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Profiles of ICT use in adolescents: differences and similarities in academic performance, stress and parental mediation

Profiles of ICT Use in Adolescents: Differences and Similarities in Terms of Academic Performance, Stress and Parental Mediation

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Abstract

Maladaptive ICT use in adolescents is a growing socio-educational problem. It is related to various difficulties in multiple life contexts, requiring a deeper analysis to identify the influence of other variables in said situation. To this end, the following objectives were formulated: 1) To identify profiles of ICT use; 2) To analyse differences in the frequency of use of mobile phones, video game consoles and other devices between profiles; 3) To analyse differences in online parental mediation between profiles; 4) To analyse differences in online technological stress between profiles; 5) To analyse differences in academic performance between profiles. A non-experimental, cross-sectional, correlational, non-experimental research design was carried out.

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The sample consisted of 1,101 adolescents (47.8% boys). Statistical techniques of association, group difference and cluster analysis were used as a multivariate approach. With regard to the results, a three-cluster solution was found: adapted use, signs of problematic use and problematic use of ICT. In the problematic use cluster, a higher frequency of use of smartphones, video games and other devices was detected, as well as greater technological stress. The lowest prevalence of parental mediation, as well as the worst academic performance were found in the problematic use cluster. The design of preventive and corrective actions that foster the development of educational, social and technological competences is considered extremely necessary for adolescents to make appropriate use of ICTs.

Keywords: adolescent; ICT; stress; academic achievement.

Resumen

El uso desadaptativo de las TIC en adolescentes es un problema socioeducativo creciente. Está relacionado con diversas dificultades en múltiples contextos de la vida, requiriéndose de un análisis más profundo para identificar la influencia de otras variables en tal situación. Para ello, se formularon los siguientes objetivos: 1) Identificar perfiles de uso de las TIC; 2) Analizar las diferencias en la frecuencia de uso de teléfonos móviles, videoconsolas y otros dispositivos entre los perfiles; 3) Analizar las diferencias en la mediación parental en línea entre los perfiles; 4) Analizar las diferencias en el estrés tecnológico en línea entre los perfiles; 5) Analizar las diferencias en el rendimiento académico entre los perfiles. Se ejecutó una investigación con diseño no experimental, transversal, con alcance correlacional. La muestra estuvo conformada por 1.101 adolescentes (47,8% varones). Se implementaron técnicas estadísticas de asociación, de diferencia de grupos y el análisis de conglomerado como enfoque multivariante. Respecto a los resultados, se encontró una solución de tres clústeres: uso adaptado, indicios de uso problemático y uso problemático de las TIC. En el conglomerado de uso problemático se detectó una mayor frecuencia de uso de smartphone, videojuegos y otros dispositivos, además de mayor estrés tecnológico. La menor prevalencia de mediación parental, así como el peor rendimiento académico se encontraron en el clúster de uso problemático. Se considera extremadamente necesario el diseño de acciones preventivas y correctivas que fomenten el desarrollo de competencias educativas, sociales y tecnológicas para que los menores hagan un uso adecuado de las TIC.

Palabras clave: adolescente; TIC; estrés; rendimiento académico.

Introduction

The widespread use of information and communication technologies (hereafter ICTs) in the daily lives of minors has given rise to disparate discourses. Some point to potential advantages (Pardo et al., 2019 and Soriano and Jiménez, 2022), others point to the dangers and risks implied by continued and extended use (Anderson et al., 2016; Andrade et al., 2021).

When the use of these technologies starts to cause some interference in the different areas of adolescents' lives, it is referred to as problematic ICT use. This has been defined as a series of actions associated with the abandonment of educational, family or social obligations in order to spend more time online. It also includes a preference for virtual social relationships over physical ones, showing significant restlessness if calls or text messages are not received, experiencing sleep disturbances when using a smartphone, as well as irritation and aggression when experiences related to the use of electronic devices connected to the network are interrupted (Díaz et al., 2020).

In this sense, most of the adolescent population uses digital media mainly within the family environment, where parents play a decisive role in moderating the use of digital media (Rubio et al., 2021). In addition, several authors highlight the family as an indispensable figure in the prevention of inappropriate ICT use (Tartakowsky et al., 2023; Villanueva and Serrano, 2019). The way in which adults exercise this role through different behavioural strategies has been referred to as parental mediation and has been conceptualised as a series of efforts by families to maximise the opportunities and minimise the risks of their children's Internet use (Collier et al., 2016; Díaz et al., 2020; Nielsen et al., 2019). In addition, concerns such as access to inappropriate content, excessive exposure to screens and contact with strangers have been further explored (Dedkova and Mýlek, 2023).

In this regard, more than 95% of parents claim to require training on the use of ICT and online safety (Gairín and Mercader, 2018). Thus, in the research carried out by Bartau et al. (2018), some of the parental mediation strategies were identified, among which supervision and support, the spatial-temporal organisation of limits and the establishment of rules stand out. However, even though the use of ICTs allows adults to have some control and supervision over minors (Santana et al., 2019), Gairín and Mercader (2018) showed that 65% of minors aged between 15 and 17 years reported that they had no supervision regarding the use or time spent using online technological resources. Furthermore, Díaz et al. (2020) reported that 56% of minors were not supervised by their primary caregivers while surfing the Internet and that 4 out of 10 were not supervised about the time they spent playing video games.

On the other hand, adolescence is a stage that is particularly vulnerable to risk-taking, even more so when ICTs are used without prior training (Bartau et al., 2018). In this sense, the existence of certain disorders of a physical, socio-educational and psychological nature associated with problematic ICT use has been confirmed by scientific evidence, as Rubio and Trillo (2024) point out. Some of these disorders are fear of missing out (FOMO) (Oberst et al., 2017; Syahniar et al., 2018), nomophobia (Bragazzi and Del Puente, 2014), anxiety states (Eilert et al., 2022), impoverished social relationships and alterations in behaviour (García et al., 2014), digital obesity (Díaz and Aladro, 2016) and other pathologies such as depression (Lozano and Cortes, 2020), anxiety (Santana et al., 2019), insomnia (Jaradat et al., 2019) and technological stress (Díaz et al., 2020; Díaz et al., 2023;Villanueva and Serrano, 2020).

Another worrying aspect is related to the decline in school performance. In this line, several studies have identified that the incessant growth in the use of mobile devices connected to the Internet has led to a neglect of students' academic

responsibilities, which has had a negative impact on grades (Anderson et al., 2016; Díaz et al., 2021). In contrast, Soriano and Jiménez (2022) noted that a rational use of such technologies is positively associated with improvements in academic performance in certain subjects. However, other authors highlighted that students with poorer academic results had higher ICT consumption (Díaz et al., 2021; Muñoz et al., 2023; Rodríguez et al., 2018). Along the same lines, Gómez et al. (2020) detected video game consoles as the main cause of demotivation towards academic tasks.

There are currently several studies that have established ICT usage profiles (Pontes and Macur, 2021; Machimbarrena et al., 2019). However, to the best of our knowledge, none of the research has been related to sociodemographic variables such as: frequency of use, parental online mediation, technological stress and academic performance. Therefore, the following objectives are proposed: 1) To establish ICT usage profiles; 2) To analyse the existing differences in the frequency of use of mobile phones, video game consoles and other devices among the different ICT usage profiles; 3) To analyse the existing differences in online parental mediation among the different ICT usage profiles; 4) To analyse the existing differences in online technological stress among the different ICT usage profiles; 5) To analyse the existing differences in academic performance among the different ICT usage profiles.

Method

Type of research

This is an empirical-quantitative study, with a non-experimental survey design, a descriptive-correlational scope and a cross-sectional approach.

Participants

The sample consisted of 1101 adolescent subjects. A total of 52.2% were female and 47.8% male. They were enrolled in different levels of compulsory secondary education (ESO): 32.4% in the first year, 22.3% in the second year, 24.3% in the third year and 21% in the fourth year. The ages of the individuals ranged from 11 to 18 years old with the following distribution: 11-12 years old (17.7%), 13-14 years old (46.1%) and 15-18 years old (36.2%). The sample was representative of the population with a confidence level of 95% and a margin of error of 5%. It was obtained through a probabilistic sampling procedure, in which 10 public secondary schools were selected from 9 of the counties that form part of the Autonomous Community of the Region of Murcia (CARM).

In addition, census information on the number of students enrolled in Compulsory Secondary Education (ESO) in the academic year prior to the execution of the survey was requested from the Regional Ministry of Education of the Autonomous Community in question. In that period, 70910 students were enrolled in ESO.

On the other hand, the sample and analysis units had to meet the following inclusion criteria: they had to be enrolled in the selected schools and in one of the four ESO grades.

Instruments

We used the instrument called the Unadaptive Use of ICT (Ud-TIC) by Díaz et al. (2022). This artefact is made up of two distinct parts.

The first part is related to socio-demographic variables and consists of 20 items classified into the following dimensions: (a) personal data (gender, age, region and grade); (b) attitude towards study-related issues and interference caused by ICT in studying (3 items with a 5-point scale); (c) family supervision regarding the use of social networks and Internet (1 dichotomous item) and adult persons in charge of such supervision (1 dichotomous item); d) time of access to ICT (1 polytomous item); e) technological stress (1 dichotomous item); f) frequency of use of mobile phones, video games and other Internet-connected devices (3 items with a 5-point scale).

The second part is related to variables concerning problematic experiences with the use of the Internet, video games and Smartphone (16 items with a 5-point scale).

The internal consistency reliability of the instrument was adequate (α = .841).

Procedure

Each parent was given an informed consent form, in which they were asked for prior authorisation if they wished their minor children to participate in the research. The students were given an informed consent form on the voluntary nature of their participation and anonymity. Both documents were validated beforehand by an ethics committee of a higher education institution. The artefact was implemented on paper and lasted between 12 and 20 minutes. The data collection was carried out in the presence of the group tutor, who had received a short training with instructions on how to apply the artefact in the classroom during the tutoring sessions.

Data analysis

First, a descriptive analysis was carried out (mean, standard deviation). The Kolmogorov-Smirnov (K-S) test was then used, the results of which showed evidence of non-normality in the distribution of the data ($p \leq .05$), making it necessary to use non-parametric tests: Mann-Whitney U (two groups) and Kruskal Wallis H (more than two groups). As for the establishment of relationships between variables, Pearson's Chi-square and contingency tables were used to determine the existence of significant associations. Cramer's V made it possible to assess the magnitude of statistically significant relationships. On the other hand, a hierarchical cluster analysis was carried out, specifically with Ward's method. This facilitated the distinction of different adolescent profiles according to the characteristics analysed and the scores obtained on these characteristics.

Results

Objective 1: ICT usage profiles

Based on the data for the dimension of problematic ICT use, a satisfactory solution was found for three groups of learners with different profiles (Figure 1).

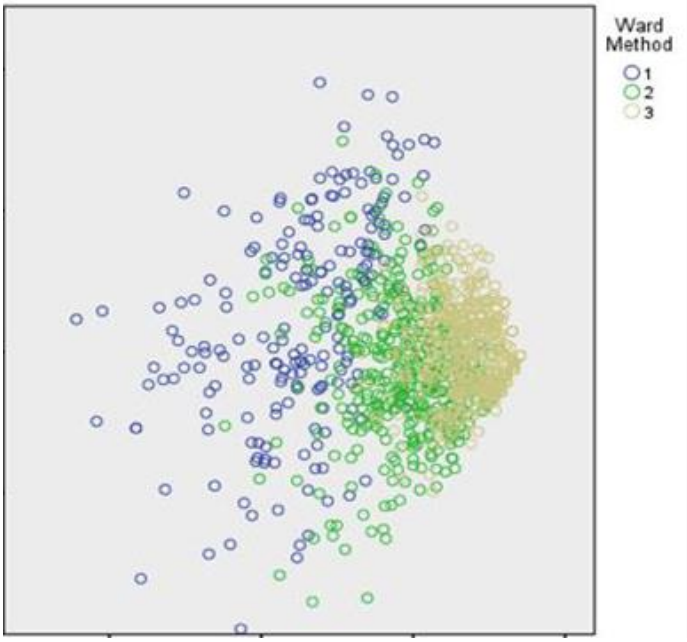

Figure 1. Identified ICT usage profiles

Cluster 3, which included 648 subjects (58.84%), was called "adapted ICT use".

Cluster 2, consisting of 335 subjects (30.42%), was labelled "signs of problematic ICT use". Students in this cluster were characterised by average levels of experiences of maladaptive use of Internet-connected mobile devices.

Cluster 1, or "problematic ICT use", consisted of 10.72% of the sample (n=118). These students showed a high level of experiences related to maladaptive ICT use, such as: (a) decreased academic performance due to the use of Smartphone, Internet or video games; (b) neglect of obligations due to spending more time with video games or surfing the Internet; (c) staying up late at night to stay with the console or mobile phone; (d) restlessness when not receiving calls or messages; (e) greater ease in interacting online than face-to-face or saying things in virtual mode than in person; (f) irritation or anger if someone bothers them while using the console or Smartphone; (g) need to spend more time on mobile devices connected to the Internet.

Regarding the gender distribution in the different profiles, it is worth noting that the presence of boys was higher than that of girls in the problematic use cluster (58.9% boys). Gender homogeneity was found in the cluster of indications of problematic use (49.6% boys) and a higher presence of girls in the cluster of adapted use (41.9% boys) (17.295; (2) p<.001; V=.001).

With respect to grade, a greater presence of students in the 2nd and 3rd years of compulsory secondary education (hereafter ESO) was identified in the problematic use cluster (X=16.628 (6); p=.011; V= .011).

Objective 2: use of game consoles, smartphones and other devices according to ICT usage profile.

In response to objective two, firstly, the frequency of video game console use was analysed. In this regard, we found a higher prevalence of young people who play every day in the problematic use cluster and a higher prevalence of young people who play only on weekends or rarely in the adapted use cluster. Statistically significant differences were identified in the distribution of clusters according to the frequency of console use (X=52, 001 (8); p<.001; V<.001). Regarding the mobile device, a higher prevalence of users who use it all the time was found in the cluster with indications of problematic use (41%), followed by the cluster with problematic use (30.5%). However, the group of young people who use it frequently, or only when they need it, was mostly positioned in the adapted use cluster, so the differences were statistically significant (x=99.833 (8); p<.001; V<.001). Thirdly, with respect to the frequency of use of other Internet-connected devices, a similar trend to that of the mobile phone was found. Thus, the prevalence of young people using other devices at all times is higher in the cluster with signs of problematic use and in the cluster with problematic use. However, the prevalence of young people using these devices to a lesser extent (frequently and only when needed) is significantly higher in the adapted use cluster (X =.53.275 (8); p<.001; V<.001) (table 1).

Objective 3: Technological stress according to ICT usage profile

Another of the variables analysed was technological stress. In this sense, the percentage of technologically stressed students is significantly higher in the problematic use cluster. Whereas, in the adapted use cluster, students who are not technologically stressed predominate. Statistically significant differences were found between technological stress and the three clusters (X=86.935 (2); p=.001; V<.001) (table 1).

Objective 4: online parental mediation according to ICT use profile

To respond to objective 4, three types of mediation were measured: mediation of Internet and social network use, mediation of time spent playing video games, and mediation of the type of video games. In this regard, it was found that, regarding the mediation of Internet and social network use, the presence of unsupervised young people is significantly higher in the clusters of signs of problematic use and problematic use, while of the group of young people who do have family supervision, more than half were included in the cluster of adapted use, so the differences were statistically significant (x=16.194 (2); p<.001; V<.001).

Regarding the supervision of the type of video games, a greater presence of unsupervised young people was found in the problematic use cluster, so that statistically significant differences were also found on this point (x2= (4) 9.814; p<.05; V<.05).

Additionally, in terms of monitoring time spent playing video games, no statistically significant differences were found between clusters (X= (2) 3.585; p=.145; V=.145) (table 1).

Objective 5: academic performance according to ICT use profile

In response to objective five, the instrumental subjects of language, mathematics, English and social studies were analysed.

Thus, firstly, with respect to the language subject, a significantly higher number of failures were found in the problematic use cluster (32%) compared to 25.3% in the cluster of indications of problematic use and 18.3% in the adapted use cluster. Additionally, a lower number of outstanding students were found in the problematic use cluster (5.6%) and a higher percentage of outstanding students in the adapted use cluster (17.7%) and indications of problematic use (9.6%), so that statistically significant differences were identified in terms of the language grade and the three clusters (x2=(6) 40.637; p<.001; V<.001). With respect to the subject of mathematics, a similar trend was detected, as there was a significantly higher percentage of failures in the problematic use cluster (38.6%) compared to 24.8% in the cluster of indications of problematic use and 18.5% in the adapted use cluster. In addition, we found a lower number of outstanding grades in this subject in the problematic use cluster (5.1%) and a higher percentage of outstanding grades in the adapted use cluster (20.5%) and indications of problematic use (14.5%), with statistically significant differences in terms of the language grade and the three clusters (x2=(6) 50.259; p<.001; V<.001).

For social studies, a similar bias was found, with a significantly higher percentage of failures in the problematic use cluster (34%) compared to 23.6% in the cluster of indications of problematic use and 21% in the adapted use cluster. In addition, a lower number of A's in this subject was identified in the problematic use cluster (10.2%) and a higher percentage of A's in the adapted use cluster (20%) and indications of problematic use (15.5%), and statistically significant differences were found in terms of the language mark and the three clusters (x2= (6) 22.035; p<.001; V<.001).

Finally, with respect to the subject English, a significantly higher percentage of failures was found in the problematic use cluster (34.5%) compared to 25.3% in the cluster of indications of problematic use and 16.3% in the adapted use cluster. In addition, a lower number of "A" grades in this subject were found in the problematic use cluster (9.1%) and a higher percentage of "A" grades in the adapted use cluster (21.3%) and indications of problematic use (13.3%), with statistically significant differences in the English grade and the three clusters ($x2= (6) 43.566$; $p<.001$; $V<.001$) (table 1).

Table 1

Characteristics and differences in the identified clusters of students according to ICT use and their relationship with other variables of interest.

	C1: problematic use			**C2: indications of problematic use**			**C3: adapted use**			**Value**	**gl**	***p***	**V**
Frequency of use	At all times	Often	Little	At all times	Often	Little	At all times	Often	Little				
Console	13,7%	37%	45,3%	7,1%	32,7%	60,2%	2,6%	32,2%	65,2%	52,001	8	<.001	<.001
Mobile	47,2%	45,7%	7,1%	30,7%	58,5%	10,8%	17,5%	63,6%	18,9%	99,833	8	<.001	<.001
Other	24,9%	50,8%	24,2%	14%	52,6%	33,4%	8,2%	51,1%	40,6%	53,275	8	<.001	<.001
Performance academic	Suspense	Good-good	Outstanding	Suspense	Good-good	Outstanding	Suspense	Good-good	Outstanding				
Language	32%	62,4%	5,6%	25,3%	65,1%	9,6%	18,3%	64%	17,7%	40,63	6	<.001	<.001
Mathematics	38,6%	56,3%	5,1%	24,8%	60,7%	14,5%	18,5%	62,1%	20,5%	50,25	6	<.001	<.001
English	34,5%	56,4%	9,1%	25,3 %	61,4%	13,3%	16,3%	62,3%	21,3%	43,56	6	<.001	<.001
Science	34%	55,8%	10,2%	23,6%	61%	15,5%	21%	59,1%	20%	22,03	6	<.001	<.001
Stress and mediation	Yes		No	Yes		No	Yes		No				
Technological stress	53,8%		46,2%	35,9%		64,1%	18,7%		81,3%	86,93	2	<.001	<.001
Mediation RRSS	34%		66%	40,8%		58,2%	49,7%		50,3%	16,19	2	<.001	<.001

Mediation video games time	50,85	49,2%	59,2%	40,8%	56,3%	43,7%	3,858	2	<.001	<.001
Video game type mediation	36,5%	62,4%	42,8%	56,8%	46,7	53,3%	9,814	4	<.05	<.05

Note: C=cluster; gl=degrees of freedom; P=p-value; Cramer's V=V; p=p-value of chi-square.

Discussion and Conclusions

The problematic use of ICT among adolescents is one of the educational and social challenges that most concerns parents, teachers and the scientific community. In this study, students were classified into three profiles according to the relationship they have with electronic devices connected to the Internet and the interference this causes them on a personal, academic, psychological and social level. In addition, the differences between the three clusters were analysed in terms of the socio-demographic variables of frequency of use, parental mediation, technological stress and academic performance.

Thus, the solution of the clusters yielded a cluster called "Problematic use of ICT" (n=118), corresponding to 10.72% of the student body and a second cluster called "Indications of problematic ICT use" (n=335), corresponding to 30.43% of the student body and characterised by showing medium levels of experiences related to the maladaptive use of ICT. The third cluster, coded as "Adapted use of ICT" (n=648), corresponded to 58.84% of the student body and was identified as the group of students showing adequate use of ICT. These findings differ from those found by Machimbarrena et al. (2019), who found a solution of 4 profiles (non-problematic use, mood regulator, problematic Internet use and severe problematic use), as well as those found in the study by Pontes and Macur (2021), who found a solution of two profiles (low problematic Internet use and high problematic Internet use). This discrepancy may be due to the different measurement instruments and statistical analyses used in each study. In terms of gender, in line with the findings of review studies (Anderson et al., 2016; Vigna et al., 2017), the presence of boys was much higher in the problematic use cluster and a higher presence of girls was found in the adapted use cluster. These results are contrary to those found in the study by Machimbarrena et al. (2019), who found a higher prevalence of girls in both clusters. One possible explanation for our results is that, although girls are higher Internet users, boys use the Internet for less adapted purposes, such as playing video games or watching pornography (Andrade et al., 2021), which have been linked throughout the literature to problematic use (Mestre et al., 2024; Guglielmucci et al., 2019).

With respect to grade, a greater presence of students in the 2nd and 3rd years of ESO (13-15 years old) was found in the problematic use cluster, and of students in the 1st year of ESO in the adapted use cluster. These results partially coincide with those found by Machimbarrena et al. (2019), who found that there is a higher number of 16-17 year-olds in the three profiles related to dysfunctional use and of 11-13 year-olds in the profile of non-problematic use. One possible explanation for this is that adults exercise greater online parental mediation in the first year of ESO, which progressively decreases as the school year increases (Díaz et al., 2020).

On the other hand, the analysis of the data shows that with regard to the frequency of use of electronic devices, those adolescents who are in the profile of problematic use are those who make greater use of mobile devices, video game consoles and other devices with Internet connection such as tablets or computers, a finding common in cross-sectional studies (Koyuncu et al., 2014; Vigna et al., 2017), in which it was observed that the frequency of Internet connection and the number of hours spent online increase the

risk of problematic use of the Internet. In this sense, there is no consensus in the literature on whether time spent on ICT is a risk in itself. However, it is important to analyse frequency of use because, on the one hand, it can explain part of the variance in exposure to risks and benefits, and on the other hand, it is one of the main variables measured in digital media studies (Lanca and Saw, 2020; Tang et al., 2021).

Additionally, another variable of vital interest is online parental mediation. In this line, the results show that online parental mediation is significantly more prevalent among pupils in the adapted ICT use cluster. These results cannot be discussed with other studies due to the lack of similar research. However, they may bear some similarity to the findings of Pontes and Marcus (2021), who analysed the parental relationship and, although with a different approach, found no differences between the clusters. This finding sheds light on the effectiveness of online parental mediation as a protective factor against problematic ICT use, which is in line with the findings of review studies (Nielsen et al., 2019), and reinforces the need to promote the training of parents in parental mediation strategies, thus meeting the demand detected by Gairín and Mercader (2018), in which more than 95% of parents reported needing training on ICT use and online safety.

In addition, aspects of a more psychological nature were analysed. Specifically, the concept of technological stress. In this sense, the results reveal that the most technologically stressed young people were in the problematic use cluster. Therefore, it can be concluded that problematic ICT use is associated with problems of technological stress. These results are in line with other studies associating high frequency of ICT use with technological stress (Díaz et al., 2020; Díaz et al., 2023; Villanueva and Serrano, 2019;) and problematic ICT use with stress (Odacı and Çikrıkci, 2017; Andrade et al., 2021). A possible explanation for this fact may be related to FoMO, a phenomenon related to the need to check one's phone for new messages or updates. In this sense, the worry of being left out and the fear of missing out on what is happening on the Internet in general or on social networks in particular can cause stress in children (Li et al., 2020).

Finally, in an attempt to address one of the main concerns of parents and the educational community, we analysed the differences in academic performance between the different profiles of ICT use. Thus, the results in this respect follow the same pattern for the four instrumental subjects analysed: language, mathematics, English and social sciences. A higher prevalence of outstanding students was found in the adapted use cluster and a higher prevalence of failures in the problematic ICT use cluster. Therefore, it is evident that pupils with a profile of problematic use are those with the worst academic grades, followed by pupils with a profile of signs of problematic use. These results are supported by the findings of previous studies, which report that the incessant use of mobile devices connected to the Internet has led to a neglect of students' academic responsibilities (Anderson et al., 2016; Díaz et al., 2021) and that those adolescents with poorer academic results had higher ICT consumption (Díaz et al., 2021; Muñoz et al., 2023; Rodríguez et al., 2018). Along the same lines, Gómez et al. (2020) pointed to video game consoles as the main cause of demotivation towards academic tasks in their study.

This study is not without limitations. 1) The instruments used are self-reported, and are therefore subject to possible biases and social desirability; 2) Some of the socio-demographic variables such as parental mediation or technological stress are dichotomous. In future research it would be advisable to use additional measures, qualitative tools and consult other sources of information such as parents or teachers to triangulate the information.

The present research has several practical implications. The design of preventive actions that instruct children in the appropriate use of ICTs is considered to be of utmost necessity. However, in order for these actions to be effective, it is essential to carry them out before children start using ICT, i.e. at the primary school stage. In addition, it would be worth considering the need to intervene, from an approach based on secondary prevention, with children who are in the profile of signs of problematic use, who, although they have already begun to suffer psychological, social and educational interference, are not yet as serious as children in the cluster of problematic use. In the same way, it seems necessary, firstly, to transmit to adults the importance of their role as mediators in this network and the evidence behind their function. Secondly, it seems advisable to train adults in online parental mediation strategies since, as has been found, it is related to the adapted use of ICTs by adolescents.

Therefore, we conclude by pointing out that we must work towards a comprehensive training that includes children, families and the entire educational community. As for society, for its part, massive preventive actions must begin to be promoted to warn of the problematic use of ICTs in adolescence and of the serious consequences that this can have on minors without supervision or prior training. In this sense, it should be remembered that digital competence implies the safe, healthy and responsible use of ICT to participate in society, interact, work and learn. However, the use of digital devices connected to the Internet is not risk-free (Rubio et al. 2024; Rubio et al., 2024b).

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