

Research Article

Protective and Risk Parenting Styles for Internet and Online Gambling Addiction

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This study analyzes the relationship of the four parenting styles, authoritative, authoritarian, indulgent, and neglectful, with Internet addiction and online gambling addiction. Study sample was 512 adolescents aged between 16 and 21 years (63.9% females, $M = 18.7$, $SD = 1.8$). A $4 \times 2 \times 2$ MANOVA was applied for the outcome variables of Internet addiction (loss of control, emotional need and dependence) and gambling (anticipation, desire, and relief) with parenting style (authoritative, authoritarian, indulgent, and neglectful), sex (boy vs. girls), and age (16-18 years old vs. 19-21 years old) as independent variables. The results provide evidence of the relationship between parenting styles and technological addictions, showing that parenting characterized by the use of practices of involvement and acceptance (authoritative and indulgent parenting) can act as protective factors for Internet addiction and online gambling addiction. On the contrary, authoritarian parenting, characterized by the use of strictness and imposition practices, would act as a risk factor for Internet addiction and online gambling addiction. The protective and risk effects of parenting styles over adolescents' technological addictions take place irrespective of their sex and age.

1. Introduction

In recent decades, we have witnessed the information and communication technology revolution, which has produced great changes that have spread to all areas of life. This new reality has brought numerous scientific, intellectual, economic, and social advantages, increasing the quality of life and even democratizing knowledge [1, 2]. But this reality has also brought disadvantages, among others, the digital gap for economic, political, or generational reasons and the decrease in offline relationships, sedentary lifestyles, or certain pathologies associated with the use and abuse of these technologies, such as cyberbullying or cyberaddictions [3–5].

The last two decades have seen exponential growth in global Internet use. According to Internet World Stats [6], the number of Internet users has grown from 361 million in 2000 to 5544 million in 2022, with 69% of the world's population using the Internet. These data confirm that Internet use has become critical. In addition, the preventive mea-

asures taken during the recent COVID-19 pandemic, forcing people to stay at home, drastically reduce social contact, and engage in multiple online educational and work activities, have led to an increase in Internet use in daily life, especially among the younger population [7, 8]. As Internet use increases, so does the number of Internet addicts. The ease of use of the Internet around the world, being a widely available and affordable resource, can exacerbate health problems. Thus, the ease of access to Wi-Fi networks and the spread of smartphones have increased the likelihood of unlimited Internet use, also increasing the risk of addiction [9].

Consequently, compulsive use of the Internet and electronic devices has become a global concern. In fact, between 1% and 4% of the world's population has some significant impairment in their lives resulting from this phenomenon [10, 11]. Recent studies show that this problem especially affects the younger generations, influencing the way they live [12, 13]. The need for social interaction during adolescent identity development is closely related to Internet abuse

among youth, which is especially concentrated in problematic use of social networks [14, 15].

Technological addictions are defined as “non-chemical (behavioral) addictions which involve human-machine interaction. They can be passive (e.g., television) or active (e.g., computer games) and usually contain inducing and reinforcing features which may contribute to the promotion of addictive tendencies” ([16], p.15). Griffiths et al. [17] relate technological addictions to the excessive and inappropriate use of technological devices (smartphones, tablets, computers...) and the Internet and its services (video games, social networks...). In these behaviors, the typical characteristics of addiction are observed, such as salience, mood modification, tolerance, withdrawal, interpersonal, or intrapsychic conflicts and relapses.

Although there is no agreement on whether or not to consider problematic Internet use as an addiction [17], there are numerous studies on the negative effects of Internet addiction on physical health, mental health, and social development [4]. Young [18] points out that Internet addiction can lead to detrimental consequences, such as depression, anxiety, or impatience due to Internet deprivation, gradually leading to functional impairment at the academic, family, and social levels. Thus, empirical evidence points to an extensive list of associated problems, despite the fact that Internet addiction has not been included in the main diagnostic manuals, such as the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders [19] or the 11th Revision of the International Classification of Diseases [20].

In terms of effects on physical health, Internet abuse is related to sedentary lifestyle, obesity, insomnia, musculoskeletal problems, or sensory impairments [13, 21, 22]. Moreover, Taehtinen et al. [23] reported a relationship between time spent on screen-based activities (watching TV/DVD/VCR, being on the Internet, playing computer games, and other computer uses) and different somatic symptoms such as dizziness, tremors, headaches, stomach aches, and multiple pain symptoms. As well, research shows that Internet addiction is negatively related to mental health and social development, being associated with numerous psychosocial consequences. For instance, Internet addiction has been related to anxiety, depression and stress [24, 25], impulsivity [26], problematic substance use [27], low self-esteem [28, 29], suicidality [2], attention deficit hyperactivity disorder (ADHD) [30], loneliness [31], and academic performance problems [32], among other issues.

Two types of Internet addiction were distinguished by Davis [33], generalized Internet addiction, referring to various activities practiced through the Internet, or specific addiction to the Internet, referring to the practice of specific behaviors online, such as gaming and online gambling. Davis [33] points out that the difference between generalized and specific addiction is that in the generalized form, individuals would not have developed such addiction without the Internet, while in specific forms, individuals could have developed a similar addiction within another context. As in the generalized Internet addiction, research has also demonstrated the physical and psychological damage of Internet-

specific addictions [34, 35]. Internet gaming addiction involves an excessive and uncontrollable use of video games, despite the multiple harmful consequences of this behavior [19, 20]. This type of addiction has become a public mental health problem in many developed countries. In fact, it has been considered by the DSM-5 and ICD-11 within behavioral addictions, which consist of poorly controlled, repetitive, persistent, and dysfunctional behaviors. This practice becomes even more frequent when young people resort to it as a coping strategy, allowing them to participate in games to escape from stressful situations [36].

Otherwise, the DSM-5 [19] has included gambling disorder in the chapter “Substance-related and addictive disorders” because like certain drugs and addictive substances, gambling behaviors activate similar reward systems and behavioral symptoms [37, 38]. The DSM-5 classifies gaming as a gambling disorder when it includes gambling. Given that accessibility is a determining factor in addictive behaviors, the ease of access to online gambling through the diversity of technological devices increases the predisposition to gambling addiction, especially among adolescents [39, 40]. To this, it must be added that online gambling has peculiarities that increase its addictive potential with respect to traditional gambling, such as speed, the attractiveness of betting, anonymity, and immediacy of response [41, 42].

Even though gambling is a forbidden activity for minors, a significant proportion report having gambled. According to the latest ESPAD survey, involving adolescents from 35 European countries, 22% of 15-16-year-olds have gambled in the last 12 months (both traditional and online gambling) and 7.9% have gambled online, doubling the prevalence of gambling in males to that of females [43]. Recent studies have shown that this activity has become the second most common cause of pathological gambling for patients in treatment, especially among those younger than 26 years old. Likewise, the proportion of pathological gamblers in this age group seeking therapeutic assistance has increased [44].

Regarding gender differences in Internet use, the evidence is inconclusive. Differences in patterns of Internet addiction have been observed according to gender, but not always in the same direction. On the one hand, some studies show more negative results for males, with higher Internet addiction [21, 45, 46]. On the other hand, some studies indicate a higher tendency for Internet addiction among girls [47, 48]. However, some studies claim that differences in usage patterns (frequency and time spent online) between boys and girls are minimal or nonexistent [49, 50]. According to Golpe et al. [50], boys and girls differ especially in the reasons for using the Internet and, therefore, in the activities and content they access. Girls use the Internet more as a source of information for studies [51, 52] and, above all, as a means of social and emotional development (social networks, cell phone use, email...) [51, 53], whereas boys go online more to access pornographic content [50, 54] and to play, both video games [51, 52] and gambling [55, 56]. Specifically, with respect to online gambling, according to the latest ESPAD survey, the prevalence of online gambling among European adolescents is twice as high in males as in females [43]. In Spain, the ESTUDES survey of 2021 has

also found differences by sex, with the prevalence of males quadrupling that of females [57].

Concerning age differences in technological addictions, although some researchers disagree and others claim that these differences among adolescents are not significant [58], there is some evidence that older adolescents score higher on Internet addiction and online gambling than younger adolescents [57, 59]. Empirical evidence is highlighting the role of the family in technological addictions. However, most of the studies investigated parental behaviors (e.g., emotional availability, warmth, and punishment) and aspects of parent-child relationship, and few studies addressed the relationship of Internet addiction with the four classical parenting styles, authoritative, authoritarian, indulgent, and neglectful. The classic model of parental styles is built around two orthogonal dimensions of parental behavior, commonly referred to as demandingness and responsiveness [60–63]. Demandingness represents the degree of control and authority exercised by parents and the maturity they demand from their children. Responsiveness represents the degree of affection, warmth, support, acceptance, and reasonableness that parents employ with their children [64, 65]. More recent labels to refer demandingness and responsiveness dimensions are strictness/supervision and acceptance/involvement (e.g., [66–69]). Based on the degree to which parents employ parenting practices based on the dimensions of strictness/supervision and acceptance/involvement, four parenting styles are differentiated. The authoritative style is characterized by high levels of strictness/supervision and acceptance/involvement. The indulgent style presents high acceptance/involvement and low rigor/supervision. The authoritarian style is expressed with high rigor/imposition and low acceptance/involvement. Finally, the neglectful style is characterized by low rigor/supervision and acceptance/involvement [60, 62, 67, 70–72].

Studies have shown the relationship between parental practices and adolescent adjustment [72–75]. Recent studies in several European countries, such as Spain, Sweden, Slovenia, Czech Republic, Italy, Germany, Portugal, Turkey, or Norway [76–79], and also in some Latin American countries, such as Brazil or Mexico [80–82], agree to point out that acceptance/involvement practices are related to the highest levels of adolescent adjustment. Thus, even though research has traditionally associated authoritative parenting with the highest levels of adolescent adjustment [60, 62, 67, 72], these emergent studies have found similar or even higher adjustment outcomes among children of indulgent parents [83]. The two parental styles, authoritative and indulgent, share high level of acceptance and involvement and the use of practices of warmth and reasoning, while authoritarian and neglectful parenting share low use of warmth and reasoning and are both associated with lowest adolescent adjustment [84].

Otherwise, adolescents' use of technological devices and the Internet is related to their family environment [46, 85]. Several researchers associate technological addictions in adolescence with parent-child relationship [86–90]. For example, Bonnaire and Phan [86] found that nonproblematic gamers had a better family cohesion while adolescent with Internet gaming disorder had more family conflict

and a poorer family relationship. According to Li et al. [87], youth with Internet addiction reported greater parent-child conflict and global dissatisfaction with their families. Shek et al. [88] have found that the quality of parent-child relationships is negatively associated with adolescent internet addiction, pointing out that positive family interactions are beneficial for adolescents and prevent them from becoming addicted to the internet. Trumello et al. [89] explored the association of Internet addiction with parent-adolescent relationship and showed that maternal emotional availability negatively predicted Internet addiction. All these studies, based on adolescents' self-reports, highlight the role played in technological addictions by different aspects of the parent-child relationship, such as family cohesion, overall satisfaction with the family, quality of the parent-child relationship, or emotional availability of the mother.

Furthermore, technological addictions have been shown to be related to some specific parenting practices (e.g., [45, 90, 91]). For example, Chou and Lee [45] found that strict control and overprotection around children's Internet use may be associated with an increased tendency to Internet addiction. According to Dogan et al. [46], warmth in family relationships decreases the likelihood of Internet addiction, whereas family dynamics with low kindness increase the likelihood of Internet addiction. Floros and Siomos [92] studied the relationship between parental bonding factors (care and overprotection) and addictive technological behaviors, finding that in optimal bonding, parents respect their children's autonomy while still caring for and protecting them. This good parenting can eliminate the need to seek affective rewards in addictive online behaviors and intrinsic motivation to engage in social networks. Karaer and Akdemir [91] showed that parents with lower emotional availability presented a higher likelihood of their adolescent children suffering from Internet addiction. In the study of Li et al. [87], youth with Internet addiction perceived their parents as more punitive and less supportive, warm, and involved and described their families as less organized, cohesive, and adaptive. Xiuqin et al. [90] found that adolescents with Internet addiction rated their parents as overintrusive, punitive, and unresponsive. These studies, mostly conducted with adolescent self-reports, have shown the relation of that some specific parenting practices (e.g., strict control, overprotection, overintrusion, punishment, care, and warmth) have with technological addictions. So, parents who use practices based on strict control, overprotection, overintrusion, and punishment are more likely to have children with technological addictions. However, parenting practices based on warmth, care, and support seem to be protective factors against technological addictions.

Moreover, parental warmth and support play an important role in adolescents' ability to regulate their emotions. Since emotions are factors present in addictions, emotional regulation will be an important factor in their prevention. Adolescents raised under affective deprivation may try to satisfy, through the Internet, emotional needs derived from the family environment. However, those adolescents with skills to regulate their emotions should be less predisposed to technological addictions. Thus, according to some authors

(e.g., [91, 93]), adolescents with unmet affective needs are more likely to compensate for affective distance and/or strict parental supervision by using the Internet to communicate online and practice quartering to peers, thus being more at risk of becoming addicted. In turn, authors such as Lin et al. [94] and Yu and Gamble [95] found an inverse relationship between adolescents' perception of parental warmth, involvement, and availability and technological addictions. Additionally, Chou and Lee [45] note that while parental demand and strict control are predictors of problematic Internet use, parental warmth and support are linked to positive technology use.

In the present study, we propose to study the relationship between parenting and Internet addiction, not only in its generalized form but also in one of its specific forms, such as online gambling addiction. Particularly, the aim of the study is to analyze which parenting styles could be risk or protective factors for Internet and online gambling addiction. Taking into account previous studies in Spain that have associated indulgent parenting with similar or even better adjustment in adolescents, we expect that parenting styles based on involvement and acceptance (authoritative and indulgent parenting) will act as protective factors for Internet addiction and online gambling addiction. We also expect no difference between indulgent and authoritative styles. Furthermore, parenting characterized by the use of strictness and imposition practices (authoritarian parenting) have shown to be particularly related with other Internet-related problems such as being a victim of cyberbullying in Spanish samples [70]. Therefore, it is hypothesized that authoritarian parenting would act as risk factor for Internet addiction and online gambling addiction. No specific assumptions are made regarding neglectful parenting.

2. Method

2.1. Participants and Procedure. The sample of the study was of 512 adolescents attending public high school and university in middle class neighbourhoods from Spain. A priori power analysis determined that 460 participants were required to detect an unfavourable small effect size ($f = 0.21$) with a power of .95 ($\alpha = 0.05$, $1 - \beta = 0.95$) in F-test between the four parenting styles [96]. To achieve a priori-determined sample size about 500 students, data were collected in 8 educational centres (6 secondary centres and 2 university centres) selected by simple random sampling from a complete list of centres from a region in the centre of Spain. We chose multistage cluster sampling because it provides a feasible sampling solution, given our available list of educational centres, by allowing us to randomly sample clusters. Following Kalton [97], when clusters are selected randomly, then the elements within the clusters (i.e., students) are similarly selected in a random method.

After obtaining the informed consent of the students and schools, the participants completed the questionnaires collectively and voluntarily, taking into account the rules of the Declaration of Helsinki. We intentionally oversampled, randomly selecting over 500 potential participants who (a) were Spanish; (b) lived in nuclear families, mother or

primary male caregiver or female caregiver and father; (c) had received their parents' admissibility to participate; and (d) were attending school at the time the research was conducted. A total of 512 students ended the instruments. Girls made up 63.9% of the sample, and boys made up the remaining 36.1%. The participants ranged in age from 16 to 21 years old. The mean age was 18.7 ($SD = 1.8$). All of the questionnaires were finished anonymously following the Institutional Review Board approval.

2.2. Measures. Parenting styles were collected with the acceptance/involvement and strictness/imposition dimensions of the Warmth/Affection Scale [98] and Parental Control Scale [99], both included in the Parental Acceptance-Rejection/Control Questionnaire. The Warmth/Affection Scale is composed of 20 items assessing the acceptance/involvement dimension, in which adolescents rate the frequency with which their parents are affectionate, responsive, and involved with them (e.g., "Says nice things about me"). The Parental Control Scale is made up of 13 items assessing the strictness/imposition dimension, in which adolescents assess the frequency with which they perceive that their parents monitor them in an imposing, firm, and demanding way (e.g., "Is always telling me how I should behave"). Both scales have a response scale that ranges from 1 ("almost never true") to 4 ("almost always true"), so that the high scores indicate a high degree of acceptance/involvement and strictness/imposition. The Cronbach's alpha obtained in this study for each of the dimensions was, respectively, 0.95 and 0.84.

Following examples of Lamborn et al. [67] and Steinberg et al. [72], families were labelled into four types of parenting styles. Authoritative families were those who scored above 50th percentile on both acceptance/involvement and strictness/imposition dimensions, whereas neglectful families were below 50th percentile on both dimensions. Indulgent families were above 50th percentile on acceptance/involvement and below 50th percentile on strictness/imposition. Authoritarian families were above 50th percentile on strictness/imposition and below 50th percentile on acceptance/involvement.

The Internet Addiction Test (IAT) was designed by Young [18] who likened excessive Internet use most closely to pathological gambling, a disorder of impulse control in the Fourth Edition of the Diagnostic and Statistical Manual of Mental Disorders [100], adapting the DSM-4 criteria. This is a 20-item questionnaire on which respondents are asked to rate items on a five-point Likert scale, from 1 ("never") to 5 ("always"), covering the degree to which their Internet use affects their daily routine, social life, productivity, sleeping pattern, and feelings. This scale has high face validity, and it has been subjected to systematic psychometric testing in several countries [101]. We have followed the factorial structure obtained in Spain [101] based in three dimensions: loss of control (inability to control the use and neglect of obligations, e.g., "How often do you neglect the things you need to do around the house to spend more time online?"), emotional need (satisfaction of emotional needs, e.g., "How often do you snap, shout or get annoyed when someone bothers you while you are online?"), and dependence

(dependence of Internet, e.g., “How often do you feel that life without Internet would be boring, empty and joyless?”). For each subscale, the internal consistency was 0.81 for loss of control, 0.87 for emotional need, and 0.77 for dependence.

Online gambling was captured with the 9-item version of the Gambling Craving Scale developed by Young and Wohl [102]. This scale is a short version from a longer scale based on literacy and on criteria to diagnose of pathological gambling according to the DSM-4 [100]. They obtained three factors with three items each. The first factor all represented an intention to gamble that was anticipated to be fun and enjoyable (e.g., “If I were offered an opportunity to gamble right now, I would gamble”), and it was labelled anticipation. The items loading on the second factor, labelled as desire, represented a strong, urgent desire to gamble (e.g., “I crave gambling right now”). Finally, the third factor comprised items that reflected relief from negative experiences expected from gambling (e.g., “If I were gambling now, I could think more clearly”). This factor was labelled relief. Respondents answered questions on a 7-point scale anchored at 1 (strongly disagree) to 7 (strongly agree). Scores on each subscale were calculated by averaging items designed to measure the particular construct. In addition, the three subscales demonstrated good reliability: anticipation (.76), desire (.92), and relief (.89).

2.3. Plan of Analysis. A factorial ($4 \times 2 \times 2$) multivariate analysis of variance (MANOVA) was applied for the outcome variables: Internet addiction (loss of control, emotional need and dependence) and gambling (anticipation, desire, and relief) with parenting style (authoritarian, authoritative, indulgent, and neglectful), sex (girls vs. boys), and age (16-18 years old vs. 19-21 years old) as independent variables. Ages 16-18 correspond to high school students, and ages 19-21 correspond to university students. Two- and three-way interactions were examined, and univariate F follow-up tests were performed within the multivariate significant overall differences, and significant results on the univariate tests were followed with Bonferroni's comparisons between all possible pairs of means. We conducted the same traditional design and robust statistical analyses that other crucial studies (e.g., [67, 72, 103]).

3. Results

3.1. Parenting Style Groups. Adolescents were registered into one of four parenting style groups (indulgent, authoritative, authoritarian, or neglectful) (Table 1): indulgent 144 (28.1%), with high acceptance/involvement, $M = 3.69$, $SD = .19$, and low strictness/imposition, $M = 1.68$, $SD = .26$; authoritative, 109 (21.3%), with high acceptance/involvement, $M = 3.69$, $SD = .17$, and high strictness/imposition, $M = 2.66$, $SD = .41$; authoritarian, 154 (30.1%), with low acceptance/involvement, $M = 2.56$, $SD = .55$, and high strictness/imposition, $M = 2.79$, $SD = .49$; and neglectful, 105 (20.5%), with low acceptance/involvement, $M = 2.74$, $SD = .46$, and low strictness/imposition, $M = 1.66$, $SD = .29$. Additional analyses also showed that both parental dimensions, acceptance/involvement and strictness/imposition, in

accordance with the orthogonality assumption, were modestly correlated, $r = -.199$, $R^2 = .039$, $p < .001$.

3.2. Parenting Style Effects. As was hypothesized, the MANOVA showed a significant main effect for parenting style, $\Lambda = .81$, $F_{(18,1386.4)} = 5.96$, $p < .001$ (Table 2). Additionally main effects for sex $\Lambda = .93$, $F_{(6,490)} = 6.04$, $p < .001$, and age, $\Lambda = 0.97$, $F_{(6,490)} = 2.50$, $p < .001$, were also significant (Table 2). No interaction effects between parenting styles, sex, and age were found. Follow-up univariate analyses (ANOVAs) indicated statistically significant effects for the three dimensions of Internet addiction (loss of control, emotional need, and dependence) and for the three dimensions of gambling craving (anticipation, desire, and relief). Adolescents who qualified their parents as authoritarian showed higher scores on loss of control, $F_{(3,508)} = 4.86$, $p < .01$; emotional need, $F_{(3,508)} = 28.55$, $p < .001$; and dependence, $F_{(3,508)} = 24.09$, $p < .001$ than adolescents raised by the other types of parents (Table 3). Besides, neglectful parenting style showed higher score on emotional need than adolescents grown in indulgent style. Withal, adolescents from authoritarian homes present on gambling more anticipation, $F_{(3,508)} = 14.00$, $p < .001$; desire, $F_{(3,508)} = 7.57$, $p < .001$; and relief, $F_{(3,508)} = 9.27$, $p < .001$, than adolescents from neglectful, authoritative, and indulgent homes.

3.3. Sex and Age Effects. Although it was not the central target of this study, we analyzed the main effects for sex and age. Follow-up univariate analyses (ANOVAs) for gender indicated statistically significant effects for the three dimensions of Internet addiction (loss of control, emotional need, and dependence) and for the three dimensions of gambling craving (anticipation, desire, and relief). Girls showed lower levels of loss of control, $F_{(1,510)} = 11.32$, $p < .01$; emotional need, $F_{(1,510)} = 29.90$, $p < .001$; dependence, $F_{(1,510)} = 16.52$, $p < .001$; anticipation, $F_{(1,510)} = 9.48$, $p < .01$; desire, $F_{(1,510)} = 5.29$, $p < .05$; and relief, $F_{(1,510)} = 7.48$, $p < .01$ than boys (Table 4). Follow-up univariate analyses (ANOVAs) for age indicated that adolescents of 16-18 years old showed lower levels of emotional need, $F_{(1,510)} = 11.32$, $p < .01$, and dependence, $F_{(1,510)} = 10.46$, $p < .001$. In the other dimensions, no statistically significant differences between age groups were found.

4. Discussion

A significant effect for parenting style was found for the three dimensions of Internet addiction (loss of control, emotional need, and dependence) and for the three dimensions of gambling craving (anticipation, desire, and relief). Thus, adolescents who perceived their parents as authoritarian scored higher on loss of control, emotional need, and dependence than adolescents who had experienced other types of parenting. In addition, neglectful parenting style showed higher score on emotional need than adolescents grown in indulgent style. Likewise, adolescents with authoritarian parents present on gambling more anticipation, desire, and

TABLE 1: Number of cases in parenting style groups and mean scores and standard deviations on measures of parental dimensions.

	Total	Indulgent	Authoritative	Authoritarian	Neglectful
Frequency	512	144	109	154	105
Percent	100	28.1	21.3	30.1	20.5
Warmth/affection					
Mean	3.16	3.69	3.69	2.56	2.74
SD	.65	.19	.17	.55	.46
Strictness/imposition					
Mean	2.21	1.68	2.66	2.79	1.66
SD	.65	.26	.41	.49	.29

TABLE 2: MANOVA factorial ($4^a \times 2^b \times 2^c$) for adolescent Internet addiction and gambling outcomes.

Source of variation	Λ	F	df_{between}	df_{error}
(A) Parenting Style ^a	.81	5.96***	18	1386.41
(B) Sex ^b	.93	6.04***	6	490.00
(C) Age ^c	.97	2.50*	6	490.00
A × B	.95	1.16	18	1386.41
A × C	.95	1.35	18	1386.41
B × C	.97	1.87	6	490.00
A × B × C	.95	1.24	18	1386.41

Note: a: indulgent, authoritative, authoritarian, and neglectful, b: girl, and boy; c: 16–18 years old, and 19–21 years old; * $p < .05$, *** $p < .001$.

relief, than adolescents with neglectful, authoritative, and indulgent parents. These results are consistent among the different groups of students, regardless of their sex and age, with no significant interaction effects.

Overall, the results confirm the hypothesis of the study. On one hand, the parenting style which is associated with the highest Internet addiction and online gambling addiction, acting as risk factor, is the authoritarian style, characterized by strictness and imposition. On the other hand, no differences were found between authoritative and indulgent parenting. Both parenting styles present lower scores in Internet addiction and online gambling addiction than the authoritarian parenting, acting both as protective factors in technological addictions. Finally, neglectful parenting, characterized by lack of both strictness/imposition and involvement/acceptance, shows higher emotional need for Internet addiction than indulgent parenting.

Therefore, the highest scores of the authoritarian style in all the dimensions of technological addictions point to strictness and imposition as risk factors for both Internet addiction and online gambling. Furthermore, the higher score on emotional need among children of neglectful parents than among children of indulgent parents suggests that, since strictness and imposition are absent in both styles, but involvement and acceptance are only present in the indulgent style, adolescents raised under affection deprivation could seek to satisfy emotional needs derived from the family environment through the Internet. This result is consistent with research relating technological addictions to lack

of parental involvement and acceptance of children's Internet use [86, 104].

The risk effects of the authoritarian style found in this study are consistent with previous studies that highlight the negative effects on children's maladjustment of parenting practices based on strictness and imposition [76, 81, 105]. Furthermore, the results of the present study are also consistent with previous studies that have found that adolescents who perceive their parents as overly authoritarian tend to develop more maladaptive behaviors related to technology. For example, Xiuqin et al. [90] found that authoritarian families using punitive practices are more likely to foster Internet addiction. Different authors have found that technological addictions are connected to some parenting practices, such as neglect, rejection, and demanding parenting [45, 46, 91, 92, 106].

The protective effects of the parental acceptance and involvement for internet and online gambling addiction found in this study are consistent with previous studies that have shown that acceptance and involvement practices are related to the highest levels of adolescent adjustment [76, 107]. Besides, several studies have related indulgent parenting with a similar or even higher adolescents' social and psychological adjustment than authoritative parenting in different cultural contexts such as Philippines [108], Iran [109], México [82], Brazil [65], Turkey [79], Italy [77], Portugal [78], or Spain [83, 103]. For example, there is previous evidence in Spain for the role of indulgent parenting as a protective factor for negative attitudes and behaviors such as sexist prejudices [110], psychopathic traits [111], violence towards parents [112], substance use [83], or being a victim of bullying and cyberbullying [113].

Moreover, different studies that have analyzed the role of the family in technological addictions are congruent with the results obtained in this study. For example, children of parents who show more affection and warmth, and who are more involved and available to them, are less likely to show technological addictions [94, 95]. Similarly, Chou and Lee [45] found that parental demandingness and strict control are related to technological addictions; however, warmth and support are associated with positive use of new technologies. Finally, several studies (e.g., [45, 114, 115]) agree that children with warm parents who use reasoning and nonpunitive educational strategies use the Internet positively and for less time and show high self-control and self-regulation,

TABLE 3: Means, standard deviations (in brackets), F values, probabilities of a type I error, and post Bonferroni^a procedure for the parenting style groups in adolescent Internet addiction and gambling.

Source of variation	Parenting style				$F_{(3,508)}$	P
	Indulgent	Authoritative	Authoritarian	Neglectful		
Internet addiction test						
Loss of control	2.44 (.67) ²	2.44(.90) ²	2.71 (.80) ¹	2.40 (.77) ²	4.86	.002
Emotional need	1.53 (.52) ^{2b}	1.66 (.59) ²	2.25 (.86) ¹	1.79 (.78) ^{2a}	28.55	.000
Dependence	1.64 (.66) ²	1.90 (.74) ²	2,39 (.94) ¹	1.82 (.81) ²	24.09	.000
Gambling craving scale						
Anticipation	1.79 (.98) ²	1.98 (1.02) ²	2.55 (1.21) ¹	1.93 (1.02) ²	14.00	.000
Desire	1.06 (.39) ²	1.10 (.50) ²	1.39 (1.06) ¹	1.08 (.33) ²	7.57	.000
Relief	1.05 (.20) ²	1.11 (.45) ²	1.41 (1.04) ¹	1.11 (.45) ²	9.27	.000

Note: 1 < 2; a > b.

TABLE 4: Means, standard deviations (in brackets), F values, and probabilities of a type I error for the sex and age in adolescent internet addiction and gambling.

Source of variation	Girls	Sex	F	Age		F
		Boys		16-18 years old	19-21 years old	
Internet addiction test						
Loss of control	2.42 (.74)	2.67 (.85)	11.32**	2.50 (.83)	2.52 (.45)	.10
Emotional need	1.69 (.67)	2.06 (.84)	29.90***	1.91 (.83)	1.76 (.69)	5.22*
Dependence	1.84 (.80)	2.16 (.90)	16.52***	2.09 (.92)	1.85 (.78)	10.46**
Gambling craving scale						
Anticipation	1.97 (1.05)	2,29 (1.20)	9.48**	2.13 (1.12)	2.05 (1.10)	.75
Desire	1.12 (.62)	1.27 (.78)	5.29*	1.17 (.68)	1.15 (.63)	.13
Relief	1.12 (.59) ²	1.29 (.77)	7.48**	1.19 (.65)	1.16 (.61)	.22

Note: ^aAll ANOVAs $F(1, 510)$. * $p < .05$, ** $p < .01$, *** $p < .001$.

compared to the children of other parents. Similarly, Tao et al. [116] confirmed the risk potential for Internet addiction of excessive control or lack of parental involvement and warmth, versus the protective effect against this type of addiction of parental involvement, warmth, and acceptance.

In summary, the results confirm and extend previous research on the relationship between parenting and technological addictions. The study provides evidence of the differences on technological addictions depending on the family parenting style, which is not the focus in most of the studies analyzing the influence of the family in Internet addiction. The research underlines the protective effects of acceptance and involvement with adolescents on internet and online gambling addiction, with no differences observed between authoritative and indulgent parenting. On the contrary, authoritarian parenting, characterized by strictness, imposition, and lack of acceptance and involvement, acts as a risk factor on Internet and online gambling addiction. Regarding the neglectful parenting, it does not seem to be strongly related to technological addictions, since only in the emotional need dimension, there is a difference between indulgent and neglectful parenting, showing lower scores of adolescents from neglectful homes. It is possible that, in that case, the lack of involvement/acceptance of the neglectful

parenting leads adolescents to seek satisfaction of their emotional needs through the Internet. In any case, it appears that the use of coercive practices (authoritarian parenting) is more detrimental, for Internet addiction, than the absence of both, coercion and involvement (neglectful parenting).

Although not central to the focus of this study, the main effects for sex and age were analyzed. Differences according to sex in both Internet addiction and online gambling were confirmed, with boys scoring higher on all considered measures, on the three dimensions of Internet addiction (loss of control, emotional need, and dependence) and on the three dimensions of gambling craving (anticipation, desire, and relief). Some previous research has confirmed similar results showing worse results for males, with higher Internet addiction and online gambling [21, 43, 45]. The results of the study are also consistent with previous studies that find differences between boys and girls in the pattern of technology use, with boys tending to connect to the Internet more than girls to gamble online [55, 56]. The age of the study participants is related with two measures of Internet addiction, emotional need and dependence, with older adolescents (19-21 years) showing higher levels of emotional need and dependence than younger adolescents (16-18 years). This result is consistent with previous studies that have found

that older adolescents score higher on Internet addiction than younger adolescents [57, 59].

The present study also has limitations. On the one hand, the limitations derived from a correlational and cross-sectional study prevent causal statements. On the other hand, the use of self-report measures always carries potential biases. The results derived from this study raise some educational implications that should be considered. It is necessary to consider the family context in the development of maladaptive technological behaviors. Prevention of technological addictions should include working with families, awareness of the relevance of positive parent-child relationships, communication with children, interest in their problems, and reasoned explanation of the consequences of their actions.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request (MIsabel.Martinez@uclm.es).

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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