

The relationship between family climate and technology use among adolescents: A logistic regression analysis

Relación entre el clima familiar y el uso de tecnologías en adolescentes: análisis de regresión logística

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Abstract

The aim of this study is to determine the extent to which family cohesion, expressiveness and conflict are associated with the likelihood of problematic use of social media and video games, whilst controlling for the effect of gender. **Method:** A cross-sectional study was conducted with a total sample of 3,673 adolescents (51.3% female) with a mean age of 14.84 years. Two multiple binary logistic regression models were conducted, one for each technology, controlling for the effect of gender, using the GASA, FES and the MULTICAGE-TIC social media subscale. **Results:** A prevalence of problematic use of 17.4% was found for social media and 5.3% for video games. Gender emerged as a significant variable, with being female, compared to being male, being associated with higher levels of problematic social media use and lower levels of problematic video games use. Among the family climate dimensions, conflict was the only significant risk factor for both forms of problematic use. Expressiveness acted as a protective factor only in the case of video games, and no significant relationships were found in the case of family cohesion. **Discussion and conclusions:** The findings highlight the need to approach prevention from a gender perspective and through a systemic family-based educational and clinical approach focused on managing family conflict to prevent problematic use of technology.

Key Words

Cohesion, expressiveness, conflict, problematic use, social media, video games.

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Resumen

Introducción: El objetivo del presente estudio es determinar en qué medida la cohesión, la expresividad y el conflicto familiar se asocian a la probabilidad de uso problemático de redes sociales y videojuegos, controlando el efecto del género. **Método:** Se realizó un diseño transversal con una muestra total de 3.673 adolescentes (51,3% mujeres) con una media de edad de 14,84 años. Se realizaron dos modelos de regresión logística binaria múltiple, uno para cada tecnología, controlando el efecto del género, utilizando las escalas GASA, FES y la subescala específica de redes sociales del MULTICAGE-TIC. **Resultados:** Se encontró una prevalencia de uso problemático del 17,4% en redes sociales y del 5,3% en videojuegos. El género actuó como una variable destacada asociándose el hecho de ser mujer con respecto a ser varón con un mayor uso problemático de redes sociales y con un menor uso problemático de videojuegos. De las dimensiones de clima familiar, el conflicto fue el único factor de riesgo significativo para ambas problemáticas. La expresividad solo actuó como factor protector en el caso de los videojuegos y no se encontraron relaciones significativas en el caso de la cohesión. **Discusión y conclusiones:** Los hallazgos evidencian la necesidad de enfocar la prevención desde una perspectiva de género y un abordaje educativo y clínico sistémico familiar enfocado en la gestión del conflicto familiar para la prevención de usos problemáticos a las tecnologías.

Palabras clave

Cohesión, expresividad, conflicto, uso problemático, redes sociales, videojuegos.

I. INTRODUCTION

The accelerated digitalisation of the last decade has consolidated a scenario in which digital disconnection is increasingly difficult, where a large part of adolescents dedicate several hours a day to digital leisure and integrate screens into almost all areas of their lives (Calderón-Gómez & Gómez-Miguel, 2023). Through them, they study, interact with others, inform themselves and seek entertainment, configuring an environment marked by immediacy and constant interaction.

While digital technologies offer educational and socialization opportunities, their expansion has also been accompanied by an international increase in problematic use of the Internet, social media, and video games (Boniel-Nissim et al., 2024; ESPAD Group, 2025). Exposure to digital devices

has intensified, with frequent use of smartphones even at night or interrupting sleep (Andrew et al., 2018). This pattern of hyperconnectivity has been associated with difficulties in controlling the time of use and with feelings of dependence or discomfort when technology cannot be accessed. In Spain, it is estimated that 5.7% of students have a possible problematic social media use, a higher percentage in women (7.2%) than in men (4%). Likewise, around 2.3% of adolescents could have a video game use disorder, with a higher prevalence in boys (Márquez et al., 2025).

Although many of these problems are not fully covered in the main diagnostic manuals, especially in the case of social media (American Psychiatric Association, 2013; World Health Organization, 2019), there is consistent evidence of its association with depressive symptoms, anxiety, sleep distur-



bances and frustration with disconnection (Ivie et al., 2020; Lozano-Blasco & Cortés-Pascual, 2020; Scott & Woods, 2018) In addition, a significant proportion of adolescents manifest difficulties in reducing the time of use or discomfort when they cannot connect, suggesting the presence of compulsive patterns (Spanish Observatory of Drugs and Addictions, 2025).

In this context, the family constitutes a central axis of study. From the ecological perspective of development, the family represents the main microsystem of socialization during childhood and adolescence and plays a relevant role in the emergence of adaptive and risky behaviours (Bronfenbrenner, 1994). Subsequently, neoecological theory incorporated the influence of digital environments and the coexistence of physical and virtual microsystems (Navarro & Tudge, 2023) Thus, technologies also modify family dynamics, altering interactions and daily organization. The family has gone from being a space of direct supervision to facing new difficulties related to the management of digital behaviours. In many cases, adolescents adopt the role of “technological experts” within the home, partially altering the traditional family hierarchy (Navarro & Tudge, 2023). Likewise, the use of devices by parents and shared exposure to screens can influence family relationships and the regulation of technological use (Lam, 2020).

Within this framework, the family climate is defined as the perception that its members have about the functioning of the family environment in terms of cohesion, emotional expressiveness and conflict (Moos & Moos, 1976). Cohesion refers to emotional support and bonding; expressiveness, to the open communication of feelings and

opinions; and conflict, to the presence of family tensions. These dimensions are especially relevant during adolescence due to their possible protective role against risky behaviours.

Scientific evidence has linked a negative family climate with antisocial behaviours (LoBraico et al., 2020; Otto et al., 2021), criminal conduct (Saladin et al., 2021) and substance use (Hummel et al., 2013; Saladino et al., 2021; Trucco, 2020). Similarly, maladaptive family dynamics, such as lack of communication, intra-family conflict or low parental involvement, have been associated with an increased risk of problematic social media use (Qin et al., 2022; Valencia-Ortiz et al., 2021; Van Dijk et al., 2021) In addition, family functioning is also related to the frequency of technological use and parental supervision of digital behaviour (Lam, 2020).

In relation to digital risk behaviours, recent reviews have shown that a dysfunctional family climate is associated with more screen time (Liu et al., 2024) increased problematic social media use (Vossen et al., 2024) and increased problematic video game use (Nielsen et al., 2020; Rosales-Navarro & Torres Pérez, 2026). Some studies also suggest that certain dimensions of the family climate could be differentially related to each digital behaviour. Specifically, low family cohesion and expressiveness have been linked to a greater problematic social media use (Vossen et al., 2024), while high levels of conflict seem to be especially associated with problematic video game use (Rosales-Navarro & Torres Pérez, 2026). However, the results are not completely homogeneous, so it is necessary to continue deepening the specific role of each family dimension.



Despite the available evidence, several limitations persist in the literature. There is heterogeneity in the conceptualization and evaluation of both family functioning and the problematic use of technologies, making comparison between studies difficult. In addition, numerous studies have analysed the family climate in a global way, without differentiating between cohesion, expressiveness, and conflict, limiting the understanding of the specific contribution of each dimension. Finally, although gender differences have been identified, with greater problematic social media use in women and greater problematic video game use in men (Su et al., 2020), it is necessary to control this effect in order to analyse more precisely the relationship between family climate and digital behaviours.

Therefore, the aim of this study is to analyse the relationship between the family climate and the problematic use of ICT (Information and Communication Technologies) in the adolescent population, specifically examining to what extent cohesion, expressiveness and family conflict are associated with the probability of presenting problematic use of social media and video games, controlling for the effect of gender. The following hypotheses are proposed:

- Hypothesis 1. A lower level of cohesion will be significantly associated with a higher likelihood of problematic social media and video game use, regardless of gender.
- Hypothesis 2. A lower level of expressiveness will be significantly associated with a higher probability of problematic social media and video game use, regardless of gender.
- Hypothesis 3. A higher level of conflict will be significantly associated with a

higher probability of problematic social media and video game use, regardless of gender.

- Hypothesis 4. Being female compared to being male will be significantly associated with a higher probability of problematic social media use, and the fact of being male compared to being female with video games.

2. METHOD

Procedure and participants

The study was approved by the educational authority, the board of directors of schools, the parents or legal guardians and the ethics committee of the Miguel Hernández University (DES.DLI.MBC.25). The study participants were adolescents selected from randomly selected secondary schools in the Valencian Community (Spain). Data collection was carried out from October 2023 to January 2024 through an online questionnaire.

The initial sample consisted of 4448 students. The following exclusion criteria were applied: high schools that contributed fewer than five cases, cases with incomplete or incoherent responses, cases in which the response interval was less than 15 minutes and more than 90 minutes, those that indicated "Other" in gender ($n = 76$) and those that were outside the range of 13 to 17 years. The final sample for this study was 3,673 subjects, of which 48.7% were male ($n = 1,789$) and 51.3% female ($n = 1,884$), with a mean age of 14.84 years ($SD = 0.81$).



Variables and Instruments

The dimensions of the family climate were established as independent variables and the severity of the use of ICTs as dependent, controlling for the effect of gender. The instruments applied were the following:

- The *Family climate* was measured using the Family Environment Scale (FES) (Moos et al., 1984), in its Spanish adaptation (Fernandez-Ballesteros & Sierra, 1984). The subscales of *Cohesion*, *Expressiveness* and *Conflict* family, each composed of nine binary response items (true/false). The reliability (Cronbach's α) of these subscales was .769, .478 and .612 respectively.
- The *severity of video game use* (*Video Game Severity*) was measured with the "Game Addiction Scale for Adolescents" (GASA) (Lemmens et al., 2009; Lloret Irlles et al., 2018) 27 años (13-18, DT: 1,83 which consists of seven items with four answer alternatives, in a range from 0 to 4, in which 0 is no problem or does not play video games to 4 indicating a problem in the use of video games. The reliability (Cronbach's α) for the study sample was .946.
- Regarding the *severity of use of social media* (*Social Media Severity*) the SM subscale of the MULTICAGE-TIC was used (Pedrero Pérez et al., 2017), whose internal consistency (Cronbach's α) in this sample was .604. This subscale assesses the problems associated with the use and abuse of social media and consists of four dichotomous response items (YES/NO).

In addition, the Gender variable was considered, which was evaluated through an ad hoc question.

Data analysis

First, descriptive analyses were performed to characterize the sample and the study variables. It was decided to use the specific subscales of family climate to obtain greater precision in the results, avoiding the redundancy of the global scale that was already represented by its dimensions. Given the size of the sample ($N = 3,673$) and assuming the Central Limit Theorem, a bivariate correlation analysis was performed using Pearson's coefficient, assuming the normality of the distribution.

Subsequently, two multiple binary logistic regression analyses were performed, one for each dependent variable, including gender, to control for its effect. Previously, the continuous dependent variables were recoded to dichotomous. In the case of Video Game Severity, the cut-off point was applied based on the one proposed by the original authors, which determines the presence of problematic use in those participants who scored, at least, the third response option of their scale ("Sometimes") in all items (Lemmens et al., 2009), which in this adaptation corresponded to the third option of "Often". In the case of SM Severity, the authors do not establish a clearly defined cut-off point, but they determine that from three points onwards there is considered to be a high probability of problematic use (Pedrero Pérez et al., 2017), so this criterion was established as a cut-off point. It should be clarified that the cut-off points established do not constitute a clinical diagnostic criterion, the results should be interpreted as indicators of risk or high probability of problematic use.



Likewise, the assumption of independence was guaranteed through the design of the study itself and compliance with the assumptions of linearity of the *Logit*, and absence of multicollinearity and outliers for logistic regression analysis (Hosmer et al., 2013). The evaluation of the global fit was performed by the likelihood ratio test or Likelihood reporting the Chi-square contrast statistic (χ^2), as well as the R^2 of Nagelkerke. The weight of the predictors was determined by the *Odds Ratios* (OR) with their respective 95% confidence intervals.

The statistical software program R version 4.5.2 was used (R Core Team, 2025).

3. RESULTS

Description

In general, males scored higher than females in almost all the variables examined, showing higher levels of problematic use of video games, as well as higher levels of cohesion and expressiveness. The variables where females scored highest were in the problematic use of social media and family conflict (See Table I). The most striking differences between genders were found in the variables of problematic use of technologies: males stood out notably in the problematic use of video games and females, likewise, scored higher on the scale of problematic social media use. On the contrary, the differences in the dimensions of family climate were the most moderate.

Table I. Descriptive statistics of the study variables

	N	Mean	SD	Median	IQR
Boys					
Cohesion	1789	7.29	1.89	8	2
Expressiveness	1789	5.50	1.78	6	3
Conflict	1789	3.11	1.69	3	2
SM_Severity	1789	0.96	1.14	1	2
VideoGame_Severity	1789	1.70	0.64	1.71	0.71
Girls					
Cohesion	1884	6.77	2.33	7	3
Expressiveness	1884	5.30	1.89	6	3
Conflict	1884	3.44	1.86	3	3
SM_Severity	1883	1.49	1.28	1	2
VideoGame_Severity	1884	0.67	0.84	0	1.43
Total					
Cohesion	3673	7.02	2.14	8	3
Expressiveness	3673	5.40	1.84	6	3
Conflict	3673	3.28	1.79	3	2
SM_Severity	3672	1.23	1.24	1	2
VideoGame_Severity	3672	1.17	0.91	1.43	1.86

Note. SD = Standard Deviations; IQR = Interquartile Range; SM_Severity = Problematic Use of Social media; VideoGame_Severity = Problematic Use of Video Games.



Bivariate correlation analyses were performed with Pearson's correlation coefficient (See Table 2). Problematic use of social media and video games was significantly associated with the three dimensions of family climate ($p < .001$), but the strength of the relationship for video games was practically nil and for social media very weak.

The variables of Video Game Severity and Social Media Severity were dichotomized (0 = no problematic use; 1 = problematic use). The sample used for the regression analysis was 3,630 after identifying invalid responses in the items of the MULTICAGE-ICT for Social media. Regarding the prevalence of problematic use of video games, most of the sample was in the profile without problems with 94.7% ($n = 3,439$), compared to 5.3% ($n = 191$) who manifested problematic use. On the other hand, the prevalence of problematic social media use was notably higher, reaching 17.4% ($n = 633$) of the adolescents in the sample, while the remaining 82.6% ($n = 2,997$) did not present risk symptoms.

Model 1. Problematic use of video games

First, the regression model for problematic use of video games (Video Game Severity) was evaluated. The global model was statis-

tically significant ($\chi^2 = 145.64$; $df = 4$; $p < .001$) and Nagelkerke's R^2 coefficient estimated that the model explains 11.64% of the variance in the dependent variable.

When analysing the individual contribution of each variable (see Table 3), most of the variables obtained a significant relationship. With respect to gender, the fact of being female compared to being male decreased the probability of developing problematic use of video games by 0.205 times ($OR = 0.205$), this being a significant relationship (95% CI: 0.143 - 0.294; $p < .001$).

Regarding the dimensions of the family climate, greater family expressiveness was associated with a lower probability of problematic use of video games (95% CI: 0.750 - 0.897; $p < .001$), indicating that, for each unit of increase in levels of expressiveness in the home, the probability of presenting problematic use of video games is 0.821 times lower ($OR = 0.821$). On the other hand, the family conflict variable also showed a significant relationship with the dependent variable (95% CI: 1.101 - 1.327; $p < .001$). It is interpreted that for each point that family conflict increases, the probability of developing problematic use of video games increases 1.208 times ($OR = 1.208$). Family cohesion did not reach the conventional statistical significance threshold (95% CI: 0.891 - 1.055; $p > .05$).

Table 2. Pearson correlations between the study variables

	Cohesion	Expressiveness	Conflict	SM_Severity	VideoGame_Severity
Cohesion	1				
Expressiveness	.503***	1			
Conflict	-.560***	-.286***	1		
SM_Severity	-.143***	-.101***	.142***	1	
VideoGame_Severity	-.049**	-.099***	.058***	-.044**	1

Note. Pearson's correlation coefficients are only shown in the lower triangle. * $p < .05$; ** $p < .01$; *** $p < .001$. SM_Severity = Problematic use of Social media; VideoGame_Severity = Problematic use of video games. $N = 3,672$ valid cases.



Table 3. Results of Multiple Binary Logistic Regression Analysis for Video Game Severity

	B	Standard Error	Sig.	OR	95% CI for OR	
					Low	High
Constant	-1.798	0.412	<.001	0.166	0.074	0.371
Cohesion	-0.031	0.043	.473	0.969	0.891	1.055
Expressiveness	-0.197	0.046	<.001	0.821	0.750	0.897
Conflict	0.189	0.048	<.001	1.208	1.101	1.327
Gender(Female)	-1.583	0.184	<.001	0.205	0.143	0.294

Note. Variables specified in step 1: Cohesion, Expressiveness, Conflict and Gender. The reference category for gender is males. CI = Confidence interval; OR = Odds Ratio. $n = 3,630$ valid.

Model 2. Problematic use of social media

In the second model, regression analysis was performed for problematic social media use (SM Severity). The model was statistically significant ($\chi^2 = 124.46$; $df = 4$; $p < .001$) and Nagelkerke's R^2 coefficient determined that the model explained 5.58% of the variance of the dependent variable.

In the analysis of the individual contribution of each variable to the social media model (see Table 4), gender was once again shown to be a variable to be highlighted. In this case, being female compared to being male increased the probability of developing a statistically significant problematic social media use by 2.201 times ($OR = 2.201$) (95% CI: 1.831 - 2.645; $p < .001$).

Regarding the dimensions of family climate, the conflict variable showed a statistically significant relationship (95% CI: 1.048 - 1.175; $p < .001$). Greater conflict in the family system increases the probability of developing problematic social media use by 1.109 times ($OR = 1.109$). Finally, neither cohesion (95% CI: 0.920 - 1.021; $p > .05$) nor fam-

ily expressiveness (95% CI: 0.919 - 1.024; $p > .05$) showed a statistically significant relationship with problematic social media use.

4. DISCUSSION

The initial objective of this study was to determine the relationship between the family climate and the problematic use of ICT (Information and Communication Technologies) in the adolescent population. Specifically, it sought to evaluate the extent to which family cohesion, expressiveness and conflict are associated with the probability of presenting a problematic use of social media and video games. To this end, a cross-sectional design was carried out with a sample of adolescents between 13 and 17 years old, who were asked to fill out a questionnaire online. Multiple binary logistic regression analyses were performed, including gender as a control variable. The two resulting models were significant, so the set of independent variables used in this study allows a significant differentiation between adolescents with and without problematic use.



Table 4. Results of the Multiple Binary Logistic Regression Analysis for SM Severity

	B	Standard Error	Sig.	OR	95% CI for OR	
					Low	High
Constant	-1.999	0.259	<.001	0.136	0.082	0.225
Cohesion	-0.031	0.027	.243	0.970	0.920	1.021
Expressiveness	-0.030	0.028	.275	0.970	0.919	1.024
Conflict	0.104	0.029	<.001	1.109	1.048	1.175
Gender(Female)	0.789	0.094	<.001	2.201	1.831	2.645

Note. Variables specified in step 1: Cohesion, Expressiveness, Conflict and Gender. The reference category for gender is males. CI = Confidence interval; OR = Odds Ratio. $n = 3,630$ valid.

The results regarding the dimensions of expressiveness and cohesion diverged according to the model, thus Hypotheses 1 and 2 are not met. In the case of video games, a higher level of family expressiveness was associated with a lower probability of problematic use, while cohesion was not significant. On the other hand, in the social media model, neither of the two dimensions of family climate showed a significant relationship with the dependent variable. In general, previous literature agrees that a dysfunctional climate is linked to problematic uses of ICTs (Nielsen et al., 2020; Rosales-Navarro & Torres Pérez, 2026; Vossen et al., 2024). However, when it comes to pinpointing which specific components of the family climate act as risk or protective factors, the evidence remains limited. In the case of social media, a recent review found that low family cohesion and expressiveness increased problems related to social media use (Vossen et al., 2024), which differs from the results found in this sample. Regarding video games, although less cohesion has been pointed out as a risk factor for the development of problematic use (Marrero

et al., 2021) in this study, this variable did not reach significance, with expressiveness within the family environment becoming more relevant.

On the other hand, the conflict dimension was significantly associated with both problematic uses, specifically pointing out that a higher level of family conflict increases the probability of developing problematic use in social media and video games, confirming Hypothesis 3. These findings converge with the current literature, where it has been shown that the presence of conflictive dynamics in family systems are related to problems related to the use of ICTs (Wei et al., 2025), being specifically associated with both problematic social media use (Vossen et al., 2024) and video games (Rosales-Navarro & Torres Pérez, 2026).

Finally, gender emerged as a significant variable. Being a girl compared to being a boy increases the probability of problematic social media use and decreases the probability of problematic use of video games, which verifies Hypothesis 4. These results are in line with the evidence replicated in



different studies, where men have presented higher prevalences of problematic use of video games and women in social media (Burén et al., 2023; Su et al., 2020; Todorovic et al., 2025). There are several theoretical explanations suggested for this phenomenon, ranging from the different social motivations for the use of each technology to cultural aspects (Liao et al., 2025; Zhou et al., 2024). However, having carried out the analyses controlling for the effect of gender, the findings show that, regardless of whether the adolescent is male or female, relational dynamics within the home, such as conflict, or expressiveness in the case of video games, exert their own independent influence on the technological vulnerability of adolescents.

Limitations

Despite the findings, some of these results should be interpreted with caution, since this work has methodological limitations linked to the psychometric properties of the instruments used, which consisted of subscales extracted from broader tools. On the one hand, the measure of problematic social media use exhibited moderate internal consistency ($\alpha = .604$). On the other hand, the family climate subscales showed disparate reliability indices, being acceptable for cohesion ($\alpha = .769$) and conflict ($\alpha = .612$), but remarkably discrete for the expressiveness dimension ($\alpha = .478$). This low internal consistency in the expressiveness variable limits the statistical power of this variable and could explain its lack of significance in the social media model, suggesting the need to replicate these analyses in the future. Finally, the cross-sectional design of the study prevents the establish-

ment of causal or predictive inferences, making it necessary to develop research with longitudinal designs to delve into the direction of the effects.

Applicability and practical implications

However, from a translational approach, this study provides elements to be considered in prevention. The results suggest that interventions aimed at the problematic use of technologies should consider the family dynamics that can favour or maintain these patterns of use, beyond focusing exclusively on the control of time of use. In particular, family conflict management, emotional communication and parental mediation could constitute relevant components of family prevention programs.

5. CONCLUSIONS

In conclusion, this study underlines the role of gender in the patterns of use and manifestations of problematic use of ICTs, placing men in a position of vulnerability to video games and women to social media. Beyond this polarization, family conflict is a cross-cutting risk factor in the development of problematic behaviours in the use of video games and social media, above family cohesion and expressiveness. Therefore, educational and clinical interventions focused on preventing or alleviating the problematic use of screens must not only consider the gender perspective, but also the need for a systemic-family perspective focused primarily on the management and resolution of conflicts in the home.



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