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# Parental profiles and online supervision in the digital age

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#### ABSTRACT

Amidst the escalating digital engagement observed among adolescents, it becomes imperative for parents to hone specific skills related to digital parenting. This study endeavors to delineate parental profiles by scrutinizing their interaction with technology, establishing a correlation between these profiles and their proficiency in overseeing and guiding their adolescent children's utilization of Information and Communication Technology (ICT). Employing LatentGold V.6.0 software, we conducted a latent class analysis involving 1200 parents with adolescent children aged 11–17 in Spain ( $\bar{x} = 46.61$  years, range 28-69 years). The analysis unveiled three distinct profiles: 'Instrumentals' (39.61%), characterized by a utilitarian and necessitydriven use of ICT; 'Digital Passives' (31.88%), who scarcely engage with ICT; and 'Digital Actives' (28.51%), who are characterized by habitual engagement with ICT. Notably, they not only use technology for utility but also adeptly leverage its benefits, enjoying recreational digital pursuits. The latter profile, primarily composed of young parents, demonstrated that their tools and knowledge not only enrich their digital experience but also enhance their effectiveness in digital-age parenting. This underscores the importance of targeted interventions designed to help parents integrate into the 'Digital Actives' class. Such initiatives should promote engagement with ICT, fostering essential digital competencies and cultivating a positive appreciation for the benefits of technology, including the expansion of digital leisure activities for the entire family.

#### **ARTICLE HISTORY**

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#### **KEYWORDS**

Family; adolescent; ICT; digital leisure; latent profile analysis

## Introduction

The rise in teenagers' engagement with stimulating digital leisure activities (Livingstone et al., 2023; National Statistical Institute [INE], 2022) necessitates that parents develop specific competencies to ensure their children's online safety and well-being (Jeffery, 2021). Contrary to the belief that 'digital natives' inherently possess digital skills – a term coined by Marc Prensky in 2001 to describe individuals familiar with digital technology from an early age – the use of digital tools carries risks such as cyberbullying,

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exposure to inappropriate content, and contact with strangers (National Observatory of Technology and Society, 2022). Excessive media use among adolescents can adversely affect their health, including reduced physical activity, sleep disturbances, and problematic internet use (Tomczyk et al., 2020). Therefore, active parental involvement is recommended as a preventive measure to ensure adolescents' online safety (Moreno et al., 2023).

Parents' active involvement in children's online experiences is vital for protection against potential threats (Blázquez, 2017). Shared digital activities foster learning, strengthen family bonds, and enhance safer technology use (Belmonte et al., 2021). Saker and Mercea (2022) highlight research on parental integration of media technologies, including video games, and joint media engagement. However, limited digital skills leave some parents uncertain about guiding responsible Information and Communication Technology (ICT) use, leading to restrictions rather than active engagement (Livingstone & Blum-Ross, 2020).

Active parental participation in shared digital leisure enhances digital competencies, supports effective technology supervision, and benefits health and social well-being (Ballard & Spencer, 2022; Gil et al., 2022b). Parents' ICT attitudes and self-efficacy are crucial in digital parenting (Walker et al., 2011; Wu et al., 2020). Studying parental ICT use offers insights into how children model their digital behaviors (Nikken, 2017).

#### Literature review and research questions

Extensive research has investigated ICT usage patterns among adult users (Chiu-Ju, 2019; Pantelaki et al., 2023) and adolescents (Foerster & Röösli, 2017; Moreno et al., 2022) using latent class analyses. However, this research often does not specify whether the adults are parents. Some studies, such as those by Walker et al. (2011) and Wu et al. (2020), have addressed this by categorizing parental profiles based on ICT usage and attitudes, ranging from high engagement and positive attitudes to limited involvement and negative attitudes.

Walker et al. (2011) identified three primary subclasses of parents using ICT with their adolescent children. These subclasses were determined by the frequency of online activity, the types of devices used, and attitudes toward technology. The categories were labeled 'Middle of the Road,' 'Active,' and 'Limited,' with the first being the most representative. Parents in the 'Active' category engaged in a wide range of daily online activities, used multiple devices, and expressed positive attitudes toward technology. In contrast, those in the 'Limited' category accessed technology infrequently, used fewer types of devices, and exhibited negative attitudes.

Similarly, Wu et al. (2020) identified three distinct profiles of parents with adolescent children based on their ICT usage. These profiles were labeled 'Compliant Users,' 'Quiescent Users,' and 'Active Users.' This study assessed parental ICT proficiency, considering factors such as personal use of digital devices, attitudes toward technology, self-efficacy, and involvement in regulating their children's ICT activities.

Additionally, Yaman et al. (2022) analyzed perceptions of self-efficacy in digital parenting and identified three classes: 'The Experienced Well-Educated,' 'The Experienced Moderately Educated,' and 'The Inexperienced Less Educated.' These categories reflected varying levels of digital competence and educational background among parents.

In this context, some authors argue that the lack of familiarity with ICT among parents is linked to certain sociodemographic characteristics, such as gender, age, and educational level (Lanigan, 2009). For example, evidence suggests that gender may influence internet usage patterns and parental involvement in monitoring their children's online activities. Livingstone et al. (2018) suggest that while men are more likely to use ICT for leisure purposes, women tend to show greater interest in supervising their children's internet usage. Other research indicates that parents with higher levels of education tend to have greater access to the internet, use it more frequently, possess more advanced information-seeking skills, and experience greater benefits from its use compared to those with lower levels of education. Similarly, age plays a role in digital usage patterns, as older parents may exhibit higher digital self-efficacy (Hargittai, 2021; Yaman et al., 2022). However, as Baker et al. (2017) note, research examining internet use among parents is limited and often outdated, especially given the rapid pace of development in this field. While efforts have been made to identify different types or subgroups of internet users among parents, studies examining demographic differences have been inconclusive, highlighting the need for further investigation in this area.

Despite these advancements, a significant gap persists in research focusing specifically on parents' digital leisure activities (Walker et al., 2011; Wu et al., 2020; Yaman et al., 2022). This gap is significant given the relevance of such activities in contemporary society (Bryce, 2013) and within family dynamics (Agate et al., 2007; Hornberger et al., 2010; Zabriskie & McCormick, 2001). Furthermore, existing studies frequently overlook critical factors such as parental skills in monitoring and guiding their children's digital activities (Williams & Merten, 2011).

Based on the above, the research questions are as follows:

- RQ1: What are the differentiated patterns of parental participation in ICT, their perceptions of ICT use for leisure, and their engagement in digital activities, both with their teenage children and individually?
- RQ2: What are the differences in parental supervision and parenting skills across the identified subclasses, and how does the use of ICT impact family life and child rearing?

Based on the findings from the reviewed literature, we propose the following hypotheses:

- H1: Younger parents with a higher level of education will tend to adopt a more playful approach to the use of ICT, emphasizing its recreational aspects rather than its strictly instrumental functions.
- H2: This group of younger and more highly educated parents will also be those who exercise more active supervision and demonstrate more developed parenting skills in managing their children's ICT use.

The main objective of this study is to identify differentiated patterns among parents based on their participation in ICT, perceptions of its use for leisure, and engagement in digital activities, both with their teenage children and individually. Additionally, it aims to examine differences in supervision and parenting skills among these subclasses, providing a comprehensive understanding of how ICT influences family life and child rearing.

# Method

#### **Participants**

To collect the sample, we used the Spanish non-university educational centers search engine (https://www.educacion.gob.es/centros/) to obtain contact emails from public and private educational institutions, including primary and secondary schools, as well as vocational training centers. We emailed these centers to explain our research and request their help in distributing a questionnaire to parents, involving Parent-Teacher Associations. We lack detailed data on the number of recipients or specific participating schools, as well as on whether children attended public or private institutions. Some institutions confirmed their participation, others did not provide direct confirmation, and some did not respond, possibly due to outdated contact information.

Thanks to their collaboration, we obtained a non-probabilistic sample of 1200 parents, comprising 79.4% mothers (n = 953) and 20.6% fathers (n = 247), residing in Spain with adolescent children aged 11–17. The mean age of the parents was 46.61 years ( $\sigma = 5.33$ , range 28–69 years), with approximately 43.4% (n = 521) holding a university degree, including diplomas, undergraduate, or bachelor's degrees. In terms of residence, 52.9% (n = 635) lived in cities. Regarding employment, 63.9% (n = 767) were employed. Additionally, 77.7% of participants (n = 932) reported being part of heteroparental families.

#### Instruments

An online self-administered questionnaire was developed with two sections. The first gathered sociodemographic data, including gender, age, educational attainment, among others. The second required participants to complete Likert-type scales (1-6) to assess constructs related to the research objective:

The Digital Leisure Perception Scale (Gil et al., 2023) consists of 17 items and assesses the perceptions of parents with adolescent children regarding aspects related to digital leisure. These items were formatted on a six-point Likert scale, ranging from 1 (totally disagree), 2 (strongly disagree), 3 (disagree), 4 (agree), 5 (strongly agree), to 6 (totally agree). This scale demonstrates optimal fit indices (RMSEA = .087; CFI = .97; TLI = .95; SRMR = .021), high overall reliability ( $\omega$  = .92), and for the explored factors: Cognitive Perception, encompassing 4 items ( $\omega$  = .79) (e.g., Digital leisure activities help concentration); Behavioral Perception, encompassing 5 items ( $\omega$  = .81) (e.g., Leisure activities are fun); Social Perception, encompassing 5 items ( $\omega$  = .81) (e.g., Digital leisure activities help to maintain friendships) and Time Perception, encompassing 3 items ( $\omega$ = .56) (e.g., Engaging in digital leisure activities makes time pass more quickly).

The *ICT Usage Scale* (ad hoc) consists of 15 items and assesses the frequency of ICT use by parents with adolescent children. These items were formatted on a six-point Likert scale, ranging from 1 (none), 2 (hardly any), 3 (little), 4 (somewhat), 5 (a lot), to 6 (very much). This scale, being ad hoc, was specifically designed for the present study. It was

based on the list of online activities from the 'Survey on Equipment and Use of Information and Communication Technologies in Households' (National Statistics Institute [INE], 2019) and the content presented in the section 'Uses and Customs of Spaniards on the Internet' from the report 'Digital Society in Spain 2019' (Telefónica Foundation, 2019). The scale demonstrates optimal fit indices (RMSEA = .068; CFI = .954; TLI = .937; SRMR = .033), good overall reliability ( $\omega$  = .87), as well as for the explored factors: Recreational and Leisure Use, encompassing 9 items ( $\omega$  = .77) (e.g., Watching videos on sharing sites like YouTube, Vimeo, etc.); and Instrumental Use, encompassing 6 items ( $\omega$  = .76) (e.g., Sending forms to Public Administrations).

The Digital Leisure Activities Scale (ad hoc) consists of 7 items and assesses the frequency with which parents participate in various digital leisure activities, both individually and with their children. Responses were on a six-point Likert scale, ranging from 1 (none) to 6 (very much). Similar to the previously mentioned ICT Usage Scale, this scale has also been based on the 'Survey on Equipment and Use of Information and Communication Technologies in Households' (INE, 2019) and the report 'Digital Society in Spain 2019' by Fundación Telefónica (2019). The scale demonstrates optimal fit indices (RMSEA = .044; CFI = .99; TLI = .99; SRMR = .004), high overall reliability ( $\omega$  = .90), as well as for each of the explored factors: Online Gaming, encompassing 2 items ( $\omega$ = .78) (e.g., How often do you play traditional and/or educational games online, such as chess, Parcheesi, Trivial Pursuit, or puzzles?); Online Cultural Activities, encompassing 3 items ( $\omega = .72$ ) (e.g., How often do you watch, engage in, or participate in cultural activities virtually, such as virtual museum visits, monuments, concerts, or viewing artworks?); and Online Entertainment Activities, encompassing 2 items ( $\omega = .78$ ) (e.g., How often do you watch series, documentaries, and/or films on internet-connected platforms such as YouTube or Netflix?)

The *Parental Supervision Scale* (Gil et al., 2022a) consists of 20 items and assesses the self-perception of parents with adolescent children regarding their parental supervision. Responses were on a six-point Likert scale, ranging from 1 (totally disagree) to 6 (totally agree). The scale demonstrates optimal fit indices (RMSEA = .066; CFI = .98; TLI = .97; SRMR = .019), high overall reliability ( $\omega$  = .95), as well as for each of the explored factors: Openness, encompassing four items ( $\omega$  = .78) (e.g., Your child spontaneously shares details about their friends, such as who they are and how they feel and think); Control, encompassing five items ( $\omega$  = .86) (e.g., Your child has to tell you where they are going after school and with whom in order to be allowed to go out); Educational Supervision, encompassing four items ( $\omega$  = .78) (e.g., You know if they have exams or need to submit any school work); Nighttime Leisure Supervision, encompassing three items ( $\omega$  = .86) (e.g., Your child has to tell you with and where they are going in their night-time outings); and Digital Leisure Supervision, encompassing four items ( $\omega$  = .73) (e.g., You know which digital resources your child plays with and whether they are appropriate for their age).

The Scale of Parental Figures' Perception of Their Own Parental Competencies (Gil & Alemán, 2023) consists of 29 items and assesses the self-perception of parents with adolescent children regarding various parental competencies. Responses were on a six-point Likert scale, ranging from 1 (totally disagree) to 6 (totally agree). The scale demonstrates optimal fit indices (RMSEA = .073; CFI = .93; TLI = .90; SRMR = .03), high overall reliability ( $\omega$  = .95), as well as for each of the explored factors: Organization of the Family

Educational Environment, encompassing ten items ( $\omega = .85$ ) (e.g., Establishes rules for their child's use of digital devices); Seeking Formal and Informal Support, encompassing five items ( $\omega = .79$ ) (e.g., When they have a problem with their child, they seek help from someone, family members or close friends); Educational Competence, encompassing six items ( $\omega = .87$ ) (e.g., They meet with their child's teachers); and Personal Development and Resilience, encompassing eight items ( $\omega = .84$ ) (e.g., They promote their child's good use of digital technology).

The results of the exploratory and confirmatory factor analysis for each of the scales used in this study are freely accessible and can be consulted through the following DOI: [Inser DOI near here]

#### Data analysis

To determine the normality of the data for the variables used in this study, skewness and kurtosis were calculated (Curran et al., 1996).

The LatentGold V.6.0 software was used to conduct latent class analysis (LCA) to identify subclasses of parents with adolescents based on their perceptions of digital leisure, use of ICT, and participation in digital activities, both with their teenage children and individually. The suitability of including these variables in the model was evaluated using the Wald test (Villarejo-Ramos et al., 2016).

LCA is a parametric statistical model that uses observed data to estimate the values of the parameters of the selected model through the maximum likelihood method (Porcu & Giambona, 2017). To determine the optimal number of latent classes, we evaluated several criteria: entropy, log-likelihood (LL), Bayesian Information Criterion (BIC), Akaike Information Criterion (AIC), AIC3, number of parameters (Npar), *p*-value, classification error rate (Class.Err), and interpretability (Bauer & Curran, 2004; Nylund-Gibson & Choi, 2018).

However, it's important to clarify that our selection process focused on three primary considerations: minimizing the number of parameters (Npar), ensuring the representativeness of the identified classes, and achieving interpretability relevant to our study's context. Vermunt and Magidson (2005) stress the importance of choosing the most parsimonious model, which balances interpretability and avoids overfitting. Furthermore, to ensure the practical relevance of our findings, we set a minimum criterion for class representativeness, requiring each class to include at least 100 individuals. This approach ensures statistical robustness and practical applicability (Weller et al., 2020). Additionally, Bauer and Curran (2004) and Nylund-Gibson and Choi (2018) indicate that for poorly explored studies, it is beneficial to allow the identification of more than two classes to capture the complete complexity of the phenomenon under study.

After selecting the optimal number of latent classes, contingency tables with chisquare tests were conducted to explore the sociodemographic profile of each identified class (Agresti, 2018). Analysis of Variance (ANOVAs) was performed to detect significant differences between latent classes and parental supervision and competencies (Cardinal & Aitken, 2013). Tukey post-hoc tests were conducted to examine significant differences between subclasses. Effect sizes were calculated using Cohen's d (1988). These analyses were carried out using SPSS V.28.

The investigation achieved a 100% response rate within the selected sample, meaning all participants completed the questionnaire. However, not all respondents answered

every question. Missing values were encoded as 999 during data processing to identify incomplete responses. For statistical analyses, pairwise deletion was applied, allowing the inclusion of as much available data as possible by using only cases with complete data for the specific variables involved in each analysis. This approach was chosen to minimize data loss and avoid unnecessary exclusion of complete cases, ensuring the results reflected the relationships between variables without significant bias.

# Results

Before conducting latent class analysis, we assessed the normality of included variables. Skewness and kurtosis values for the Perception of Digital Leisure scale ranged from -0.56 to -0.29 and 0.57 to 1.29, respectively. For the ICT Usage Scale, skewness ranged from -0.24 to -0.06, and kurtosis ranged from -0.59 to -0.36. Regarding digital leisure activities parents engage in with their children, skewness ranged from -0.25 to 0.93, and kurtosis ranged from -0.72 to 0.68. Individual digital leisure activities showed skewness from -0.28 to -1.15 and kurtosis from -0.76 to 1.15. For the Parental Supervision Scale, skewness ranged from -1.59 to -0.88, and kurtosis ranged from -0.47 to 3.32. Lastly, skewness for the Scale of Parental Figures' Perception of Their Own Parental Competencies ranged from -1.37 to 0.16, and kurtosis ranged from -0.80 to 3.44. These results suggest satisfactory variable distributions (Curran et al., 1996).

# Identification of latent classes

To determine the optimal number of latent classes, various models ranging from two to seven classes were evaluated (see Table 1). The model with two classes was identified as the most parsimonious, having the fewest parameters (Npar). However, limiting the latent class analysis to only two classes might not adequately capture the complexity of the relatively unexplored phenomenon (Bauer & Curran, 2004; Nylund-Gibson & Choi, 2018). Therefore, it was decided that the optimal model should consist of three classes. This decision balanced parsimony and interpretability of the results, despite having a slightly higher Npar. Furthermore, models with four to seven classes revealed that at least one class contained fewer than 100 individuals, compromising its representativeness.

Table 2 displays the statistical significance of the thirteen variables used in latent class segmentation, assessed through the Wald test. In all cases, the *p*-value was below .05, supporting the appropriateness of these thirteen variables as robust foundations for segmentation.

Models	Entropy	Log-likelihood	BIC(LL)	AIC(LL)	AIC3(LL)	Npar	<i>p</i> -value	Class.Err.
2 class <b>3 class</b>	0,8348 <b>0,8074</b>	-20165.6675 - <b>19577.3637</b>	40678.7488 <b>39679.393</b>	40429.3351 <b>39302.7274</b>	40478.3351 <b>39376.7274</b>	49 <b>74</b>	.000. . <b>000</b> .	0,0472 <b>0,0859</b>
4 class	0,8791	-18735.372	38172.6615	37668.7439	37767.7439	99	.000	0,0632
5 class	0,8874	-17951.7633	36782.6961	36151.5266	36275.5266	124	.000	0,0665
6 class	0,8831	-17753.3146	36563.0506	35804.6291	35953.6291	149	.000	0,0736
7 class	0,8798	-17560.1038	36353.8809	35468.2075	35642.2075	174	.000	0,0825

Table 1. Model evaluation with different latent class models.

Note<sup>1</sup>. Bayesian Information Criterion (BIC), Akaike Information Criterion (AIC and AIC3), Number of Estimated Parameters (Npar), Classification Error (Class.Err.)

*Note*<sup>2</sup>. The model of 3 classes considered optimal in this study is highlighted in bold

Segmentation variables	Class 1 (Instrumentals)	Class 2 (Digital Passive)	Class 3 (Digital Active)	Wald	<i>p</i> - value
Cognitive perception of digital leisure	0,2329	-0,4912	0,2583	143,4325	.000
Behavioural perception of digital leisure	0,0395	-0,4346	0,395	100,538	.000
Social perception of digital leisure	0,243	-0,4078	0,1648	113,35	.000
Time perception of digital leisure	0,0019	-0,2219	0,2201	25,7072	.000
Leisure and recreational use of ICTs	0,0433	-0,77	0,7267	698,9894	.000
Instrumental use of ICT	0,1455	-0,7626	0,617	369,4526	.000
Online gaming alone	-0,1316	-0,4839	0,6155	109,4315	.000
Online gaming together with teenage children	-0,1184	-0,5137	0,6321	154,4063	.000
Online cultural activities alone	0,2249	-0,875	0,6501	399,358	.000
Online cultural activities together with teenage children	0,1796	-0,7505	0,571	327,8044	.000
Online entertainment activities alone	0,149	-1,292	1,143	739,9294	.000
Online entertainment activities together with teenage children	0,124	-1,2196	1,0956	632,3741	.000

Table 2. Estimated parameters of sequientation variable	Ta	able	2.	Estimated	parameters	of	segmentation	variable
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It is noteworthy that, in the model of 3 latent classes, the frequency distribution and percentage of participants were as follows: Class 1 (n = 494; 39.61%), Class 2 (n = 377; 31.88%), and Class 3 (n = 329; 28.51%). Class 1 comprises parents showing average scores across all segmentation variables. This class has been termed 'Instrumentals'. In contrast, Class 2 consists of participants with low scores across all variables, designated as 'Digital Passives'. Class 3 harbors parental figures with high scores across all variables, labeled as 'Digital Actives' (see Figure 1).

# Analysis of the sociodemographic profile and variations in parental supervision and competencies among the identified latent classes

Firstly, a contingency table analysis was carried out using the chi-square test to compare the proportions of participants in each class, based on their sociodemographic variables. The results revealed significant differences in the ages and education levels of participants belonging to the different classes. However, no significant differences were observed depending on sex (see Table 3).

Secondly, in order to analyze potential differences in levels of parental supervision and competencies among participants from the three identified classes, analysis of variance (ANOVAs) was conducted.

On the one hand, regarding parental supervision, significant differences are observed in terms of the Openness factor ( $F_{(2,1196)} = 5.36$ ; p = .005), with a small effect size (d = .21); Control ( $F_{(2,1171)} = 5.47$ ; p = .004), with a small effect size (d = .23); Nighttime Leisure Supervision ( $F_{(2,933)} = 5.35$ ; p = .005), with a small effect size (d = .24) and Digital Leisure Supervision ( $F_{(2,1175)} = 5.84$ ; p = .003), with a small effect size (d = .24). However, no significant differences are observed in the Educational Supervision factor (see Table 4).

On the other hand, regarding the parental competencies of participants belonging to different classes, significant differences are observed in the Organization of the Family Educational Environment ( $F_{(1,1199)} = 16.50$ ;  $p \le .000$ ), with a small effect size (d = .42); Seeking Formal and Informal Support ( $F_{(1,1199)} = 8.98$ ;  $p \le .000$ ), with a small effect size (d = .31), and Personal Development and Resilience ( $F_{(1,1199)} = 11.01$ ;  $p \le .000$ ),



Figure 1. Class representation graph based on mean scores of segmentation variables.

with a small effect size (d = .35). However, no significant differences are observed in Educational Competence (see Table 5).

Below, the most important characteristics of each class are presented in relation to the analyzed factors.

# Class 1: 'Instrumentals'

6

Most of the parents in the 'Instrumentals' class are between 45 and 49 years old (40.1%) and have a high level of education (45.7%). In fact, a significant proportion of the participants hold a university degree or diploma ( $\chi^{^{2(10)}} = 26.67$ ; p = .003), with a small effect size (d = .30) across the different classes identified (see Table 3).

	Cla (Instrui	iss 1 mentals)	Cla (Digital	ass 2 Passive)	Cla (Digita	iss 3 I Active)	Тс	otal
Sex	n	%	n	%	n	%	n	%
Female	385	77.9	307	81.4	261	79.3	953	79.4
Male	109	22.1	70	18.6	68	20.7	247	20.6
Age *								
28–44 years	143	29.2	121	32.3	125	38.6	389	32.7
45–49 years	196	40.1	140	37.3	123	38	459	38.6
50–69 years	150	30.7	114	30.4	76	23.5	340	28.6
Education level**								
Primary School	15	3	24	6.4	8	2.4	47	3.9
Compulsory Secondary Education (ESO)	29	5.9	39	10.3	25	7.6	93	7.8
Intermediate Vocational Training	41	8.3	28	7.4	26	7.9	95	7.9
Higher Vocational Training and Baccalaureate	125	25.3	113	30	74	22.5	312	26
Bachelor's and University Degree	226	45.7	142	37.7	153	46.5	521	43.4
Postgraduate	58	11.7	31	8.2	43	13.1	132	11

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*Note*<sup>1</sup>. *p*-value: \*\*\* $p \le .001$ ; \*\* $p \le .01$ ; \* $p \le .05$ 

Note<sup>2</sup>. The socio-demographic variables of the participants where significant differences have been found are highlighted in bold

Table	4. ANOVA	of	the	factors	of	the	parental	supervision	scale	based	on t	he c	lasses.
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Factor	Class 1 (Instrumentals)	Class 2 (Digital Passive)	Class 3 (Digital Active)	F	Post-hoc	d Cohen
OPN	4.72 (.96) 494	4.72 (1.09) 375	4.93 (.86) 328	5.36**	(Class 3> Class 1**) (Class 3> Class 2**)	.21
CTRL	5.26 (.82) 484	5.23 (.91) 362	5.42 (.71) 326	5.47**	(Class 3> Class 1**) (Class 3> Class 2**)	.23
EDUSUP	5.01 (.82) 494	5.09 (.87) 374	5.15 (.80) 328	2.75	-	-
NLS	5.07 (.96) 384	5.06 (1.11) 287	5.30 (.94) 263	5.35**	(Class 3> Class 1**) (Class 3> Class 2**)	.24
DLS	4.64 (1.09) 484	4.73 (1.09) 365	4.89 (.95) 327	5.84**	(Class 3> Class 1**)	.24

*Note*<sup>1</sup>. *p*-value: \*\*\* $p \le .001$ ; \*\* $p \le .01$ ; \* $p \le .05$ 

*Note*<sup>2</sup>. Openness (OPN), Control (CTRL), Educational Supervision (EDUSUP), Nighttime Leisure Supervision (NLS), Digital Leisure Supervision (DLS)

*Note*<sup>3</sup>. The factors that exhibited significant differences have been highlighted in bold

Regarding parental supervision, post-hoc tests revealed that 'Instrumentals' report lower openness and control, as well as lower supervision in both nighttime and digital leisure activities, compared to 'Digital Actives' (see Table 4).

In terms of parental competencies, parents in the 'Instrumentals' class report lower organization of the family educational environment compared to 'Digital Actives,' although it is higher than that of 'Digital Passives.' Additionally, 'Instrumentals' parents seek more formal support compared to those in the 'Digital Passives' class. However, they

Factor	Class 1 (Instrumentals)	Class 2 (Digital Passive)	Class 3 (Digital Active)	F	Post-hoc	d Cohen
OFEE	5.16 (.65) 494	5.05 (.74) 377	5.33 (.54) 329	16.50***	(Class 3> Class 1***) (Class 3> Class 2***) (Class 1> Class 2**)	.42
SFIS	3.50 (1.23) 494	3.26 (1.28) 377	3.65 (1.27) 329	8.98***	(Class 1> Class 2**) (Class 3> Class 2***)	.31
EDUCOMP	4.50 (.99) 494	4.45 (1.08) 377	4.63 (1.07) 329	2.73	-	-
PDR	4.93 (.61) 494	4.84 (.81) 377	5.08 (.59) 329	11.01***	(Class 3> Class 1**) (Class 3> Class 2***)	.35

**Table 5.** ANOVA of the factors of the scale of perception of parental figures about their own parental competencies based on the identified classes.

*Note*<sup>1</sup>. *p*-value: \*\*\* $p \le .001$ ; \*\* $p \le .01$ ; \* $p \le .05$ 

*Note*<sup>2</sup>. Organization of the Family Educational Environment (OFEE), Seeking Formal and Informal Support (SFIS), Educational Competence (EDUCOMP), Personal Development and Resilience (PDR)

Note<sup>3</sup>. The factors that exhibited significant differences have been highlighted in bold

show lower personal development and resilience compared to parents in the 'Digital Actives' class (see Table 5).

# Class 2: 'Digital passives'

Most of the parents in the 'Digital Passives' class are between 45 and 49 years old (37.3%) and have a high level of education (37.7%) (see Table 3).

Regarding parental supervision, post-hoc tests showed that participants in the 'Digital Passives' class report lower openness and control, as well as lower supervision in night-time leisure activities, compared to 'Digital Actives' (see Table 4).

In terms of parental competencies, post-hoc tests indicated that parents in the 'Digital Passives' class report lower organization of the family educational environment, as well as seeking both formal and informal support and showing lower personal development and resilience, compared to parents in the 'Digital Actives' class (see Table 5).

#### Class 3: 'Digital actives'

Most of the parents in the 'Digital Actives' class are young, aged between 28 and 44 years (38.6%) ( $\chi^{^{2}(4)} = 9.85$ ;  $p = 0.043^{*}$ ), with a small effect size (d = .18), and have a high level of education (46.5%) (see Table 3).

According to the results of the post-hoc tests, it is observed that parents in the 'Digital Actives' class consistently report higher levels of supervision and parental competencies compared to those in the other classes (see Tables 4 and 5).

# Discussion

To contextualize the discussion of the findings, it is important to recall the research questions that guided this study. First, the study explored different patterns of parental involvement in ICT use, their perceptions of its recreational purposes, and their level of engagement in digital activities both individually and with their adolescent children (RQ1). Second, it examined variations in parental supervision and parenting skills across the identified groups and the impact of ICT use on family life and child-rearing (RQ2). Based on the literature review, two hypotheses were proposed: younger parents with higher levels of education tend to adopt a more playful approach to ICT use, emphasizing its recreational aspects over its instrumental functions (H1); and this same group of parents is more likely to engage in active supervision and demonstrate more developed parenting skills in managing their children's ICT use (H2).

Three parent profiles were identified based on their perceptions of digital leisure, ICT use, and participation in digital activities with their teenage children and individually.

The largest group, 'Instrumentals' (39.61%), regularly uses ICT in daily life, maintains a balanced view of digital leisure, and participates in such activities, though less intensely than 'Digital Actives.' 'Digital Passives' have minimal ICT interaction, a negative or limited perception of digital leisure, and minimal participation in these activities. They also exhibit significantly lower scores in supervising and guiding their children's digital activities. In contrast, 'Digital Actives' actively engage in digital activities, hold a positive perception of digital leisure, and participate both individually and with their children. They report strong skills in supervising and guiding their children's digital activities.

The scientific literature identifies three groups of technology users across various fields, emphasizing their impact on family digital relationships, as evidenced by Ben-Sasson et al. (2020) in a study of parental figures in Israel and by Ragnedda et al. (2024) in England.

Regarding the three classes identified in our study, a similarity can be observed with a prior study by Walker et al. (2011), which also identified three main subclasses of parents in the United States using ICT with their adolescent children (average age: 14.41 years). Notably, the characteristics of the 'Middle of the Road' subclass closely resemble those of the 'Instrumentals' class identified in our study, particularly in terms of moderate ICT use and balanced attitudes toward technology. However, our analysis emphasizes that, beyond frequency of use or the types of devices employed, 'Instrumentals' consciously integrate ICT into family leisure activities. This suggests an additional role for ICT as a tool for fostering positive interactions, an aspect that was not explored in depth by Walker et al. (2011).

In addition, Wu et al. (2020) identified three distinct profiles of parents with children aged 12–14 in the United States based on their ICT use. The most prevalent profile in this research was 'Compliant Users,' characterized by a basic level across all variables related to ICT competence. These parents use ICT occasionally, maintain a neutral attitude toward digital tools, and exhibit moderate self-efficacy in their use. Additionally, they actively support their children in ICT-related matters and occasionally establish rules to regulate ICT use. This profile shows a strong resemblance to the 'Instrumentals' class identified in our study.

However, while previous research provides a detailed understanding of how families interact with technology – offering valuable insights into the latent classes identified in our study, particularly the 'Instrumentals' class – it is important to note that studies such as those by Walker et al. (2011) and Wu et al. (2020) have examined technology use in a broader context rather than focusing specifically on digital leisure. Despite this difference, the latent classes identified in our study align with those found in

other countries, suggesting that these patterns of parental engagement with technology may be consistent across different contexts.

Wu et al. (2020) emphasize the need for further research on individual variations in parental attitudes and behaviors toward ICTs, beyond demographic differences. Perceptions of digital leisure vary significantly due to individual characteristics (Lanigan, 2009). For example, Baker et al. (2017) highlights the influence of variables such as gender, age, and education. To advance this field, we analyzed the sociodemographic profiles of parents in each class using contingency tables and chi-square tests.

The results reveal that although the 'Active Digitals' constitute the smallest class in the sample (28.51%), they warrant special attention due to their unique characteristics. Their significance lies in their advanced tools and knowledge, which enhance their digital experience and position them to play a more effective parenting role in the digital age. The data indicate that these parents are predominantly young mothers with a diploma or university degree, supporting H1 and H2.

Firstly, regarding parental gender, our findings indicate that mothers are more likely to be classified as 'Active Digitals,' possibly due to their higher representation in our sample. Although we did not find statistically significant differences based on gender – consistent with Nikken's (2017) research in the Netherlands – other studies suggest that mothers often take a more active role in their children's digital activities (Livingstone et al., 2018). This suggests that, while our research did not identify significant gender differences, existing literature supports the notion that mothers are generally more engaged in digital parenting, which may explain their greater presence in the 'Active Digitals' class.

Secondly, regarding the educational level of parents, the literature indicates that those with higher education tend to use the Internet more frequently and have a stronger perception of their self-efficacy in digital parenting (Baker et al., 2017; Yaman et al., 2022).

Thirdly, both our study and that of Yaman et al. (2022) agree that perceptions of selfefficacy in digital parenting vary by age, possibly linked to the theorized generational digital divide (Hargittai, 2021). Analysis of participants in the 'Active Digitals' and 'Passive Digitals' classes suggests that age plays a crucial role in their classification, supporting Walker et al.'s (2011) notion that younger parents tend to be 'Active users' of the Internet, while older parents are more likely to be 'limited users.'

Another factor that could explain the differences in classifications is the level of parental involvement in supervising their children, particularly among those who exhibit a higher level of 'Openness' related to active mediation. These parents are known for their willingness to engage in dialogue and communicate with their children, supporting them in exploring new experiences, including digital activities. This trait of active mediation tends to make parents more curious, imaginative, and open to new experiences. They frequently engage in discussions with their children, encouraging them to experiment with new technologies. As a result, they are more likely to embrace ICT and explore its uses, classifying them as 'Instrumentals' rather than 'Digital Passives.' In contrast, parents who are less involved in active mediation may lack this trait, resulting in greater reluctance to adopt and engage with new technologies.

This difference could be attributed to several factors, one of the most significant being the level of digital competence acquired over the course of life. Younger parents, having grown up in a digital era and being more familiar with technology from an early age, are

likely to have developed more advanced digital skills compared to older parents. As a result, their greater confidence in digital parenting may be linked to higher proficiency and familiarity with technological tools, which influences their perceptions of self-efficacy in this area. In contrast, older parents may face a steeper learning curve or feel less confident when using new technologies, which could contribute to lower perceptions of self-efficacy in digital parenting (Fidan & Olur, 2023; Pons-Salvador et al., 2022).

Studies, such as those by Chiu-Ju (2019), identified four typologies of internet users: 'Leisure users,' 'Sporadic users,' 'Instrumental users,' and 'Anxious users.' Our 'Active Digitals' class shares similarities with the 'Leisure users' typology, which is characterized by women with high educational levels, internet experience, a positive perception of technology, and greater participation in online social activities. Additionally, Yaman et al. (2022) analyzed perceptions of self-efficacy in digital parenting and identified three classes. The 'Experienced Well-Educated Class' aligns with the characteristics of our 'Active Digitals' class, where younger mothers with higher education exhibit a strong perception of self-efficacy in digital parenting.

However, it is important to acknowledge the limitations of this study. The use of selfreport measures and the exclusive perspective of one parental figure may introduce biases and limit the generalizability of the results. Future research should address the perspectives of both parental figures and consider the opinions of adolescent children to gain a more comprehensive understanding of ICT interaction in family life. Moreover, expanding the range of variables for analysis, including parental digital competencies, is recommended to obtain more accurate latent models.

# Conclusion

In conclusion, our findings underscore the need for targeted interventions to encourage active parental involvement in digital parenting, particularly among 'Digital Passives.' While age is a key factor in digital leisure participation, other sociodemographic factors, such as education and prior technological experience, must also be considered.

Our results suggest that interventions should address the needs of parents with limited ICT skills, regardless of age. Collaborative digital skills training programs, developed with government, community, and educational organizations, could build confidence and digital competence, enabling parents to better support their children in the digital world.

Gender differences were not found to significantly impact active digital parenting, suggesting interventions should focus on individual digital competence rather than gender. Additionally, future research should explore monitoring children's ICT use at home, establishing rules, and ensuring a secure digital environment.

In summary, effective interventions aimed at enhancing parental digital skills, especially for 'Digital Passives,' require collaboration between governmental, community, and educational institutions, ultimately boosting parental self-efficacy and promoting active monitoring of children's ICT use.

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# **Ethics statement**

Communication was established with various educational entities and Parent-Teacher Associations in Spain to recruit parents of children aged 11–17 for the study. Participants completed a detailed questionnaire, adhering to the ethical standards of the Declaration of Helsinki (Carlson et al., 2004). This research is part of a doctoral thesis titled 'Digital Leisure as a Space for Family Development.' Although, at the time of approval, the doctoral program did not have a formal procedure for obtaining an ethics committee certificate from the first author's institution, the study complies with ethical guidelines and has the support of the research team. Before data collection, participants were informed about the scope of the research and provided their informed consent. The questionnaire allowed for voluntary withdrawal at any time, and no personal data were collected, ensuring transparent, voluntary, and anonymous participation.

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