % |             |       |       |
| WhatsApp  | Yes | 75.0 %  | 81.2 % | 7.464       | 0.007 | 0.056 |
|           | No  | 25.0 %  | 18.8 % |             |       |       |
| Snapchat  | Yes | 32.5 %  | 44.5 % | 21.711      | 0.000 | 0.096 |
|           | No  | 67.5 %  | 55.5 % |             |       |       |
| Telegram  | Yes | 4.6 %   | 9.6 %  | 15.924      | 0.000 | 0.083 |
|           | No  | 95.4 %  | 90.4 % |             |       |       |

simplify their perception down to a single value. The results obtained are therefore based on respondents' perceptive responses, more than on reality. Consequently, training usually aims, among other things, to modify participants' perceptions [50].

The results of the present study reveal a stronger perception of the risks posed by those actions that focus on the individual (sharing passwords, talking about highly personal issues) and a weaker perception of the risks posed by social actions (sharing one's location or having an open profile). These perceptions are consistent with those reported by Byrne et al. [36] and Gainsbury et al. [35].

Here, training and education initiatives would seek to enhance participants' perception of the consequences of managing their social media accounts in a negligent manner, with special focus on aspects linked to privacy (geolocation, open profiles, posting personal information, etc.). Many of the training programmes currently being implemented in schools have proven effective in promoting responsible and critical use of the Internet and social media. Some of these programmes are based on case study analyses. The most common are linked to cyberbullying, with examples including the KIVA programme in Finland, MARC and Stop-bullying in the US, the VICS programmes in Austria and the Media Heroes programme in Germany. In all these places, progress has been observed in relation to the issue of cyberbullying over recent years [51]. In Spain, one intervention programme that has proven to be successful in terms of improving privacy issues is CONRAD. This programme has been found to improve participants' perception of the control they have over online safety and privacy (geolocation, open profiles, etc.), reduce the amount of time they spend on social media and help prevent addictive use [52], aspects that, as the results of the present study indicate, are

clearly correlated.

### 5. Conclusions

Many studies have highlighted the importance of incentivising digital literacy and training during childhood and adolescence, to help youngsters manage online digital information and avoid the risks posed by the digital world [53]. This training is currently being provided in accordance with a variety of different training frameworks and models [54,55]. Focusing on aspects linked to safety, and in light of the results presented here, there are three elements to which special attention should be paid in training programmes targeted at adolescents who engage in negligent social media use: (1) managing friend requests from strangers; (2) showing one's location on social media; and (3) keeping one's social media profiles open so that anyone can see anything posted on them.

In a study focusing on the first of these elements, Alonso et al. [56] found that 4.5 % of girls and 9.8 % of boys claimed to always accept all friend requests, even when they come from total strangers. These figures are very low compared to those recorded during the pandemic, when results in this sense changed significantly. Recent studies have reported that contact with strangers via the Internet seems to be a common (although not majority) practice among children and adolescents. Depending on the region, figures may be as high as 53 % among the 17-year-old population [57]. In general terms, these figures indicate an upwards trend in this practice, parallel to the increasingly widespread use of digital and social media platforms.

Given that the excessive use of social media positively correlates with negligent use, it is important to highlight the need to limit the time spent by adolescents using these digital technologies, as a means of preventing negligent habits. Several years ago, Domínguez-Alonso et al. [58] warned that excessive use indicators correlated with more frequent engagement in cyberbullying. The present study confirms that this is true also in relation to problematic and negligent uses not exclusively linked to cyberbullying.

As mentioned above, it is vital to provide digital literacy training before young people start to use technology in a negligent manner, which, according to our results, happens mainly between the ages of 13 and 15. Bearing in mind the importance of family during this developmental period, parents and guardians should also offer positive experiences aimed at fostering the appropriate use of technology outside the school setting. Regardless of key factors such as socioeconomic status, age and education, which will doubtless have an influence [59], parents and guardians should strive to maintain a positive attitude to their offspring's technology training.

Consistently with that reported by Lareki et al. [42], the results

reported here support the idea of the importance of proposing training actions aimed at increasing young people's awareness of the possible consequences of the negligent management of their social media accounts. In order to ensure responsible use of digital technologies, children and adolescents need to develop a stronger perception of the risks involved in inappropriate actions or behaviours that go against the agreed-upon rules of online conduct (netiquette).

Based on the results obtained, some examples of healthy technology use that may serve as the basis for policy design and improving the applicability of future research include: engaging in activities that do not require a screen, sleeping in a room with no screens, questioning the need to receive likes and focusing instead on improving personal relationships in the real world, and analysing the values that should guide one's online actions, with the aim of protecting one's personal data.

Particularly effective in this sense is the instructive mediation model, coupled with the co-viewing of audiovisual content [60]. Our results indicate that this model should also be accompanied by advice regarding good data management and decisions linked to social media use. Parents and guardians should be present in those digital spaces in which most negligent use takes place, which, according to our results, are Instagram, Facebook and Twitter, as well as other instant messaging services that have turned into social media sites (WhatsApp, Telegram, etc.).

It is important to point out that family mediation should be linked to a democratic parenting style, which, according to Halpern et al. [61], should complement the education received at school. This would, without doubt, help children and adolescents to acquire a good level of digital competency and encourage them to act responsibly and avoid the negligent use of digital technology and social media.

Finally, one of the study's principal limitations is linked to the risk of social desirability bias in students' responses to the questionnaire. The samples used were also recruited on the basis of convenience. However, this method is appropriate to the purpose of the research being carried out, which did not aim to estimate negligent use rates among the general population, but rather to draw comparisons between different cultural groups. Finally, although it is faster, the online data collection method meant that some data were lost from schools that did not have the required infrastructure for this task.

### Competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

### CRedit authorship contribution statement

**Arkaitz Lareki:** Writing – review & editing, Writing – original draft, Visualization, Supervision, Methodology, Investigation, Formal analysis, Data curation. **Fernando Fraga-Varela:** Writing – review & editing, Writing – original draft, Visualization, Resources, Investigation, Data curation, Conceptualization. **Juan-Ignacio Martínez-de-Morentin:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Funding acquisition, Formal analysis, Conceptualization.

### Data availability

The authors do not have permission to share data.

### Acknowledgements

This study was carried out with funding received from the call for Research Group Grants issued by the Spanish Research Agency (Ref PID2020-113918GB-I00/AEI/10.13039/501100011033).

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.techsoc.2024.102623>.

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