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Parenting Style, Differentiation of Self, and Pornography Use Among Adolescents: Exploring the Links

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ABSTRACT

Parenting style and differentiation of self (DoS), understood as an ability associated with emotional regulation, are two factors that may be linked with pornography use in adolescents. The main aim was to explore the association between parenting style (specifically warmth and demandingness), DoS (specifically emotional cutoff and emotional reactivity) and pornography use in a sample of 7161 hispanic adolescents aged 12 to 17. Frequency of pornography use, parenting style (using the shortened version of the Family Education Scale), DoS (through the Spanish Differentiation of Self for Adolescence) and different sociodemographic variables were evaluated. Higher levels of parental warmth were significantly linked to less pornography use (with a larger effect size in female adolescents). Conversely, higher levels of parental demandingness were significantly associated with less pornography use in male adolescents and in younger adolescents. In relation to DoS, greater differentiation in the Emotional Reactivity dimension was associated with less pornography use. Emotional Cutoff was not associated with pornography use. Adolescents who showed more difficulty regulating their own emotions and who perceived parents as less warm and demanding reported a higher frequency of pornography use. Pornography use may be used as a maladaptive strategy for emotional regulation. The causal relationship between these variables warrants direct examination.

Introduction

Pornography Use in Adolescents and Associated Factors

The current easy access to pornography and the high availability of sexually explicit content, together with the high sexual interest in adolescence (Hornor, 2020), have increased the interest in exploring which specific factors may be associated with the use of pornography during adolescence. The Differential Susceptibility to Media Effects Model (DSMM; Valkenburg & Peter, 2013) is a theoretical model that facilitates the systematization of research focused on adolescents and pornography.

The DSMM suggests that media use (e.g. pornography use through the smartphones) in adolescents is predicted by dispositional, developmental and social factors. Studies focusing on dispositional factors have explored demographics, personality traits, norm-related, internet behavior and sexual interest variables. Developmental factors include pubertal maturation/age, developmental competencies, and sexual experience in assessing pornography use among adolescents. Finally, social factors include variables related to victimization, peers, and family (Valkenburg & Peter, 2013). Peter and Valkenburg (2016) concluded that being an adolescent male, having higher levels of sensation seeking, being more advanced in puberty, and having poor family relationships were linked with a greater likelihood of pornography use.

Pornography Use in Adolescents and Parenting Style

The DSMM considers family-related variables as social predictors of adolescent pornography use (Valkenburg & Peter, 2013). Among the family-related variables, few studies have explored the influence of parenting styles in adolescent pornography use.

Parenting styles include two main dimensions: warmth and demandingness (Baumrind, 1967; Maccoby & Martin, 1983). These dimensions have been assessed in studies focused on adolescent pornography use. Boniel-Nissim et al. (2020) found that parents with higher levels of authoritative parenthood (both warmth and demandingness) showed a lower likelihood of dysfunctional communication about pornography with their children.

Warmth (sometimes labeled as responsiveness) includes parental behaviors such as listening to children, helping them, enjoying activities with them and being kind to them (Reparaz et al., 2021). This dimension seems to be associated with life satisfaction, and to be a protective factor against adolescent problems such as internet dependence (Reparaz et al., 2021). However, the association between warmth and pornography use in adolescents warrants direct examination.

The demandingness dimension of parenting styles is sometimes known as "control." Parental control is a complex construct commonly analyzed from two opposing perspectives

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(González-Cámara et al., 2019; Reparaz et al., 2021). On the one hand, behavioral control has been understood as supervision and rule setting, and is usually associated with positive outcomes (Reparaz et al., 2021). On the other hand, psychological control has been described as an intrusive and manipulative control of a child's thoughts and feelings (Oliva et al., 2007), and is usually linked with negative outcomes (Reparaz et al., 2021), as this kind of control, at a time when adolescents need to demonstrate their independence, is likely to generate rebellion (Weber et al., 2012). Regarding adolescent pornography use, Nieh et al. (2020) found that parental behavioral control appears to protect adolescents from pornography use, whereas psychological control increases the likelihood of pornography use in adolescents. Both types of control seem to have a greater effect in girls compared to boys (Bobakova et al., 2012; Nieh et al., 2020).

The present study focuses on parental demandingness, which is often understood as behavioral control, but not psychological control. Demandingness often encompasses parental knowledge, parental mediation, and parent-adolescent sexual health communication. It has been suggested that higher levels of parental knowledge may increase the probability of positive adolescent adjustment (Wright et al., 2022). However, parents do not always know whether their children are using pornography. Several studies have compared parents' perceptions of their children's pornography use with adolescents' reports, and discrepancies between dyad members have been identified. For example, Liu et al. (2021) observed that, among the adolescents who reported exposure to pornography, 80% of their parents were unaware of this exposure. Consistent with this, Wright et al. (2022) observed a consistent trend toward parental underestimation of their children's pornography use. Furthermore, the magnitude of parental underestimation was greater for sons, even though parents were aware that their sons were more likely than their daughters to use and learn from pornography.

Regarding parental mediation, three strategies have been described: restrictive (i.e. rule setting), active (i.e. information and discussion), and co-use (i.e. shared media time, such as pornography) (Nathanson, 1999). These strategies are not equally present across parenting styles. Boniel-Nissim et al. (2020) found that authoritative parents were both more active and restrictive in mediating pornography use.

Pornography Use in Adolescents and Emotional Regulation

Differentiation of self (DoS) may be considered as a dispositional variable in the DSMM model (Valkenburg & Peter, 2013). DoS is a psychological construct conceptualized by Bowen (1978) which is understood as a relatively stable trait of the individual that implies the ability to maintain a clear sense of self while remaining emotionally connected to others. For example, a highly differentiated person can navigate intense emotional environments without being overwhelmed or losing their emotional objectivity. This involves the ability to separate thoughts from feelings, which enables more thoughtful and less reactive decision-making, especially in stressful or conflictual situations. At the same time, they avoid resorting to emotional cutoff or avoidance, remaining emotionally engaged while effectively managing stress. This construct is particularly significant because it is directly linked to emotional regulation.

Those individuals with higher levels of DoS show greater abilities to modulate the emotional arousal generated by anxiogenic interpersonal situations, as well as higher emotional maturity and interpersonal competence (Miller et al., 2004; Skowron, 2000).

DoS begins to develop in stages prior to adulthood and it is considered the result of familial emotional functioning (Calatrava et al., 2022). Higher levels of DoS have been associated with greater psychological health in individuals and higher family functioning and communication (Calatrava et al., 2022).

Mood management has been identified as one of the main motivations for pornography use, along with others such as boredom avoidance, stress reduction, sexual pleasure/curiosity and self-exploration/masturbation (Bőthe, Tóth-Király, et al., 2021). The use of pornography has been described as a tool to handle, escape, or distract from intense negative emotional states (Pettorruso et al., 2020). Therefore, the use of pornography may be considered as an avoidance-oriented coping strategy (Bőthe, Tóth-Király, et al., 2021). This mood management motivation seems to be the one most associated with higher levels of hypersexuality (Bőthe, Vaillancourt-Morel, et al., 2021). More specifically, emotional regulation difficulties have been described as a relevant predictor of problematic pornography use (Cardoso et al., 2022). However, the association between DoS (as an indicator of emotional regulation) and pornography use in adolescents warrants direct examination.

Aims

Adolescence is a critical stage in the development of the individual and pornography use appears to condition the psychological and sexual development of adolescents (Koletić, 2017). Therefore, understanding the complex interaction between media consumption, individual traits, and family dynamics may facilitate the development of strategies to mitigate the potential negative impact of pornography on adolescents (Koletić, 2017). Therefore, we sought to test the associations of parenting dimensions (warmth and demandingness) and DoS dimensions (emotional cutoff and emotional reactivity) with pornography use, separately among males and females, and also separately among younger and older adolescents."

We hypothesized that lower levels of demandingness and warmth, as well as lower levels of DoS in its two dimensions (Emotional Reactivity and Emotional Cutoff), could be associated with pornography use in adolescents.

Method

The present study was part of the YOURLIFE project, an ongoing international study focused on the lifestyles and personal relationships of adolescents in Spanish-speaking countries. Full details of the YOURLIFE project and its procedure can be found here (Carlos et al., 2016).

Participants

A total of 7281 students aged 12–17, from Spanish-speaking countries (Argentina, Chile, Ecuador, Spain, Mexico and Peru) participated in this study. They completed an online questionnaire. Participants with missing values in sex and age were removed ($n = 120$). No other exclusion criteria were defined in the present study. A final sample of 7161 participants was analyzed (representing 98.3% of the initial sample).

Measures

Pornography Use

Participants were asked "In the past 12 months, have you viewed pornography (videos or images)?" (never, less than one day a month, between 1–3 days a month, 1–2 days a week, 3 days a week or more). As other researchers have done (Mattebo et al., 2013; Yu et al., 2021), we created two new dichotomous variables: "any use of pornography" and "frequent use of pornography." The variable "any use of pornography" included participants who reported having ever consumed in the last 12 months in the "yes" category. The remaining participants were assigned to the "no" category. The variable "frequent use of pornography" divided participants into two categories: "those who had never or occasionally used pornography" and "those who had used it frequently." Our main analyses used the "any use of pornography" variable. As additional analyses, we repeated our main analyses with the "frequent use of pornography" variable (see Supplementary material, Tables S2, S3 and S4).

Parenting Style Dimensions

Parenting dimensions were measured using a reduced version of the Family Education Scale (FES) (Reparaz et al., 2021). The FES assesses parenting styles dimensions (Warmth, 11 items, and Demandingness, 6 items) and education in values (Fortitude, 8 items, and privacy, 10 items). The aforementioned study showed results that support the validity and reliability of the instrument. Confirmatory factor analyses showed good fit indices (RMSEA = 0.045, CFI = 0.979, TLI = 0.974), confirming the validity of the proposed structure.

A reduced version of the Warmth and Demandingness subscales was used, with four items in each. Warmth is understood as showing affection, meeting basic needs, and sharing daily life. The items assessing Warmth were: "Your parents help you when you feel insecure;" "Your parents make efforts to be with you and help you;" "You feel your parents take an interest in you;" and "You feel supported and comforted by your parents." Demandingness is defined as rule setting and supervision. The items assessing this dimension were: "Your parents limit the time you can watch TV, play videogames;" "Your parents limit the money you spend;" "Your parents control the books and magazines you read;" and "Your parents control the use of your mobile, tablet, Internet." Each question had seven possible responses (from 0 = Never to 6 = Very frequently). For each subscale, a new variable was created, calculated as the mean score of all items, if the participant had answered at least half of the items. Internal consistency in our sample was high: Cronbach's alpha = 0.87 (Parental Warmth) and 0.78 (Parental Demandingness).

DoS Dimensions

The levels of DoS were measured using the Spanish version of the Differentiation of Self Inventory for Adolescents (S-DSI-A (Duch-Ceballos et al., 2022). It is a 20-item self-reported measure, based on the version of this instrument (DSI) for American adolescents (Knauth & Skowron, 2004), with a 6-point Likert-type scale, from (1) not true at all, to (6) completely true. The scale contains two subscales: Emotional Cutoff and Emotional Reactivity. Emotional Cutoff assesses the tendency to emotional and behavioral distancing and fears of intimacy or engulfment in relationships. Some examples of items assessing Emotional Cutoff are: "When someone close to me disappoints me, I withdraw from him/her for a while" and "I tend to distance myself when people get too close to me." Emotional Reactivity assesses the tendency to overreact and respond to environmental stimuli because of emotional flooding or lability. Some questions regarding this dimension are "People often tell me that I am too emotional" and "Sometimes I'm overwhelmed by my feelings and I struggle to think clearly."

Higher scores indicate higher levels of DoS in each dimension (or lower levels in the constructs of emotional cutoff and emotional reactivity). The scale has already been validated in a sample of Spanish adolescents obtaining an excellent fit $\chi2 = 403.059$, df = 141, $\chi2/df = 2.859$, RMSEA = .036 (90%CI = .032–.040), SRMR = .031, CFI = .963, and TLI = .950 (Duch-Ceballos et al., 2022). In this study, Emotional Reactivity and Emotional Cutoff scores were used in all analyses. Each dimension presented a good internal consistency ($\alpha = .84$ in Emotional Reactivity, and $\alpha = .77$ in Emotional Cutoff).

Other Variables

The assessment also included items to collect information such as: sex (male/female), age (years), country, religious affiliation, parents´ educational level (those who had at least one parent with a university degree were included in the "yes" group), and Internet access.

Religiosity level was assessed using various questions (affiliation, frequency of prayer, frequency of religious services attendance, and salience). With all these items, a dichotomous variable called religiosity was created (0 = high, and 1 = low). Highly religious participants were those who stated having a religion, attended church weekly, prayed weekly and agreed (or completely agreed) with the statement regarding faith as an important influence in their life. The remaining participants were allocated to the low category.

Internet access was assessed through 3 items regarding smartphone ownership, data plan (constant Internet connection), and content filter (a program that prevents from accessing certain contents). Participants with a mobile phone, with a data plan, and without content filter were coded as "broad Internet access." Those who did not meet all of these three criteria were coded as "Limited Internet access."

Additionally, we created a "pre/post-COVID" variable. We divided participants into two groups: those who responded

before March 13th 2020 (the lockdown date in Spain and other countries) and those who responded after that date.

Procedure

We used data from the YOURLIFE Project, collected between September 2019 and February 2023 using a convenience sampling method. The research team invited high schools to participate in the study through different channels (e-mail, personal contacts and local collaborators). The project webpage describes the characteristics of the project and how to participate (http://proyectoyourlife.com/). Forty-seven schools decided to voluntarily participate in the study (Argentina = 4 schools; Chile = 7; Ecuador = 5 and Spain = 21; Mexico = 6 and Peru = 4). Around 8% of the schools were in rural areas and 92% in urban areas.

All data were gathered through an online, self-administered, anonymous questionnaire during class time. It was completed in approximately 30 minutes.

Schools were provided with all the documentation required to obtain parents' permission. Each school handled parents' permission according to their own policies (Ruiz-Canela et al., 2013). Teachers and students were informed about the anonymity and confidentiality of the study and that they could leave the survey at any time. They were also told that clicking the "Start" button would imply their consent to participate.

Ethical approval was obtained from the Ethics Committee of the University (project ref. 2018/077).

Data Analysis

Statistical analyses were performed using STATA version 15.0 for Windows. A significance level of 0.05 was established.

Bivariate analyses (frequencies, means and percentages) were used to describe the main characteristics of the sample. Differences between groups of participants were analyzed using ANOVA tests with Bonferroni comparisons.

Given the structure of the data, with participants nested within schools, we explored the intraclass correlation coefficient (ICC) to assess the extent to which pornography use varies between schools. The ICC was found to be sufficiently small (.043), indicating minimal variance attributed to school membership. Given this result, we decided to proceed with logistic regression.

To assess the association between the dimensions of DoS (Emotional Reactivity and Emotional Cutoff) and the dimensions of parenting styles (Warmth and Demandingness) with pornography use, we conducted several regression models. All models were adjusted for age, country, parent´s education level and religiosity. First, we ran a regression with both males and females, including sex as a covariate. Then, for each predictor, we ran a new model adding the interaction between that predictor and sex. Since most interactions were significant, we ran a separate model for each sex. Odds ratios (OR) and 95% confidence intervals (CI) were estimated for these two models. Finally, the same was done regarding age: since many interactions with age were significant, two additional models were run (one for younger adolescents, one for older adolescents). Interactions between both parenting variables and between both differentiation of self variables were also tested. Missing values were imputed through Markov chains for multiple imputation. This methodology is detailed in the paper by Azur et al. (2011).

Results

Characteristics of the Sample

Around a half of participants were female (51.9%). Mean age was 14.6 years (SD = 1.5) and 54.2% were Catholics. Around one third of the students reported having a parent with a university degree. One third of participants (33.2%: 56% of males and 14.5% of females) reported having used pornography in the last 12 months (see Table 1).

A total of 1,098 participants (15.3%) left the pornography question unanswered. Table S1 (in the Supplementary material) compares both groups in different variables. Significant differences were found in sex and in Parental Warmth, but not in age, Parental Demandingness, Emotional Reactivity, and Emotional Cutoff.

Differences in Parenting and DoS Regarding Sex and Pornography Use

Students' scores in parenting dimensions (Warmth and Demandingness) and in DoS dimensions (Emotional Reactivity and Emotional Cutoff), stratified by sex and by pornography use, are detailed in Table 2.

All dimensions were directly associated with pornography use, both in males and females. Those reporting never having used of pornography scored higher in parenting and DoS dimensions than those who had ever used it.

Supplementary Table S2 shows similar analyses, but using the "frequent use" variable, with similar results.

Table 3 reports the associations of parenting (Warmth and Demandingness) and DoS dimensions (Emotional Reactivity and Emotional Cutoff) with pornography use, adjusted for several confounders, and stratified by sex. Regarding parenting, both males (OR = 0.93, 95% CI = 0.87–1.00) and females (OR = 0.86, 95% CI = 0.80–0.92) (with a larger effect size for females) reporting a higher Parental Warmth showed lower odds of pornography use. On the other side, males (OR = 0.91, 95% CI = 0.86–0.96) (but not females) reporting a higher Parental Demandingness had lower odds of pornography use. When analyzing DoS, being more differentiated in the Reactivity dimension was associated with lower odds of pornography use, with no differences by sex (males: OR = 0.97, 95% CI = 0.95–0.98; females: OR = 0.98, 95% CI = 0.96–0.99). Being more differentiated in the Emotional Cutoff dimension was not associated with pornography use, neither among males nor females. Additionally, being older (males: OR = 1.53, 95% CI = 1.44–1.63; females: OR = 1.21, 95% CI = 1.13–-1.30, with a larger effect size for males) and having a broad Internet access (only for males: OR = 1.32, 95% CI = 1.07–1.65) were associated with higher odds of pornography use, while having a high religiosity was associated with lower odds (only for females: OR = 0.48, 95% CI = 0.33–0.69). Parents'

Table 1. Characteristics of the sample.

Characteristics	Males n (%) (*N* = 3447)	Females n (%) (*N* = 3714)	Total n (%) (*N* = 7161)
Country			
Argentina	175 (5.1)	205 (5.5)	380 (5.3)
Chile	776 (22.5)	461 (12.4)	1237 (17.3)
Ecuador	251 (7.3)	271 (7.3)	522 (7.3)
Spain	1004 (29.1)	1591 (42.8)	2595 (36.2)
Mexico	864 (25.1)	862 (23.2)	1726 (24.1)
Peru	377 (10.9)	324 (8.7)	701 (9.8)
Parents with university degree			
No university degree	2198 (63.8)	2367 (63.7)	4565 (63.7)
University degree	1249 (36.2)	1347 (36.3)	2596 (36.3)
Religion			
No religion	919 (26.7)	985 (26.5)	1904 (26.6)
Catholic	1795 (52.1)	2089 (56.2)	3884 (54.2)
Other Christian religions	46 (1.3)	57 (1.5)	103 (1.4)
Other religions[a]	687 (19.9)	583 (15.7)	1270 (17.7)
Frequency of pornography use[a]			
Never	1182 (43.6)	2863 (85.5)	4045 (66.7)
Less than 1 day/month	395 (14.6)	237 (7.1)	632 (10.4)
1–3 days/month	307 (11.3)	118 (3.5)	425 (7.0)
1–2 days/week	306 (11.3)	73 (2.2)	379 (6.3)
3+ days/week	524 (19.3)	58 (1.7)	582 (9.6)

[a]Never: participants who had never used pornography during the last 12 months.
[b]Occasional: participants who had used pornography less than one day/month or 1–3 days/month during the last 12 months.
[c]Frequent: participants who had used pornography 1–2 days/week, or 3 or more days/week during the last 12 months.

Table 2. Score on warmth, demandingness, reactivity, and cutoff, by sex and pornography use.

	Males			Females		
	Mean (SD)			Mean (SD)		
	Never use[a] (*N* = 1182)	Ever use[b] (*N* = 1532)	*p*[c]	Never use[a] (*N* = 2870)	Ever use[b] (*N* = 486)	*p*[c]
Parenting						
Warmth	4.7 (1.5)	4.4 (1.5)	<.001	4.7 (1.6)	4.0 (1.8)	<.001
Demandingness	3.2 (1.8)	2.5 (1.7)	<.001	2.6 (1.8)	2.1 (1.6)	<.001
Differentiation of Self						
Reactivity	43.4 (10.8)	40.0 (10.6)	<.001	35.0 (11.3)	30.6 (10.3)	<.001
Cutoff	47.1 (9.3)	45.8 (9.4)	<.001	44.3 (9.7)	41.7 (9.8)	<.001

[a]Never use: participants who had never used pornography during the last 12 months.
[b]Ever use: participants who had ever used pornography during the last 12 months.
[c]*p* value for the Student's t test.

educational level and the pandemic were not associated with pornography use.

Supplementary Table S3 shows similar analyses, but using the "frequent use" variable, with similar results.

Table 4 reports the results of similar analysis, but stratified by age. Regarding parenting, Parental Warmth predicted lower odds of pornography use for both age groups (12–14 years: OR = 0.89, 95% CI: 0.83–0.96; 15–17 years: OR = 0.91, 95% CI: 0.85–0.97), with a larger effect size for the younger group. On the other side, only for younger participants (OR = 0.89, 95% CI: 0.83–0.95), reporting a higher Parental Demandingness predicted lower odds of pornography use. Regarding DoS, being more differentiated in the Reactivity dimension was associated with lower odds of pornography use (12–14 years: OR = 0.96, 95% CI: 0.95–0.98; 15–17 years: OR = 0.97, 95% CI: 0.96–0.99), with a larger effect size for younger adolescents. Being more differentiated in the Emotional Cutoff dimension was not associated with pornography use. Additionally, being female (12–14 years: OR = 0.11, 95% CI: 0.09–0.14; 15–17 years: OR = 0.05, 95% CI: 0.04–0.07) with a larger effect size for older adolescents, and having high religiosity for older adolescents (OR = 0.57, 95% CI: 0.43–0.74), were associated with lower odds of pornography use. On the contrary, parents' educational level (OR = 1.30, 95% CI: 1.04–1.62), Internet access (OR = 1.39, 95% CI: 1.11–1.73), and the pandemic (OR = 1.41, 95% CI: 1.06–1.87) predicted higher odds among younger adolescents.

Supplementary Table S4 shows similar analyses, but using the "frequent use" variable, with similar results.

Discussion

Our study aimed to explore pornography use among adolescents and its relationship with parenting styles and DoS. The findings revealed that approximately one third of participants reported having used pornography in the past year, with notable variations by sex: males were more likely to engage in pornography use compared to females. These findings are consistent with

Table 3. Odds ratios for pornography use among male and female adolescents.

	OR (95% CI)[a]		Interaction with sex
	Males	Females	p^b
Age (cont.)	1.53 (1.44–1.63)***	1.21 (1.13–1.30)***	<.001
Parental Warmth (cont.)	0.93 (0.87–1.00)*	0.86 (0.80–0.92)***	.016
Parental Demandingness (cont.)	0.91 (0.86–0.96)***	0.99 (0.91–1.06)	.007
Emotional Reactivity (cont.)	0.97 (0.95–0.98)***	0.98 (0.96–0.99)***	.860
Emotional Cutoff (cont.)	1.01 (0.99–1.02)	0.99 (0.98–1.01)	.045
Parent with university degree (ref=No)	1.16 (0.94–1.42)	1.07 (0.85–1.35)	.022
High religiosity (ref=None/low)[c]	0.79 (0.61–1.02)	0.48 (0.33–0.69)***	.013
Broad Internet access (ref=Low)[d]	1.32 (1.07–1.65)*	1.06 (0.82–1.38)	.006
Post-pandemic (ref=pre-pandemic)[e]	1.14 (0.87–1.50)	0.78 (0.59–1.04)	.158
Country (ref=Spain)			
Argentina	1.65 (0.93–2.92)	1.58 (0.99–2.54)	.723
Chile	1.05 (0.81–1.35)	0.91 (0.66–1.26)	.235
Ecuador	0.56 (0.38–0.81)**	0.57 (0.36–0.91)*	.047
Mexico	0.60 (0.45–0.81)**	0.39 (0.27–0.55)***	<.001
Peru	0.44 (0.31–0.63)***	1.02 (0.69–1.53)	<.001

[a]OR: Odds Ratio (and 95% confidence intervals) of each variable, adjusted for all variables in the first column.
[b]p-value of the interaction between the variable in the first column and the sex variable. Significant values suggest that the odds ratios for males and for females are different in the population.
[c]High religiosity refers to participants with religion, with a weekly or more frequent church attendance, and who consider their faith important or very important. Those who did not meet these three criteria were coded as "none/low religiosity."
[d]Broad Internet access refers to participants with a mobile phone, with a data plan, and without content filter. Those who did not meet any of these three criteria were coded as "Limited Internet access."
[e]Post-pandemic refers to participants who responded after March 13th 2020 (the lockdown date in Spain and other countries). Those who responded before that date were coded as "pre-pandemic."
Cont.=continuous variable. Ref=reference. *$p < .05$; **$p < .01$; ***$p < .001$.

Table 4. Odds ratios for pornography use among younger and older adolescents.

	OR (95% CI)[a]		Interaction with age
	12–14 years	15–17 years	p^b
Sex: female (ref=male.)	0.11 (0.09–0.14)***	0.05 (0.04–0.07)***	<.001
Parental Warmth (cont.)	0.89 (0.83–0.96)**	0.91 (0.85–0.97)**	.030
Parental Demandingness (cont.)	0.89 (0.83–0.95)***	0.95 (0.89–1.02)	.003
Emotional Reactivity (cont.)	0.96 (0.95–0.98)***	0.97 (0.96–0.99)***	.001
Emotional Cutoff (cont.)	1.00 (0.98–1.02)	1.00 (0.98–1.01)	.009
Parent with university degree (ref=No)	1.30 (1.04–1.62)*	1.05 (0.86–1.28)	.741
High religiosity (ref=None/low)[c]	0.88 (0.66–1.17)	0.57 (0.43–0.74)***	.234
Broad Internet access (ref=Low)[d]	1.39 (1.11–1.73)**	1.10 (0.85–1.42)	.639
Post-pandemic (ref=pre-pandemic)[e]	1.41 (1.06–1.87)*	0.81 (0.65–1.02)	.024
Country (ref=Spain)			
Argentina	1.30 (0.78–2.17)	2.01 (1.19–3.40)*	.213
Chile	1.41 (1.07–1.86)*	0.82 (0.63–1.08)	.007
Ecuador	0.54 (0.35–0.84)**	0.60 (0.40–0.92)*	.627
Mexico	0.67 (0.51–0.90)**	0.49 (0.37–0.67)***	.515
Peru	0.75 (0.51–1.10)	0.51 (0.35–0.75)***	<.001

[a]OR: Odds Ratio (and 95% confidence intervals) of each variable, adjusted for all variables in the first column.
[b]p-value of the interaction between the variable in the first column and the age variable. Significant values suggest that the odds ratios for younger and for older adolescents are different in the population.
[c]High religiosity refers to participants with religion, with a weekly or more frequent church attendance, and who consider their faith important or very important. Those who did not meet these three criteria were coded as "none/low religiosity."
[d]Broad Internet access refers to participants with a mobile phone, with a data plan, and without content filter. Those who did not meet any of these three criteria were coded as "Limited Internet access."
[e]Post-pandemic refers to participants who responded after March 13th 2020 (the lockdown date in Spain and other countries). Those who responded before that date were coded as "pre-pandemic."
Cont.=continuous variable. Ref=reference. *$p < .05$; **$p < .01$; ***$p < .001$.

other studies conducted in different populations (Bleakley et al., 2011; Hornor, 2020). In fact, men usually show more favorable attitudes toward pornography than females (French & Hamilton, 2018; Johansson & Hammaré, 2007).

Parenting and Pornography Use

The findings of the present study support the DSMM model (Valkenburg & Peter, 2013). Media use (e.g. pornography use through the smartphones) in adolescents is predicted by social factors, such as parental style. However, these social factors would not affect all adolescents equally. As hypothesized, according to the unadjusted results (Table 2), those adolescents who had never used pornography reported a parenting style characterized by higher levels of warmth and demandingness. However, adjusted analyses (Table 3) showed more nuanced results. The association between parental warmth and pornography use was stronger among

females than among males. In contrast, higher parental demandingness was significantly associated with lower frequency of pornography use among males, but not among females. It is interesting to note that these unique associations with pornography use remained relevant regardless of the possible relationships between these and other predictors (such as DoS).

Warmth is a dimension that has yet to be explored in depth in relation to adolescent pornography use. However, previous studies suggest that it may be a protective factor toward adolescent addictive behaviors, such as internet dependence (Reparaz et al., 2021). In our study, this dimension also seemed to be associated with pornography use, especially among girls. Regarding demandingness (understood as supervision and rule setting), other authors previously suggested it may be protecting adolescents from pornography use (Nieh et al., 2020). Therefore, a parenting style characterized by high levels of warmth and demandingness may be associated with a lower use of sexually explicit contents in adolescents (with different associations across sexes and ages). It could be interpreted that, if there is control (understood as supervision) and closeness in the family context, adolescents may communicate more openly with their parents, including topics related to sexuality and pornography. In addition, adolescents with greater parental supervision/monitoring tend to be less likely to associate with peers who engage in risky behaviors (Nieh et al., 2020), such as sharing sexually explicit content or using pornography. It is known that other family factors, such as living in a single-parent home, having weak emotional ties with caregivers and lower levels of caregiver surveillance, may increase pornography use in adolescents (Hornor, 2020; Ybarra & Mitchell, 2005).

Few studies have assessed the different role that the parenting dimensions play among girls or among boys, and very few regarding the impact on pornography use. Some studies have found that sex does not moderate the association between parenting dimensions and adolescent outcomes (Lamborn et al., 1991; Paulson, 1994; Pinquart, 2016). Other studies have found that the effect is stronger among girls (Bobakova et al., 2012), including a study specifically assessing the impact on pornography use (Nieh et al., 2020). However, Guo et al. (2024) found that the protective role of positive parenting was stronger among males than among females. In our study, parental demandingness was significantly associated with pornography use only among boys, while the role of parental warmth was stronger among girls. Though the former might be explained by low statistical power (few girls used pornography), our results suggest that the moderating role of sex may depend on the parenting dimension and the outcome behavior involved. It seems necessary to design specific studies to address this issue.

When analyzing the role of parenting by age groups, we found that the role of Parental Warmth was similar across groups, but the role of Parental Demandingness was significant only for the younger group. It is not surprising that parental rule setting and supervision are more important at a younger age. In contrast, it is interesting to note that Parental Warmth was equally important in early and in late adolescence.

DoS and Pornography Use

DoS may be considered as a dispositional variable in the DSMM model (Valkenburg & Peter, 2013). In our study, greater DoS in the Emotional Reactivity dimension was associated with lower odds of pornography use, among both males and females, and among both younger and older adolescents. However, differentiation in the Emotional Cutoff dimension did not show a significant association with pornography use, regardless of sex and age. Regarding the Emotional Reactivity dimension, we must note that its association with pornography was again independent of the possible relationships between these and other predictors (such as parenting), highlighting the distinct role of DoS in this context.

It has been suggested that pornography use may serve as a maladaptive coping strategy to regulate or escape intense emotional states (Bőthe, Tóth-Király, et al., 2021; Pettorruso et al., 2020). Adolescents who are more differentiated might have higher stress management skills (Bartle-Haring & Gregory, 2003; Rodríguez-González et al., 2019), relying less on pornography as an external regulatory source. Additionally, they may be less influenced by peer pressure, embracing their own values and messages received from their family and/or school (Calatrava et al., 2022).

In our study, lower emotional reactivity, as a key aspect of higher DoS, was associated with lower pornography consumption. This could be due to the higher indices of psychological distress present in these individuals (Calatrava et al., 2022) that could lead to a higher use of pornography as a form of escape and evasion. Higher levels of emotional reactivity could suggest a greater need to please others or to avoid conflicts, seeking to avoid, in turn, discomfort and rejection from peers. This could explain why some adolescents engage in behaviors such as pornography viewing to gain acceptance in their peer group. Furthermore, Wang and Qi (2017) found that lower levels of differentiation on this dimension were associated with problematic Internet use. Consequently, adolescents with lower differentiation on the reactivity dimension may consume more pornography via smartphones and electronic devices due to other risk factors, such as problematic internet use.

On the other hand, the Emotional Cutoff dimension did not show a significant association with pornography use. This dimension is related to discomfort with intimacy and the tendency to avoid affective ties. According to Bowen's theory, greater differentiation on this dimension is related to a greater ability to receive support within a group (friends, family, etc.) (Bowen, 1978). However, higher emotional cutoff during adolescence might have a varied effect on pornography use. While social support is important for the emotional development of adolescents, it can also have potential negative consequences if the peer group encourages pornography use. Future research should investigate these preliminary explanations.

Clinical Implications

Parental styles seem to influence communication about pornography between parents and children (Boniel-Nissim et al., 2020). Moreover, they seem to be related with children's pornography

use perceived by parents, and the likelihood of children's pornography use (Liu et al., 2021; Wright et al., 2022). It is crucial that parents be aware of the style they are using and what consequences it might have on their children's attitudes toward pornography.

Regarding DoS, adolescents with poorer emotional regulation skills (lower DoS levels) may present a higher frequency of pornography use. These adolescents might eventually develop problematic pornography use. In fact, some authors have stressed that emotional regulation difficulties may be considered a critical predictor of problematic pornography use (Cardoso et al., 2022). Therefore, it is relevant to assess the DoS levels of adolescents and the emotional regulation difficulties arising in the adolescent stage. Developing higher levels of DoS may act as a preventive factor against the later development of problematic pornography use.

Finally, the present study found the existence of sex differences in the associations of parenting and DoS with the frequency of pornography use. At the clinical level, it is essential to consider sex as a crucial variable when exploring the prevalence of pornography use in the population and addressing potential problems derived from it.

Limitations, Strengths, and Future Studies

The results of this work should be interpreted with caution, taking into account the possible bias associated with four-year data collection processes and the various limitations identified. First, parenting styles, DoS, and the frequency of pornography use were assessed by means of a self-administered survey, with the associated risks of bias (such as social desirability) that this entails, especially in the adolescent population. However, this is the best available way of assessing variables such as pornography use. Furthermore, it has been shown that surveys conducted online reduced social desirability (Richman et al., 1999). Second, pornography use was assessed dichotomously with only one item, and participants were not told what they should consider as pornography. This is a common limitation in the field of pornography that should be addressed. As suggested by other authors (Peter & Valkenburg, 2016), future studies should use homogenous, standardized, and validated psychometric tools across cultures to assess pornography use (including, for example, intentional vs non-intentional use) and problematic pornography use. This would facilitate comparison of results between studies and cultures. Third, regarding the assessment of parenting styles, the instrument only collected the adolescents' perception, but future studies may enrich these data by also including the parent's responses. Additionally, a limitation arises from the narrow conceptualization of demandingness, as the items used in the survey primarily focused on media moderation (with the exception of money limitations). This restricted scope may not fully reflect the broader aspects of parental rule-setting and control. The use of a reduced version of this scale, which may not represent a single underlying factor, should also be considered when interpreting the results. Likewise, it should be noted that the instrument did not consider that both parents may have had different levels of parental warmth and demandingness. However, research has shown that assessing maternal and paternal parenting styles as a whole is sufficient (Balaguer et al., 2021). Fourth, the cross-sectional design of the study did not allow delving into the causal relationships between the factors studied. Future studies should explore such associations longitudinally. Fifth, variables that may also be relevant, such as sexual orientation or masturbation (Perry, 2019, 2020; Prause, 2019), were not included in the present study. Future studies should take them into account in order to have an even broader perspective of all the variables involved. Sixth, a specific limitation of this study was the nonrandom nature of missing data, as detailed in Supplementary Table S1, where missingness was significantly associated with sex and parental warmth. This indicates that the data for these two variables may not be missing completely at random, potentially introducing bias into the analyses that relied on them. While multiple imputation was used to mitigate this issue, it is important to consider the potential residual effects of this bias when interpreting results involving these specific predictors. Finally, the sample was not representative of adolescents from the studied countries. Therefore, generalization of the results should be carried out with caution. However, representativeness is not essential in this kind of study, where the objective is not to obtain prevalences but associations between variables.

Despite these limitations, the present study had several strengths. First, it was carried out with a very large sample of adolescents ($N = 7{,}161$). Second, it was conducted in six Spanish-speaking countries using the same questionnaire and procedure in all of them. Third, we conducted multivariate analyses, adjusting for several possible confounders.

Conclusion

It is known that Parental Warmth and Demandingness and DoS dimensions protect adolescents from risky behaviors. This study confirms these associations, specifically with pornography use, in Spanish-speaking countries. However, these associations vary by dimension and were different across sexes. The causal relationship between these variables warrants direct examination.

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