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RESEARCH

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# "Listen to me!" The role of family supervision and parental phubbing in youth cyberbullying

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## Abstract

**Background:** To mitigate or prevent the effects of cyberbullying, adolescents are primarily influenced by how they have been educated and supervised at home in the use of technology.

**Objective:** Our main objective was to examine the association of parental phubbing and family supervision of Internet and social networks use with cyberbullying victimization and aggression.

**Method:** A survey was conducted to examine these factors in a sample of 1,554 students aged 10 to 18 years in the Aragon region of Spain.

**Results:** Family supervision is a protective factor against becoming an aggressor or a victim of cyberbullying. Aggressor and victim roles correlate with higher levels of parental phubbing. Multigroup analysis applying structural equation modeling by age and gender revealed certain differences. Gender differences were found with parental phubbing associated with boys' likelihood of being aggressors. Although family supervision protected both boys and girls, there was a stronger association for girls' parents. Fewer differences were observed for age group.

**Conclusion:** This study found strong relation between cyberbullying, family supervision, and parental phubbing. Our findings also suggest that cyberbullying prevention strategies need to differ depending on whether they are applied to girls or boys.

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**Implications:** The importance of model behavior for minors to follow in their optimal use of information and communication technologies and family supervision of smartphone use should be placed at the center of cyberbullying prevention strategies.

**KEYWORDS**

age differences, cyberbullying, family supervision, gender differences, information and communication technologies, parental phubbing

The Internet functions as a social institution that influences and is influenced by the family, leading to overlapping social dynamics (Longo, 2023). In this study, we examine the role of family supervision (i.e., lack of supervision of Internet use on the part of a parent or legal guardian) as related to likelihood of adolescents being either bullied or aggressors on social media. Specifically, we focus on whether parental phubbing, defined by Roberts and David (2016) as the interruption of a conversation or social activity (in this case, with their children) to answer or check a mobile phone, may be associated with adolescents' negative behavior such as cyberbullying (Patchin & Hinduja, 2015). The importance of this question rests in part on the consequences for children's overall health and social relationships of being aggressors or bullied on social media (Benedetto & Ingrassia, 2020; Pancani et al., 2020; Radesky & Christakis, 2016).

Both factors (parental phubbing and the lack of adequate or purposeful family supervision) can lead to children's engagement in risky behavior on the Internet. These behaviors can include cyberbullying, in the roles of both the victim who suffers the act of cyberbullying or the aggressor who performs the act of cyberbullying (Baldry et al., 2019; Sasson & Mesch, 2016; Stockdale et al., 2018). Given the connection between these two supervision-related factors and cyberbullying, we aimed in our study to provide evidence that family supervision is protective against both cyberbullying profiles (victims and aggressors) and that phubbing is a risk factor. We also tested whether supervision, as a protective factor, neutralizes the negative factor of family phubbing. Further, we analyzed gender (Sun et al., 2016) and age (Smith, 2012) as variables responsible for certain differences.

## THE CYBERBULLYING PHENOMENON

Bullying is a violent phenomenon carried out within a group of peers; several factors must be met for an act to be designated as bullying: intentionality, reiteration, and imbalance of power (Olweus, 1993; J. Wang et al., 2009). The advent of information and communication technologies (ICTs) has given rise to cyberbullying, which can be defined as a type of bullying carried out deliberately and repeatedly over time through a digital device with Internet access by a single individual or group of people toward another person who cannot defend themselves (Patchin & Hinduja, 2015; Smith et al., 2008). Cyberbullying can therefore be defined and identified based on a series of characteristics of an act carried out through digital media: intentionality, abuse of power, and reiteration.

Although the definition of cyberbullying seems clear, its defining characteristics do not always make it easy to identify (Patchin & Hinduja, 2015; Olweus, 1993; Thomas et al., 2015). These characteristics manifest themselves in several ways. Further, cyberbullying can be carried out regardless of place and time, and thus the phenomenon recur frequently. The degree or eventual lack of technological skill on the part of the bully or bullies is ultimately the only barrier against its widespread perpetration (García et al., 2016).

Social networks are a domain where information spreads at high speed, blurring and masking what actually goes on within them. Regarding the intentional nature of cyberbullying, when a person or group carries out an act through any electronic medium with the explicit intention of causing harm to a third party, this can be defined as an act of cyberbullying. However, such intentionality is not always clear. In many instances, a group of friends may decide to play an innocent joke on another member of the same group by posting a ridiculous photo on a social network, unwittingly unleashing a tide of negative and ridiculing comments. Such an innocent joke can thus become an unintentional act of cyberbullying (Patchin & Hinduja, 2015).

Another example is the abuse of power. On many occasions within social networks, power is enhanced by a popularity factor that stems from a user's number of followers. Within a social network or video game, all users theoretically have the same capabilities and can exert the same actions in relation to others; however, on many occasions, popularity becomes the determining factor because it provides a harasser with a greater capacity for dissemination (Patchin & Hinduja, 2015; Thomas et al., 2015). The potential degree of reiteration can also be enhanced in the digital environment.

A clear example of heightened reiteration is the phenomenon of "going viral," the unforeseen effects of which can be similar to those of an initially unintentional action. Considering the example of uploading a ridiculous photo of another person, the image can be posted with the mere intention of cyberbullying the victim in their immediate environment only once, or at specific moments controlled by the bully. However, due to the characteristics of certain technological media or social networks, it can be somewhat difficult to retain such control indefinitely. The shared item (the photo) can rapidly transcend the barriers of a private, closed environment and be shared throughout the social network, thus becoming viral. This has the same impact on the victim as reiteration, as the victim undergoes cyberbullying on the part of many more people than might initially have been possible (Patchin & Hinduja, 2015; Thomas et al., 2015) and for a more extended period, making the item's spread more difficult to stop.

Cyberbullying usually emerges in the victim's immediate environment (Ortega & Zych, 2016), resulting in a risk for those who are active on the Internet and making it necessary for them to learn to control it and defend themselves against it. Its effects on the psychological health of victims can be directly related to anxiety, depression, low self-esteem, frustration, stress, sadness, and suicidal ideations (Baruah et al., 2017). In Spain, cyberbullying is a significant social problem, and experts believe that the actual incidence is considerably more significant than the reported cases. A review by Llorent et al. (2021), encompassing 21 studies on cyberbullying in Spain, found a median cybervictimization prevalence of 26.65%.

Overcoming cyberbullying is closely linked to the strategies that students or their environment adopt to deal with it. In a study with 625 adolescents aged 11 to 16 years, Smith et al. (2008) found that these participants tended to implement a series of technological strategies when confronted with cyberbullying, such as blocking the cyberbully and changing one's email address, passwords, or telephone number. Such approaches, however, proved markedly ineffective in resolving a cyberbullying situation. In addition to technological strategies, Compton et al. (2014) and Giménez-Gualdo (2014) defined a set of educational or school-based preventive strategies. In surveys of 35 students aged 10 to 15 years and 11 teachers, Compton et al. (2014) highlighted a set of particularly effective strategies that can be applied within schools: training students, ascribing teachers an important role as mediators in cyberbullying cases, and dealing with cyberbullies by taking appropriate disciplinary measures. The study carried out by Giménez-Gualdo (2014) on 1,914 students aged 11 to 21 years highlighted the relevance of developing strategies of entering into dialogue with the bully, seeking support from the family, and implementing emotional strategies that encourage the victim to understand the bully and vice versa. However, for a cyberbullying case to be solved effectively, the family, school, and students should agree on the methods they wish to apply (Bautista Alcaine & Vicente Sánchez, 2020).

Finally, in their study with 124 students aged 10 to 11 years, Schroeder et al. (2017) pointed out that if students were observed by their parents in their ventures online while growing up, this would help them overcome cyberbullying or at least enable them to cope with it more positively. Good parental guidance can also help prevent cyberbullying by teaching children and adolescents to cultivate and maintain healthy relationships with their peers. On the other hand, in a study with 4,390 adolescents aged 13 to 18 years, Baldry et al. (2019) highlighted that a lack of quality family supervision, adult support, and digital education within the family can represent a problem for those who are involved in instances of cyberbullying as victims or aggressors.

## XXXFAMILY SUPERVISION

The primary mediators between children and digital tools are their families or caregivers, who play a key role in helping them learn how to use these tools in a healthy way (Benedetto & Ingrassia, 2020). Thus, the parenting styles applied at home are of relevance. Children learn proper (or improper) Internet use through their parents' rules and degree of permissiveness (Sasson & Mesch, 2016; Song et al., 2020; Valcke et al., 2010). Excessive control or excessive laxity do not reinforce children's positive activities on the Internet; therefore, a parenting style focused on support, teaching proper Internet use, and applying appropriate rules ultimately provides greater benefits to the child or adolescent and their digital growth (i.e., the impact of digital technologies on their personal development; Sasson & Mesch, 2016; Song et al. 2020; Valcke et al., 2010). However, Harris and Jacobs (2022) found that the sort of advice generally given to parents tends to focus much more on protecting children (privacy, safety, monitoring) than on teaching them how to navigate social media platforms for their benefit.

In this regard, Coyne et al. (2017) proposed two approaches that can be of great benefit for proper use of the Internet and for the digital development of children and adolescents: instructive mediation and shared use. The former focuses on active participation in the use of ICTs (e.g., explaining the content of web pages or how to use a device properly), and the latter focuses on teaching children these skills through sharing. For example, parents can visit suitable websites with their children, such as Pantallas Amigas (https://www.pantallasamigas.net/) and IS4K (https://www.incibe.es/menores) in the Spanish context; these sites provide valuable resources for healthy interaction with the Internet during childhood. Moreover, parents can play videogames with their children. These are recommended ways to teach children how to use digital technologies properly.

Sasson and Mesch (2016) have shown that restrictive strategies that are both regulatory and technological (without becoming excessive), such as setting standards and schedules of use or choosing which apps children may use, all work in favor of healthy ICT use. In contrast, if parental supervision is not applied or if parents use technology inappropriately, it negatively affects how their children use it or will eventually use it (Baldry et al., 2019; Benedetto & Ingrassia, 2020). An example of misuse that has a negative impact is the phenomenon of parental phubbing. Although no specific information is available on the incidence of parental phubbing in Spain, several international studies have been conducted on the relationship between parental phubbing and a series of outcomes in the lives of children and adolescents.

## PARENTAL PHUBBING

Some researchers have found that parental phubbing is detrimental to their relationship with their children. Overall, researchers have reported the parental phubbing can have a negative impact on parental bonds and levels of attachment (Radesky et al., 2014) and leads to an

increase in poor psychological development (Radesky & Christakis, 2016), affecting children's communication skills, hindering the externalization of their feelings, and increasing internalization of problems (Pancani et al., 2020). In addition, parents' texting and calling on their mobile telephone has been associated with child problem behavior (Dworkin et al., 2023).

These effects within families align with general research related to phubbing. Recent studies have evidenced that a person who suffers from phubbing feels devaluated by the phubber (who carried out the act of phubbing) and perceives them as annoying and disrespectful (Aagaard, 2020). In this way, their bonds are devalued, and their relationship is compromised (Roberts & David, 2016). X. Wang, Gao, et al. (2020) found that phubbing exacerbates symptoms related to depression and/or feelings of social exclusion, as well as low self-esteem and a low level of social support in those who experience phubbing (i.e., the phubbee). Children copy this behavior and learn to regard such misuse of mobile phones as "normal" (Liu et al., 2019). They develop negative behavior related to Internet interactions, such as cyberbullying (Stockdale et al., 2018).

Considering the importance of family supervision for the proper psychological development of children in the digital environment and the problems caused by behaviors such as parental phubbing, it is important to consider the link between this behavior and cyberbullying. In a study by X. Wang, Wang, et al. (2020), the relationship between phubbing and the perpetration of cyberbullying was unclear after controlling for age and gender. Parental phubbing predicts subsequent problematic smartphone use in adolescents, and the latter is related to their perceived loneliness and "fear of missing out" (FOMO; Geng et al., 2021). In this sense, parental phubbing was positively associated with adolescent mobile phone addiction (Zhang et al., 2021), but the parent–child relationship (including parental supervision) mediated that relationship (Niu et al., 2020).

An investigation by Qu et al. (2020) with a sample of more than 4,000 Chinese adolescents showed that mothers' phubbing was positively related to cyberbullying. Similarly, in their analysis of a sample of almost 500 families, X. Wang et al. (2021) found that parental phubbing was positively related to children's social withdrawal and aggression. However, positive parenting behavior significantly mediated and reduced the association between parental phubbing and children's aggression.

Similarly, Baldry et al. (2019), Ortega Ruiz et al. (2012), and Sasson and Mesch (2016) pointed out that positive parenting focusing on digital education protects children from becoming involved in risky behavior on the Internet. A study by Martín-Criado et al. (2021) pursued the main objective of proving that direct relationship. The authors underscored that when families control adolescents' Internet activity and guide them in its use, they are less likely to be involved in acts of cyberbullying—specifically, as victims. Strong relationships between parents and children have also been associated with less cyberbullying victimization (Elsaesser et al., 2017).

This relationship is transferred to the field of digital supervision, which prevents cyberbullying not only through the implementation of security measures on the Internet, but especially as a regular practice of parents who make an effort to remain informed about their children's digital habits. In turn, children are less likely to experience cyberbullying (Várnai et al., 2021). In fact, parental monitoring of Internet use has been associated with lower rates of online peer bullying than parental Internet restriction (Khurana et al., 2015). Monitoring involves cultivating an awareness of the child's Internet activities and habits through the child's self-disclosure and requests, rather than by imposing restrictive measures (Kerr et al., 2010). In short, a greater awareness of children's activities in the digital environment helps parents become more involved in their children's lives, contributing to a reduction of cyberbullying by discouraging children from interacting in harmful ways with their peer group (Khurana et al., 2015).

## GENDER AND AGE DIFFERENCES AND FAMILY VARIABLES

Since the onset of research on cyberbullying in educational environments, several studies have delved into the subject and attempted to find existing differences and their effects based on age and gender. Girls are apparently more likely to become involved in cyberbullying cases, especially in the role of victim (Connell et al., 2014; Heiman & Olenik-Shemesh, 2015); however, the literature does not entirely confirm this. Girls' greater involvement in cyberbullying has been described in literature reviews by Slonje et al. (2013) and Navarro (2016). However, both reviews concluded that although girls' involvement is greater, both boys and girls can be aggressors or victims; an entirely clear-cut difference between genders cannot be established.

In view of this, the gender variable may have a different weight depending on the context in which a study is carried out (Sun et al., 2016). Given the necessity of including a gender perspective (Navarro, 2016), we included it in our model of the association between family supervision and cyberbullying. Previous studies such as those of Wienke Totura et al. (2009) and Hanish et al. (2004) have shown that boys and girls can perceive their family environments differently and respond to them in a different way, which is why, according to these authors, the models that take into account such differences between boys and girls are more explanatory. Specifically, Wienke Totura et al. (2009) found that because girls reflect more on their social environment than boys, the degree of family supervision was more relevantly associated with the prevention of bullying in girls than in boys. Girls' more positive evaluation of family supervision thus decreased the probability of their engaging in school violence to a greater degree than was the case for boys (Wienke Totura et al., 2009).

This changes, however, when it comes to cyberbullying. Song et al. (2020) discovered that family supervision protects boys from cyberbullying to a greater degree than it does for girls. However, in a study by X. Wang, Wang, et al. (2020), the gender variable did not appear explain the relationship between parental phubbing and cyberbullying. In another study, H. Wang et al. (2022) found that although parental phubbing was positively related to cyberbullying in both genders, a moderating effect of the perspective adopted in this relationship existed only for boys.

As with gender, the age of those involved in cyberbullying is a significant variable to consider. Tokunaga (2010) examined the incidence of cyberbullying and established that 13- to 15-year-olds suffer the greatest incidence; with increasing age, the number of cases decreased (Smith, 2012). These findings are consistent with those previously reported by Kapatzia and Syngollitou (2007), who observed that students aged 14 to 16 were more likely to engage in or suffer from cyberbullying than those aged 17 to 19.

Age has rarely been considered in research on this topic, apart from serving as a control variable in specific models when examining the association of family supervision or phubbing with cyberbullying. X. Wang, Wang, et al. (2020) found that at older ages, there was a greater possibility of becoming involved in cyberbullying, but parental phubbing did not appear to be an explanatory variable for this. Other studies that analyzed the relationship between family and cyberbullying, such as that by Stockdale et al. (2018), did not take age into account in their results. However, Song et al. (2020) discovered that good supervision of older adolescents provides protection from cyberbullying for both genders.

## CURRENT STUDY

Thus, considering the theoretical framework of reference regarding family supervision, parental phubbing, and cyberbullying, the main objective of this study was to determine whether parental supervision and phubbing were related to performing or suffering from acts of cyberbullying. The second aim of our study was to determine whether respondents' age and gender

had a direct relationship with cyberbullying, family supervision, and parental phubbing. We aimed to provide evidence that the three variables are associated with each another to assess how they are related, as a function of gender (Sun et al., 2016) and age (Smith, 2012). Our literature review suggests that family supervision is protective against both cyberbullying profiles. Similarly, the evidence shows that parental phubbing is a risk factor for inappropriate social media use, and thus perhaps a risk factor for adolescents' experience of cyberbullying. Overall, we surmise that of parental supervision is a protective factor for adolescents' experience of parental phubbing.

The current study is part of a more extensive transversal, ex post facto study of risk behaviors on the Internet, social networking experiences, and cyberbullying. The study design was nonexperimental, cross-sectional, and descriptive-correlational. The main limitation, which in turn is the main characteristic of this type of study, is that although it is possible to describe associations among variables that were observed, because the observation is carried out at a given moment in time, it is not possible to establish a cause–effect link, thereby affecting internal validity. The major advantage of such approaches is that they allow a preliminary approximation of the relationship between variables that can be useful for subsequent longitudinal studies. In addition, we have used structural equation modeling (SEM) to strengthen our analysis because this technique makes it possible to analyze multiple dependent variables and latent variable constructs (which are more reliable than observed variables when measurement errors are included) while allowing for the possibility of reporting multiple goodness-of-fit measures (Byrne, 2010).

## HYPOTHESES

To ascertain the validity of the preceding assumption, we postulated the following hypothetical statistical model in which we tested the association of the degree of family supervision with young adolescents' use of the Internet and social networks, as well as that of parental phubbing, as perceived by the adolescents, with the involvement of the latter as victims or aggressors of cyberbullying. Regarding these relationships, and based on the previous literature, we proposed the following hypotheses:

**H1.** Adolescents' perceptions of family supervision are inversely associated with reports of involvement in cyberbullying as either victims or aggressors.

**H2.** Adolescents' perceptions of parental phubbing are positively associated with reported involvement as either cyberbullying victims or aggressors.

**H3.** Involvement in cyberbullying as either victims or aggressors are positively associated with family supervision and negatively associated with parental phubbing for adolescent girls but not adolescent boys.

**H4.** Family supervision and parental phubbing have a stronger relationship with reported involvement as cyberbullying victims or aggressors for younger adolescents (10–12 years) than for older age groups.

## METHODS

This research was conducted in accordance with the principles of the Declaration of Helsinki and in accordance with local statutory requirements, and it was evaluated and approved by the

Research Ethics Committee of the Community of Aragon (CEICA), ensuring ethical standards in research with underage subjects. All participants (or their parent or legal guardian in the case of children under 16 years) gave written informed consent to participate in the study.

## Participants

This project was evaluated and approved by the CEICA, ensuring ethical standards in research with underage participants. The sample included 1,554 students aged 10 to 18 years enrolled in 26 primary schools (10–12 years old) and secondary education schools (12–18 years old) in the Spanish region of Aragon. First, our research team contacted the administrative teams of 50 educational centers in Aragon. The sampling procedure was initially probabilistic by quotas, according to data from official statistical sources, creating representative sampling units for the three provinces of the region (Zaragoza, 1 million inhabitants; Huesca, 220,000 inhabitants; and Teruel, with 130,000), taking into account the proportion of urban (>30,000 inhabitants) and rural (<30,000 inhabitants) municipalities, as well as between public and private schools.

Of the study participants, 53.1% were girls. The mean age of participants was 13.5 years ($SD = 1.8$) for girls and 13.6 years ($SD = 4.1$) for boys. By age group, 29.7% were in the 10- to 12-year-old group, 37.0% in the 13- to14-year-old group, and 33.3% in the 15-and-older age group. In terms of academic year, 15.4% were enrolled in the last 2 years of primary education (fifth and sixth grades), 38.8% in the first and second years of secondary education, 41.4% in the third and fourth years, and 4.4% in first and second year of baccalaureate (preuniversity courses in Spain).

The low representation of senior high school students (16–18 years old) led us to regroup all students aged 15 years or older into the third age group, thereby making the three groups more equivalent. This readjustment was in line with previous literature (see, for example, Smith, 2012; Tokunaga, 2010; Song et al., 2020), given that our results also aligned with those studies. Regarding place of residence, 30.5% of the participants were from municipalities with fewer than 10,000 inhabitants, 32.6% from towns of 10,000 to 30,000 inhabitants, and 36.8% from cities of more than 30,000 inhabitants. On average, respondents were 10.3 ($SD = 3.54$) years old when they had their first smartphone.

## Procedure

Data collection occurred during the pandemic, which obliged us to switch the sampling type to nonprobabilistic; we nevertheless endeavored to maintain recruitment goals by gender, age, ownership of the center (public or private), and type of center (urban or rural). Ultimately, 39 centers agreed to participate in the project. Members of our research team, supported by a representative of the teaching or administrative body of each center, were in charge of collecting the questionnaire. To complete them, an online platform (Google Forms) was set up; an invitation was sent out to the schools containing general information, deadlines, and objectives; and authorizations were collected from the students' families, caregivers, or tutors.

Although family consent in Spain is only mandatory for students aged 14 and younger, we preferred to inform all families and procured their authorization in all cases, given the topic's sensitivity. Each participant received a password to access the questionnaire once, ensuring privacy, anonymity, and confidentiality throughout the process. The time devoted to completing the survey ranged from 25 to 45 minutes, depending on the students' age (younger students took more time to complete the online questionnaires). This data collection phase lasted 2 months because our research group monitored the entire process to avoid misinterpretation of variables or incomplete questionnaires.

## Measures

For data collection, although additional measures were used for the project as a whole, the present analysis included information from the following scales:

- The Family Phubbing Scale (ad hoc, created for this study by the authors) focuses on two items that seek to inquire about the father and mother's smartphone-related behavior in joint family relationships. These two items (mother phubbing and father phubbing) are divided into three possible responses: When you are with your father/mother, (a) "They listen to you and do not look at their mobile phone," (b) "they listen to you while at the same time looking at their mobile phone," and (c) "they tell you to wait and look at their mobile phone first." The McDonald Omega coefficient is .70 for this scale.
- The European Cyberbullying Intervention Project Questionnaire (ECIP-Q) has a Cronbach's alpha of .87 for the total scale, .80 for the Victimization scale, and .88 for the Aggression scale, as translated from English to Spanish and validated by Ortega-Ruiz et al. (2016). The ECIP-Q focuses on assessing the prevalence of cyberbullying among respondents in its two dimensions, victim and bully, through 22 items, 11 for each dimension. All responses are given on a 5-point Likert scale, in which 0 is *never* and 4 is *always*. The McDonald Omega coefficient is .73 for the Cyberbullying Aggressors' scale and .60 for the Cyberbullying Victims' scale; for the total scale, the coefficient is .88. We chose the four victim items and the four aggressor items because they were those for which we had surveyed the total sample (from 10 to 18 years old); they thus represented the most common cyberbullying behavior. In a previous study by Cebollero-Salinas et al. (2022), this scale obtained a McDonald's omega coefficient of $\omega = 0.60$, and cyberaggression yields $\omega = 0.74$.
- The Family Supervision Scale (translated from English to Spanish and validated by Ortega et al., 2012, Cronbach's alpha = .87) assesses family control and support in social network activities pursued by the family with their children; for example: "My parents help me to make proper use of social networks" or "My parents help me solve problems that happen to me on social media." This is divided into four items that participants rate on a 5-point Likert scale, in which 0 is *never* and 4 *always*. The McDonald omega coefficient is .82 for this scale.
- Demographic questions: Our survey also included further questions created ad hoc to analyze the socio-personal characteristics of the sample (gender, age, and school year). The list of all these variables, as analyzed in the model, can be viewed in Supplemental Table 1).

## Analysis

For result analysis using the SPSS program (IBM-SPSS, version 26), we carried out an initial descriptive (univariate) and bivariate analysis of victimization and aggression in cyberbullying by comparison of means with analysis of variance according to the socio-personal characteristics of the sample. We subsequently implemented a correlation analysis of the variables under study.

In the second phase, we tested the hypothetical model of a causal structure by applying SEM analysis because this technique allows for multiple dependent variable analysis, latent variable constructs (which are more reliable than observed variables when including measurement errors), and the possibility of reporting multiple measures of goodness of fit. In this technique, the degree of adjustment of certain data is compared with the theoretical model established in the previous section, validating the adjustment to several indicators. This procedure also allows comparisons among groups by applying multigroup analysis to investigate differences across subpopulations or demographic segments. It enables researchers to test whether the

relationships among variables in the model are the same or different across groups. We applied it in this case because a relevant variability in function of the gender and age variables can be hypothesized. For missing data, listwise deletion was used. The remainder of the measured variables presented, at most, 0.3% of missing data.

Our SEM, designed based on our previous literature review (see Supplemental Figure 1), was tested using the IBM-SPSS software and its AMOS extension (version 26). The latent and observed variables are shown in Table 1. The estimation method chosen to test the measurement model was asymptotically distribution-free, an approach recommended for scales that cannot be measured quantitatively and for which multivariate normality cannot be assumed (Byrne, 2010). Correlations were initially obtained among all the factorial scores of the variables in both the girls' and boys' subsamples, as well as in the three subsamples corresponding to the following age groups: 10 to 12 years, 13 to 14 years, and 15 years or older. Analysis of the model led us to eliminate the observed variable A2 ("I have threatened someone through the Internet") from the models we tested because it did not contribute to the latent variable "Aggressor" ($p > .05$).

We then compared the subsamples by applying Fisher's Z transformation of the correlation coefficient. This transformation is commonly used to test the significance of the difference between two correlation coefficients, r1 and r2, stemming from independent samples (given the groups we analyzed). We tested the model's goodness of fit using the $\chi^2$/degrees of freedom test (CMIN/DF in AMOS), as well as by applying the root mean square of approximation (RMSEA), goodness of fit index (GFI), and comparative fit index (CFI) indicators and their critical levels, as recommended and Byrne (2010). We applied multigroup analysis to verify the hypothesis that interviewees of different gender and age groups would display significant differences in the analyzed associations among variables. To make this distinction, we compared a series of nested models. To contrast the differences between groups, we compared the models

**TABLE 1** Descriptive analysis of the variables used in the model—percentage and level of significance by gender.

| | Girls | Boys | *p* |
|---|---|---|---|
| Cyberbullying: % of incidence at least "sometimes" | | | |
| V1. People have said bad words or insulted me on the Internet | 11.8 | 21.3 | *** |
| V2. I have been threatened through the Internet | 3.2 | 10.2 | *** |
| V3. People have spread rumors about me on the Internet | 7.5 | 9.6 | |
| V4. I have been excluded or ignored from a social network or video game | 8.8 | 13.2 | ** |
| A1. I have said bad words or insults on the Internet | 6.7 | 16.1 | *** |
| A2. I have threatened someone through the Internet | 2.0 | 6.5 | *** |
| A3. I have spread rumors about someone on the Internet | 3.2 | 4.7 | |
| A4. I have excluded or ignored someone from a social network or video game | 6.1 | 7.5 | |
| Family supervision: % of "little" or "no" supervision | | | |
| F1. My parents help me make proper use of social networks | 45.1 | 48.3 | |
| F2. My parents control my use of new technologies | 44.1 | 43.6 | |
| F3. I do things with my parents on the Internet (e.g., search for information, play games, visit websites) | 43.0 | 48.5 | * |
| F4. My parents help me solve problems that happen to me on social media | 44.7 | 55.3 | *** |
| Parents' phubbing: % of students that perceive phubbing at least sometimes | | | |
| Mother | 23.0 | 25.0 | |
| Father | 28.1 | 28.9 | |

*Note*. Independent variable: gender. Dependent variables: cyberbullying, family supervision, and parental phubbing items.
*$p < .05$.**$p < .01$.***$p < .001$.

by calculating the differences in CMIN/DF and the Akaike information criterion (AIC) index (Byrne, 2010).

## RESULTS

We had hypothesized that students' perception of family supervision and cyberbullying would be inversely associated with reports of involvement as cyberbullying victims or aggressors (H1). A negative, statistically significant relationship between being a victim and having family supervision emerged ($F1_{.1536} = 3.268$, $p < .001$, $\eta^2 = .035$). Also, a statistically significant relationship ($F1_{.1536} = 2.684$, $p < .001$, $\eta^2 = .029$) between family supervision and being an aggressor was found.

In terms of students' perception of parental phubbing and cyberbullying (H2), we found a positive and statistically significant relationship for adolescents reporting being victims of cyberbullying ($F1_{.1546} = 7.518$, $p < .001$, $\eta^2 = .033$) as well as being aggressors ($F1_{.1546} = 2.684$, $p < .001$, $\eta^2 = .023$). However, to understand these relationships better, we found that it was preferable to focus on the differences between gender and age groups.

Looking at the relationship among family supervision, parental phubbing, and bullying by gender (*H3*: *Family supervision and parental phubbing has a stronger relationship in girls than boys as cyberbullying victims and aggressors*), we found that, in victimization and aggression by cyberbullying, boys were the largest group across all behaviors: The difference from girls was significant in most of them. In family supervision, boys had a higher incidence in the percentage of "little or no supervision". In parental phubbing, however, there were no significant differences in terms of gender: Parental phubbing affected one out of four adolescents (Table 1).

We subsequently calculated the correlations among the variables that made up the model, taking the aforementioned gender criteria into account (see Supplemental Table 2). In the group of adolescent girls, the correlations were significant in all cases; and the correlations were negative between the level of family supervision and the remaining variables (level of parental phubbing, victimization, and cyberbullying aggression). For boys, the correlation between family supervision and the other variables was not significant. The relationship between parental phubbing and cyberbullying was positive and significant in both boys and girls, especially in adolescent girls who reported being victims ($r = .155$) and adolescent boys who reported being aggressors ($r = .182$). The high correlation coefficient between being a victim and an aggressor of cyberbullying was striking, especially in boys ($r = .685$).

Because different results were observed based on gender and age, we carried out a multigroup comparison of structural models taking these variables into account to check which data set best fit the hypothetical model. Contemplating the "gender" variable, we tested nine models, comparing them with each another following CMIN/DF and AIC indicators (Byrne, 2010). On the basis of the "structural weights" model, different restrictions were applied to the relation among variables. Thus, the model that had the best fit was Model C8 (Equal β3, CMIN/DF = 1.797; $p < .0001$; GFI = .952; RMSEA = .023; AIC = 339.851)—that is, the model in which all of the associations among variables were different for boys and girls—except ß3—that is, the relationship between family supervision and cyberbullying victimization (see Supplemental Table 3).

Analyzing the results of models, and starting with Model C8 according to gender, where only the ß3 coefficient was the same for boys and girls (association of family supervision with being a victim of cyberbullying, in both cases significant and negative), we can see in Figure 1 that parental phubbing had a relevant relationship with being a victim of cyberbullying for both boys and girls (ß1), although it was more evident in boys (ß1 = .262). Although phubbing was not related to being an aggressor in girls, it was significantly related to that variable in boys (ß2 = .261). Lastly, family supervision protected boys and girls from becoming aggressors, but

much more in girls (ß4 = −.292). This model explained 9.7% of the variance for aggressors and 8.8% for victims in the case of girls and 7.9% for victims and 9.5% for aggressors for boys.

Our fourth hypothesis concerned the role of adolescents' age in relation to family supervision, parental phubbing, and bullying (H4). In terms of age (Table 2), victimization by insults or exclusion affected the group aged 10 to 12 years to a greater extent, whereas the spread of rumors did so for those aged 15 and older, with no thoroughly significant differences for aggressors. On the other hand, pronounced differences could be observed in family supervision of Internet use, decreasing considerably as age increased.

By age, family supervision correlated negatively and significantly with being a victim and aggressor of cyberbullying in the 10- to 12-year-old group ($r = -.126$ and $r = -.184$), and with being a victim in the 13- to 14-year-old group ($r = -.139$). Parental phubbing and being an aggressor or victim of cyberbullying correlated in a positive and significant way in the three age

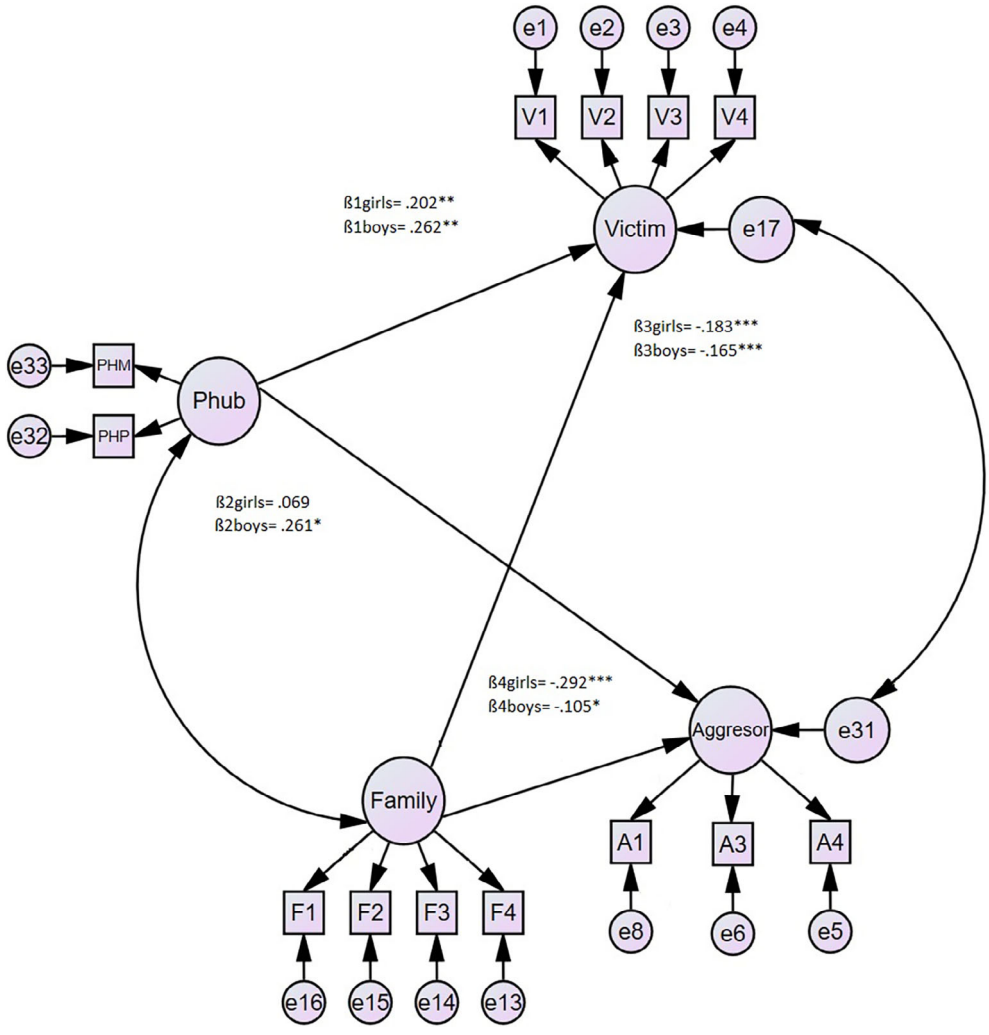


**FIGURE 1** Structural model regarding the relationship of parental phubbing and family supervision with cyberbullying victimization and aggression. *Note*. Standardized coefficients and level of significance by gender. Goodness of fit index = .95; comparative fit index = .93; root mean square of approximation = .023; CMIN/DL ($\chi^2$/ degrees of freedom test in AMOS) = 1.80. *$p < .05$. ** $p < .01$. *** $p < .001$.

**TABLE 2** Descriptive analysis of the variables used in the model—percentage and level of significance by group of age.

| | 10–12 | 13–14 | 15+ | *p* |
|---|---|---|---|---|
| Cyberbullying: % of incidence at least "sometimes" | | | | |
| V1. People have said bad words or insulted me on the Internet | 21.6 | 11.7 | 15.7 | *** |
| V2. I have been threatened through the Internet | 6.8 | 4.5 | 8.3 | |
| V3. People have spread rumors about me on the Internet | 5.9 | 6.3 | 13.3 | *** |
| V4. I have been excluded or ignored from a social network or video game | 15.2 | 8.5 | 9.2 | *** |
| A1. I have said bad words or insults on the Internet | 12.3 | 7.9 | 13.3 | * |
| A2. I have threatened someone through the Internet | 4.3 | 2.2 | 5.9 | * |
| A3. I have spread rumors about someone on the Internet | 3.6 | 3.6 | 3.6 | |
| A4. I have excluded or ignored someone from a social network or video game | 8.2 | 5.3 | 7.0 | |
| Family supervision: % of "little" or "no" supervision | | | | |
| F1. My parents help me to make proper use of social networks | 26.5 | 46.5 | 66.2 | *** |
| F2. My parents control my use of new technologies | 23.3 | 42.1 | 65.8 | *** |
| F3. I do things with my parents on the internet (search for information, play games, visit websites) | 32.1 | 47.4 | 56.7 | *** |
| F4. My parents help me solve problems that happen to me on social media | 35.3 | 52.0 | 60.9 | *** |
| Parental phubbing: % of students who perceive phubbing at least sometimes | | | | |
| Mother | 26.6 | 21.9 | 23.3 | |
| Father | 30.4 | 24.4 | 30.6 | |

*Note*. Independent variable: age. Dependent variables: cyberbullying, family supervision, and parental phubbing items.
*$p < .05$.***$p < .001$.

groups, reaching the highest coefficient in the group aged 15 and older in the relationship between that type of phubbing and being a victim ($r = .209$). Again, there was a highly significant relationship by age between being a victim and an aggressor of cyberbullying, especially in the youngest group ($r = .685$; see Supplemental Table 4).

For the multigroup comparison based on the "age-group" variable, we once more tested nine models, following the same strategy as in the previous analysis. In this case, the model with the best fit was Model C1 (Equal β1, β3, β4; CMIN/DF = 1.772; $p < .0001$; GFI = .932; RMSEA = .022; AIC = 504.317)—that is, the model in which all the associations between variables were the same regardless of age group, except for the association of parental phubbing with being a cyberbullying aggressor (ß2; see Supplemental Table 5).

Analyzing the model by age, there were no significant differences between the three groups, except in the association of parental phubbing with becoming an aggressor, which was highly apparent in the 10- to 12-year-old group (ß2 = .302); it was important but with a lower coefficient in the 13 to 14 age group (ß2 = .247) and not significant in the 15 years and older group. On the other hand, a relationship between parental phubbing and being a victim of cyberbullying could be observed in all age groups, particularly in the age group of 15 years and older (ß1 = .326). Family supervision with the aim of preventing cyberbullying was important in all age groups for both aggressors and victims, but the positive association of such family supervision in preventing the child from becoming an aggressor was higher in students aged 15 and older (ß4 = −.254). This model explained 14.2% and 7.2% of the variance for victims and aggressors for the 10- to 12-year group, 8.8% and 7.1% respectively for the 13- to 14-year group, and 8.3% and 13.5% for victims and aggressors, respectively, in the case of those aged 15 years and older (Figure 2).

## DISCUSSION

Cyberbullying is a severe problem that affects children and adolescents significantly and increasingly worldwide, given the growth of their interactions in virtual spaces (Patchin & Hinduja, 2015). Our study aimed to provide evidence that family supervision, parental phubbing, and the two cyberbullying profiles are associated with each other and assess how they are related, and also whether gender (Sun et al., 2016) and age (Smith 2012) are variables that contribute to differences. Our results indicate, on one hand, that family supervision is a protective factor, and parental phubbing is a risk factor, both for the cyber-victim and cyber-aggressor profiles. On the other hand, low levels of parental phubbing were related to lower likelihood of adolescents reporting cybervictimization and cyberaggression for boys, whereas high levels of parental supervision were related to lower levels of cybervictimization and

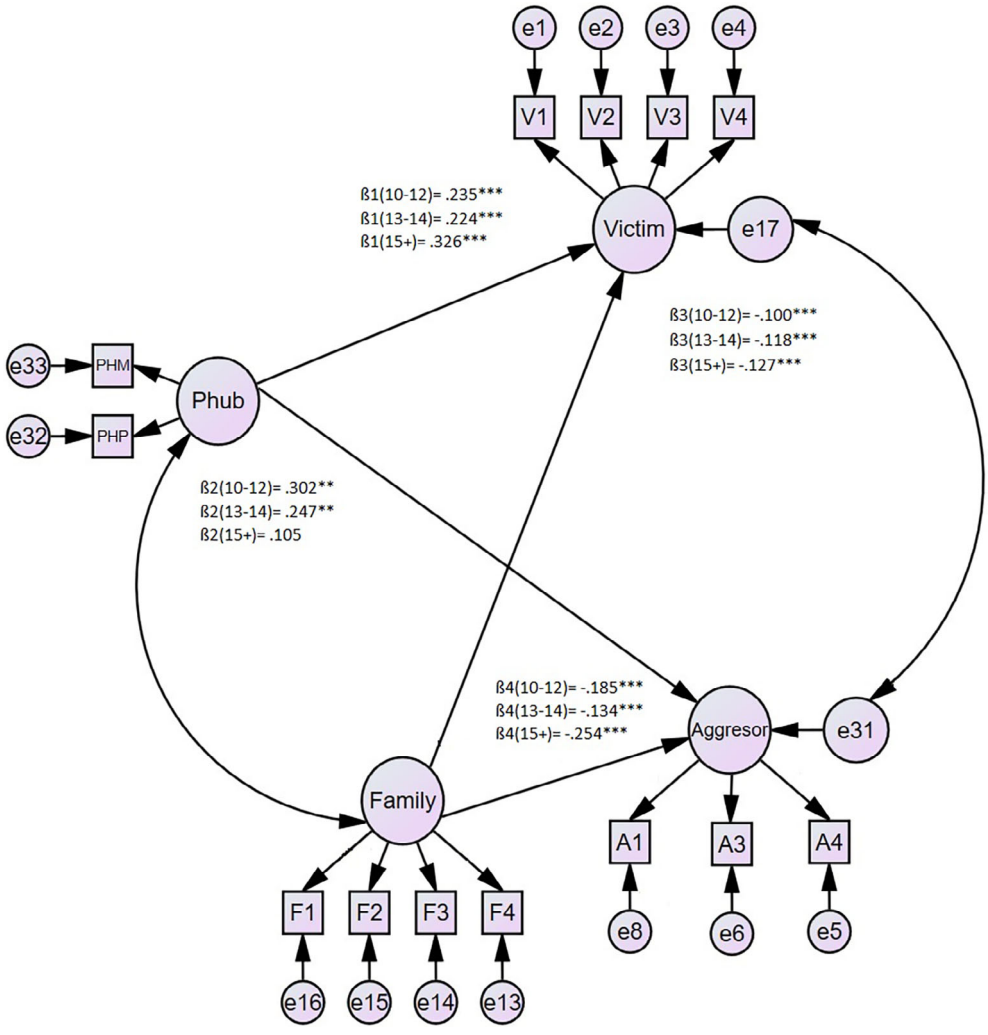


**FIGURE 2** Structural model of the relationship of parental phubbing and family supervision with cyberbullying victimization and aggression. *Note*. Standardized coefficients and level of significance by age group. goodness of fit index = .93; comparative fit index = .90; root mean square of approximation = .022; CMIN/DL ($\chi^2$/degrees of freedom test in AMOS) = 1.77. *$p < .05$. ** $p < .01$. *** $p < .001$.

cyberaggression for girls. With regard to age, family supervision is a greater protective factor against cyberbullying in both profiles from the age of 15 onward. Parental phubbing, on the other hand, is associated at early ages (10–12 years) with a greater risk of perpetrating cyberbullying acts and, at later ages (15 years and older), with cyberbullying victimization.

Regarding the literature, the inverse relationship that appears in our model between family supervision and cyberbullying victimization—namely, aggression—would endorse the viewpoints of Coyne et al. (2017), Valcke et al. (2010), Benedetto and Ingrassia (2020), and Martín-Criado et al. (2021). These authors indicated that family supervision in the correct use of the Internet and social networks can help children and adolescents maintain healthy online relationships with their peers and thereby prevent harassment on the Web in the role of both victim and aggressor.

The results obtained in the current study show a strong and significant link between parental phubbing and cyberbullying, as found by Stockdale et al. (2018). Our results also reinforce those studies that tend to affirm that this link is significant (X. Wang, Wang, et al., 2020). Indeed, in our model, parental phubbing is a variable that bears an even stronger relationship than family supervision with being a victim or aggressor of cyberbullying, thereby confirming our second hypothesis. This result is once more in line with the study by Stockdale et al. (2018), who linked parental phubbing with online aggression toward children.

Previous studies, such as those of Radesky et al. (2014) and Radesky and Christakis (2016), have placed particular emphasis on the fact that parental phubbing is detrimental to parents' relationship with their children due to less supervision and lower social support as perceived by children and adolescents (X. Wang, Wang, et al., 2020). In addition, phubbing can give minors a negative example, leading them to copy the attitude their parents display (Liu et al., 2019). This may lead to negative behavior, such as cyberbullying (Stockdale et al., 2018).

Our results indicate that the likelihood of adolescents engaging in risky behavior on the Internet, as well as the occurrence of cyberbullying, may be decreased for adolescents reporting higher levels of family supervision and for adolescents who report lower level of parents' engagement in phubbing (Baldry et al., 2019; Martín & Criado et al., 2021; Stockdale et al., 2018; X. Wang, Gao, et al., 2020). The relationship observed in this study between a lack of family supervision and a greater incidence of parental phubbing suggests an association with these family experiences and adolescents' experience of cyberbullying, as either victim or bully. This may suggest that the experiences contribute to greater likelihood of adolescents experiencing psychological problems such as stress, aggressiveness, anxiety, and depression (Baruah et al., 2017), as well as relationship problems inside and outside of school and within the family (Stockdale et al., 2018). The relevant correlation between cyberbullying victimization and aggression in our study strongly suggests that the aggressor can become the victim, and vice versa; family supervision is apparently effective in both cases. This finding is interesting, as other studies (Cebollero-Salinas et al., 2022; Ortega & Zych, 2016) have indicated that aggression is a frequently observed reaction on the part of adolescents after they have been victimized.

## Role of age and adolescent gender

In terms of gender, our study showed that boys had greater involvement in cyberbullying, both as victims and aggressors, similar to the findings of Baldry et al. (2019) but in contrast to some previous studies that have shown a higher prevalence among girls (Connell et al., 2014; Heiman & Olenik-Shemesh, 2015; Navarro, 2016; Slonje et al., 2013). This difference could also be observed in the relationships among the variables in our model. Thus, the protection provided by family supervision was especially relevant when it came to preventing the girls' acting as bullying aggressors, a conclusion also reached in previous studies (Hanish et al., 2004; Sasson & Mesch, 2016; Wienke Totura et al., 2009) but that is at odds with recent studies

(e.g., Song et al., 2020). The prevalence of parental phubbing, however, was associated with boys' greater involvement as both cybervictims and cyberaggressors. These findings partially support our third hypothesis by indicating that gender is an explanatory variable regarding the differences in the association of family supervision and phubbing with aggression and/or victimization by cyberbullying, although girls are more affected (positively) by family supervision and boys (negatively) by parental phubbing.

Regarding age, although family supervision of Internet and social network use decreases greatly with age, no significant differences in connection with this variable were observed in our study. This aspect is of considerable relevance because parental supervision greatly decreases in adolescents aged 15 and older despite being just as effective as it is in the other age groups. This is particularly the case in preventing older teenagers from becoming victims, as shown by the results obtained by Baldry et al. (2019).

For parental phubbing, only one difference was found, taking the age variable into account and its association with the fact of becoming an aggressor: a considerably relevant difference in the 10- to 12-year-old group. Our Hypothesis 4 would thus appear to be partially refuted because no other great differences were found among age groups. These results are novel in the study of the role of parental supervision in the prevention of cyberbullying because they suggest that it is effective even in older students.

## Conclusions

Taking these findings into account, we conclude that the family environment and the attention paid to how adolescents handle the Internet and social networks and interact through them is a highly relevant prevention factor for cyberbullying, regardless of the minors' developmental stage and regardless of their gender, given the relevance of positive family support in preventing boys from becoming aggressors and girls from becoming victims. In Spain, the Asegúrate program (Del Rey et al., 2019) focuses on educating young people in the prevention of digital risks associated with social networks, Internet abuse, and other digital conflicts, among which cyberbullying stands out. Such programs encourage children and adolescents to develop virtual emotions through activities they can work on at school and at home with their families. The Asegúrate program has indeed managed to reduce the frequency of cyberbullying in Spanish schools.

The supervision of adolescents is not the only relevant action, however; the manner in which parents use their electronic devices, leading their children to perceive that they are being ignored when their parents are using their mobile phones, can even more markedly promote an "exclusion behavior" that interferes in parent–child relationships and can lead to risky behavior such as cyberbullying. Moreover, such conduct can act as a negative model for children and adolescents. This leads us to suggest that educational strategies for the prevention of cyberbullying must include making families aware of the issue. A positive parenting strategy must include supervision of minor-age children in terms of their use of social networks, regardless of their age, and parents must display appropriate behavior regarding how they use their own electronic devices. The importance of model behavior for minors to follow in their optimal use of ICTs is evident and should be placed at the center of these prevention strategies and future research in this area, which could examine the supervision of ICT use and supervision of the child/adolescent in general.

## Limitations and implications

Our study has certain limitations that need to be addressed. According to Yiu et al. (2021), the post–COVID pandemic context poses unique challenges to survey methodology, especially in

the sampling process. Therefore, in our case, the pandemic context may have affected the internal validity (e.g., history and maturation of responses) and external validity (e.g., selection bias) of the results. Thus, our results should be interpreted with caution. We nevertheless applied certain recommendations made by previous authors, such as cooperation across academic disciplines (psychology, sociology, and the educational sciences) in our study design (Yiu et al., 2021), and we applied sampling error management by using random onset and cluster sampling (Henderson et al., 2009).

Moreover, although we endeavored to ensure our sample's diversity, our study can be regarded as slightly biased because it only comes from a specific region (Aragon, Spain). Also, given the low number of senior high school students (16–18 years old) compared with other age groups, a certain age bias can be observed in the participants' definitive profile. In this regard, the decision to establish an age group of 15- to 18-year-olds could also have biased our results because the age interval is wider than in the other age groups. Students' subjective interpretation of family supervision and parental behavior could somewhat limit our results' explanatory potential. However, our choice of variables and the final age grouping may be justified, given the alignment of our results with previous research and our use of validated scales. The scale used as a measure of the phubbing variable featured only two items, which may have led to limited results. Moreover, cross-sectional and self-reported data and their consequent results need to be considered carefully. Nevertheless, given that our results are in line with previous studies and produced significant indexes, we find it acceptable to generalize them.

## Implications

Regarding future lines of research, we find that the multicausality of relational cyberbullying would require new models that would explore contextual and personal variables (gender and age) not yet analyzed in this article. Likewise, it would be necessary to carry out longitudinal studies in educational centers where work with families has been implemented to prevent behaviors related to cyberbullying. Also, the relatively high prevalence of parental phubbing in our sample makes it necessary to extend the study to other Spanish regions and internationally to compare these figures within a wider context.

This study aims to make parents and caregivers aware of the importance of a good digital education for their children to prevent behaviors such as cyberbullying. Family supervision of adolescents in their use of social networks and the Internet is essential to ensure that they can function in a healthy, safe way in the virtual world. However, digital education provided by the family is not the only element required to achieve such healthy personal development.

The acts that children commit may be a reflection of family behaviors; thus, in addition to guiding children in their digital education, parents and caregivers need to avoid negative behaviors, such as phubbing, in the use of digital devices, which could draw their children closer into the orbit of online risks. Sasson and Mesch (2016) suggested a series of useful strategies, such as setting rules about which sites children can visit and installing monitoring software; however, if such control is excessive, children may regard it as infringing on their independence. As an additional strategy, Coyne et al. (2017) suggested that families should oversee their children's first encounters with the Internet and ITCs, while explaining the associated risks. Another good strategy is to create children's first email and social network accounts together. It is important to avoid invading their privacy during this process but instead seek to give them advice on how to manage their privacy in a way that helps prevent eventual digital risks associated with their use when they are alone. Collaboration between schools and families, as proposed by Bartau-Rojas et al. (2018), could be beneficial in teaching the responsible use of social networks while learning to live together harmoniously by appropriately developing the digital competence of students and their families.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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