






# Childhood use of mobile devices: Influence of mothers' socio-educational level

## Uso infantil de dispositivos móviles: Influencia del nivel socioeducativo materno

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### ABSTRACT

The presence and variety of mobile devices in Spanish homes, regardless of the social and economic context, has been widespread for years. Several studies focus on parental mediation in children's consumption of smart devices, however, there is a lack of scientific evidence about how the educational level and the professional profile of parents affect children's digital media consumption. This study analyzes the influence of the socio-educational level of families on the consumption of digital screens. The study deepens the understanding on the educational level of parents, as well as their professional category. A quantitative methodology was applied on a sample of 792 primary school children, between 5 and 9 years of age, in three Spanish cities. The consumption of television, smartphones, tablets, computers and videogames was analyzed. Results indicate that, the lower the level of education and professional category of the mother, the greater the consumption of content through smart devices by children. The study demonstrates, therefore, the importance of considering the educational and professional levels of mothers and fathers for a better understanding of the consumption of digital screens and, at the same time, as an opportunity for designing family strategies that encourage critical thinking and digital media education.

### RESUMEN

La presencia y la variedad de dispositivos móviles en los hogares españoles, con independencia del contexto social y económico, es una realidad normalizada desde hace años. Diversos estudios se centran en la mediación parental en el consumo infantil de pantallas inteligentes, aunque existe una falta de evidencia científica sobre cómo el nivel de formación y el perfil profesional de las madres y de los padres inciden en las formas de consumo mediático digital de los menores. Este estudio analiza la influencia del nivel socioeducativo de las familias en el consumo de pantallas inteligentes. La investigación profundiza en el nivel de estudios de madres y padres, así como en su categoría profesional. Para ello se utiliza una metodología cuantitativa a partir de una muestra de 792 niños y niñas de primaria, de entre 5 y 9 años, de tres ciudades españolas. Se analiza el consumo de televisión, teléfonos móviles, tabletas, ordenadores y videojuegos. Los resultados señalan que, a menor nivel de estudios y menor categoría profesional de la madre, mayor es el consumo de contenidos a través de dispositivos móviles por parte de los menores. El estudio demuestra la importancia de considerar el nivel educativo y profesional de las madres y de los padres como oportunidad para entender mejor el consumo de pantallas inteligentes y para diseñar estrategias familiares que fomenten el pensamiento crítico y la educación mediática digital.

### KEYWORDS | PALABRAS CLAVE

Mobile devices, smart screens, children, mothers, social level, parental intervention, opportunities, media consumption.

Dispositivos móviles, pantallas inteligentes, niños, madres, nivel social, mediación parental, oportunidades, consumo mediático.

## 1. Introduction and state of the art

Our media environment is changing rapidly, and this reality also influences children (Livingstone & Haddon, 2009). According to data from the Association for Media Research (AIMC for its initials in Spanish) (2018, 2019), Spanish children between the ages of 6 and 13 spend almost five hours a day in front of a screen on weekdays and seven on weekends. There is also a high number of technological equipment in Spanish households, which have an average of seven technological devices; and, of these, minors use an average of four.

Although today's children are growing up with an abundance of media devices and are exposed to a wide range of digital resources, this does not necessarily mean that they are frequent or exclusive users, and while they may have a predisposition to play videogames or watch videos, they also enjoy other non-digital activities (Chaudron et al., 2015).

### 1.1. Smart screen consumption among children

Data from the National Telecommunications and Information Society Observatory (ONTSI for its initials in Spanish) (2019a, b) on child and adolescent consumption of mobile devices focus on the 10-15 age group without providing consumption information for younger children. In the age group covered by the report, there is widespread use of technology, especially computers (92.2% of girls and 90.4% of boys) and mobile phones (71.6% of girls and 68.2% of boys). Internet use is virtually universal for these ages (92.8 %, with negligible gender variation, 93.2 % for girls and 92.5 % for boys). This use was mainly made from their own home, which represented 94.9% of the locations where these minors were connected. For younger age groups, we have the AIMC report (2018), which states that 89% of children aged 6 to 13 consume videos on the Internet and 36% do so daily.

On the other hand, it should be noted that children combine traditional and emerging technologies in their lives (Mullan, 2018), and there is a need to assess the impact of technology on their well-being and their degree of digital literacy. In this sense, several authors claim that digital literacy is a combination of knowledge, skills, attitudes and, above all, a "social practice" (Buckingham, 2007; Livingstone & Haddon, 2009). This media convergence, together with its ease of access, provides the least opportunities for sociability, self-expression, learning, creativity and participation through online and mobile media (Garmendia et al., 2016).

Although studies on the use of digital media by children in the first cycle of primary school are scarce and mostly conducted with North American children (Lauricella et al, 2015), there is a great deal of research analyzing the effects of digital media consumption on children's well-being: exposure to and use of these devices has been studied among preschool children (Dashti & Yateem, 2018; Kiliç et al., 2019) as well as among pre-adolescents and adolescents (Garmendia et al., 2016), the impact of this consumption on their physical and mental well-being has also been assessed (Bozzola et al., 2018). In this sense, studies such as that of Fajardo-Bullón et al. (2019) and El-Asam et al. (2019) among others, address tools for intervention in the problematic use of the Internet among children in the first and second cycles of primary school.

### 1.2. Parental mediation and family socioeconomic level in the use and consumption of screens

Children's consumption of screens and their time of use seems to be highly influenced by parents' attitudes (Sanchez et al., 2017). It has been found that children's media skills and activities are more related to their parents' mediation style than to the age of the child (Nikken & Schols, 2015; Sanchez et al., 2017). It has also been concluded that the socioeconomic level of families affects the use and value placed on time, and that these beliefs condition the behavior allowed to minors in their relationship with smart screens (Correa, 2015; Katz et al., 2018). Previous studies suggest that those responsible for formulating policies aimed at improving children's use of screens should consider the family environment as a whole (Berríos et al., 2015; Lauricella et al., 2015), making it necessary to incorporate the interrelationship between the type of parental mediation and the family's socioeconomic level in the design of measures.

Parental mediation refers to the set of strategies that parents use to control, supervise or interpret the content of media to which children are exposed (Warren, 2001). These mediation strategies can be

of three types: restrictive, social or active (Nikken & Jansz, 2006). In the restrictive mediation strategy, adults set rules about the amount of time and content allowed, without talking to the child about it. In the case of the social mediation strategy, the content is discussed informally, but without helping to reflect on it. Active mediation is evaluative and/or instructive, and the child is guided to understand the content in order to educate him/her about the things that happen, either during or after consuming media (Kuo et al., 2015). The adoption of strategies does not necessarily imply parental control while children are surfing the Internet. Although today's children are in contact with a wide range of digital tools from a very young age, this does not mean that they have the right criteria for selecting and evaluating information. Thus, although many families establish rules for Internet use, parents are not always present to verify compliance with those rules and in that sense, those "digital natives" become "digital orphans", since they do not manage to process all the information provided by the Internet correctly (Novoa, 2017; Ponce-de-León et al., 2016).

Studies conducted in different cultural contexts (Hargittai 2010; Valcke et al., 2010; Määttä et al., 2017) have found that families with high socioeconomic status tend to see media exposure as something that needs careful regulation and allocation (which would speak of an active mediation style), and that it is the mother who is most attentive to exercising such regulation, especially when the child is younger (Jiménez-Iglesias et al., 2015). Accordingly, the main objective of this study is to find out the impact that the level of education and professional profile of mothers and fathers has on the use and type of consumption of digital devices by children aged 5 to 9. As there is no previous research correlating the mentioned variables, the results of this study will be useful to public administrations in the development of digital literacy policies aimed at families, especially the most vulnerable ones in terms of socioeconomic status.

## 2. Material and method

### 2.1. Design

The research design was cross-sectional quantitative.

### 2.2. Procedure

With the permission of collaborating schools, a consent form was sent to parents between March and December 2017, informing them of the objectives of the study. The informed consent itself asked parents to confirm their educational background and current profession. Once the informed consent forms were collected, a date was set with the schools for the completion of the questionnaire. The questionnaire was administered on a case-by-case basis. The final sample of completed questionnaires was 792, guaranteeing confidentiality and anonymity of the data obtained at all times.

### 2.3. Sample

A convenience sample of 792 primary school students from 15 schools (five publics, nine subsidized and one private) in three Spanish cities was used (196 students in Barcelona, 320 in Madrid and 276 in Seville). Convenience sampling was applied by prioritizing the ecological validity of the study, i.e. the external validity of the situation, and not the random representativeness of the sample (external population validity). Therefore, those centers that provided better accessibility conditions were selected. Of the 792 participating schoolchildren, 429 were girls (54.2%) and 363 were boys (45.8%). The average age was 7.23 years and the median age was 7. The minimum and maximum correspond to 5 and 9 years, respectively.

The methodology used in the baseline research (Chaudron et al., 2015; Livingstone et al., 2018), promoted by the European Commission, and based on the responses of 70 families, distributed in 10 countries, was considered. The sample, in this case, is also non-probabilistic and convenience, chosen according to a broad criterion: "The core of the sample is formed by families with children under 8 with at least one parent and at least one child of age 6-7 who use a digital technology regularly, i.e., at least once a week" (Chaudron et al., 2015: 22).

## 2.4. Measuring instruments

An inductive-deductive method was used for data processing with a quantitative approach. An ad hoc questionnaire was developed –Mediacorp questionnaire: adaptation of the Body Image Questionnaire (QÜIC) to the child population by Penelo et al. (2012)– which collects six blocks of information: sociodemographic data of the child and his/her family; media consumption; satisfaction with his/her own body image; projection of the ideal body image for the opposite sex; and, finally, the child's Body Mass Index (BMI). For the purposes of this article, the focus was placed on data obtained from the first two blocks of the questionnaire (i.e., sociodemographic data on children and their families and media consumption, based on the adaptation by Velarde (1992) and Medrano et al. (2015). An initial version of the questionnaire was applied to a first-grade class as a pilot test and the necessary adjustments were made to facilitate understanding of the questions and the answer format according to the reading ability levels of 6-year-olds.

As mentioned earlier, the sociodemographic data of the students' parents were collected in the informed consent document. To avoid heteronormative biases, the specific formulation allowed for the possibility that only one option was marked (only father or only mother) as well as two fathers or two mothers. In the same document, the educational level of the mother and father was requested, following three levels: 1) Low level (no studies, primary studies); 2) Medium level (Secondary studies, Vocational training, Baccalaureate studies); 3) High level (Upper middle level, Upper university level, Master's/Doctorate). They were also asked about their professional category, organized into three levels: 1) High professional category (for example: directors and managers of establishments with 10 or more employees and professionals traditionally associated with university degrees); 2) Medium professional category (for example: administrative-type employees and support professionals for administrative management and other services); 3) Low professional category (for example: semi-skilled or unskilled workers).

The item in the questionnaire that referred to media consumption was part of the broader list of topics surveyed. Specifically, it followed the following formulation: 'When you are at home, what do you do?' and offered eight answer possibilities (choice of three from highest to lowest frequency): 1) Playing videogames; 2) Reading magazines/comics; 3) Using the computer; 4) Using the mobile phone; 5) Watching TV; 6) Using the tablet; 7) Reading books; 8) None of the above.

## 3. Analysis and results

A bivariate analysis was performed on the variables 'playing videogames', 'using the computer', 'using the mobile phone', 'watching TV', and 'using the tablet'; according to the following variables: 'mother's studies', 'father's studies', 'mother's professional category', and 'father's professional category'.

The descriptive statistics used were the following: contingency tables between the different media consumption variables and the characteristics of the child. As for inferential statistics, the Chi-square test or likelihood ratio test were performed, as appropriate. For all tests, the significance level was set at 5%. The analyses were conducted using the following software: SAS v9.4, SAS Institute Inc, Cary, NC, USA.

### 3.1. Sociodemographic data on the mothers and fathers of the sample members

Of the total 749 mothers (41 years on average), 55.81% (N=418) of the sample of mothers had a higher level of education, followed by 37.25% (N=279) with a medium level and 6.94% (N=52) reported having a low level of education. In terms of their professional category, 56.42% (N=400) had a medium professional category, 29.48% (N=209) had a high professional category, and 14.10% (N=100) had a low professional category.

Of the 622 fathers (43 years on average), 50.88% (N=317) had a higher level of education, 36.60% (N=228) had a medium level of education, and 12.52% (N=78) reported low levels of education. In terms of their professional category, 48.76 (N=296) had a medium professional category, 36.90 (N=224) had a high professional category, and 14.33% (N=87) had a low professional category.

### 3.2. Media consumption by children in the sample

The results indicate that television continues to be the most consumed medium among children in the sample analyzed. It is consumed by 69.8% of them. It was followed by tablets (50.9%), videogames (33.8%), mobile phones (30.3%) and computers (26.5%).

Television is consumed by 7 out of 10 children. By gender, we found that consumption is fairly balanced, at 71.6% in boys and 68.3% in girls. According to the educational level of their parents, it is worth noting that there is a lower television consumption as the educational level of the mother increases (Table 1). This trend is also observed in the level of studies of the father (Table 2). A decrease in television consumption stands out as the professional category of the parents increases.

Tablets are used by 50.9% of girls aged 5-9 years. By gender, 47.1% of girls and 55.4% of boys use tablets. Taking into account the mother's level of education, higher consumption is observed at low educational levels. According to the father's level of education, the highest consumption is at the middle level of education. It can be seen that the professional category of the mother influences the use of the tablet by the children, with a higher use in the lower professional categories. By analyzing the professional category of the father, it was observed that the offspring of the middle category consumed tablets the most.

Videogames are consumed by 33.8% of this group. By gender, male gaming stood out at 53.7%. In contrast, only 17% of the girls in the study played videogames. According to the level of studies for both the mother and the father, a greater consumption was observed at lower levels of education. Considering the professional category of the parents, a greater consumption was observed at lower professional categories.

Mobile phones were used by 30.3% of these minors. By gender, more male consumption was observed (35.8%) than female consumption (25.6%). Considering the level of education of the parents, important differences were observed. The higher the level of education, the lower the consumption of mobile phones.

**Table 1. Comparison of media consumption of children analyzed according to their mother's educational level and professional category**

Device	Total	Educational level of the mother			Professional category of the mother		
		High	Medium	Low	High	Medium	Low
Television	69.8%	64.8%	76.0%	78.9%	67.0%	71.5%	73.0%
Tablet	50.9%	49.0%	53.8%	53.9%	47.9%	53.3%	57.0%
Videogames	33.8%	32.5%	33.7%	36.5%	29.2%	33.0%	44.0%
Mobile phone	30.3%	25.1%	33.7%	65.4%	23.0%	30.5%	50.0%
Computer	26.5%	25.4%	26.2%	34.6%	24.9%	27.0%	31.0%

Computers are used by 26.5% of these minors. By gender, its use was balanced, amounting to 27.0% in the case of boys and 26.1% in the case of girls. By analyzing the level of maternal education, it was observed that, the more education, the less use of the computer by the minors. In the case of fathers, the trend was inverse. We can see how the rates of computer use increase as the professional category of the mother increases. In the case of the professional category of the father, the data present few differences.

**Table 2. Comparison of media consumption of children analyzed according to their father's educational level and professional category**

Device	Total	Educational level of the mother			Professional category of the mother		
		High	Medium	Low	High	Medium	Low
Television	69.8%	66.9%	69.3%	71.8%	68.8%	67.9%	70.1%
Tablet	50.9%	47.0%	55.7%	51.3%	47.8%	52.7%	49.4%
Videogames	33.8%	30.3%	35.5%	38.5%	28.6%	34.5%	42.5%
Mobile phone	30.3%	21.1%	34.2%	59.0%	21.4%	31.4%	49.4%
Computer	26.5%	26.8%	29.0%	19.2%	27.2%	26.4%	27.6%

### 3.3. Bivariate analysis results

Although previous data suggested trends in device consumption by these children according to the variables studied from their parents, a comparison was made to establish the presence of statistically significant differences. The comparison showed significant differences in the cases of videogame consumption, mobile phone use and television consumption. A chi-square test of independence was conducted to examine the relationship between the mother's professional status and videogame

consumption. The relationship between these variables was significant,  $X^2(2, N=792)=6.7, p=.00343$ . The professional category of the mother influences the consumption of videogames by her descendants. The relationship of influence of the professional category of the father was also significant,  $X^2(2, N=792)=5.7, p=.00564$  (with a significance level of 10%).

With regard to mobile phone consumption, statistically significant differences were found with the mothers' educational level variable  $X^2(2, N=792)=36.37, p<.01$  and the fathers' educational level variable  $X^2(2, N=792)=44.29, p<.01$ . The relationship of influence of the professional category of the mother is significant  $X^2(2, N=792)=23.22, <.0001$  as well as that of the father  $X^2(2, N=792)=23.59, p<.0001$ .

Finally, statistically significant differences were found between the mother's studies variable and television consumption among the children studied,  $X^2(2, N=792)=12.00, p=.0025$ .

#### 4. Discussion and conclusions

The research data reveal the importance of considering the socio-educational level of parents when understanding the type of use and consumption of digital screens by children, especially in the case of videogames, mobile phones and television. More specifically, the two mediating variables are related to the educational and professional level of the mother. In other contexts, not related to digital screens, numerous studies (Martin et al., 1991; Oliva & Palacios, 1997) have confirmed that the higher the level of education and the higher the mother's professional qualification, the higher the expectations about the child's achievements and the importance given to their personal development and autonomy. Meanwhile, when the mother's educational level is low, greater importance is given to school performance, discipline and obedience. However, there is no previous work that analyzes the role of the mother's educational and professional level in the interaction of children with digital screens.

This confirms the greater weight that mothers continue to have in the tasks of parenting compared to fathers (Craig & Mullan, 2011). On the other hand, the differences obtained in the amount of digital screen consumption by children based on the educational and professional level of their mothers can be explained because a higher educational and professional level among mothers also increases the income level of the family as a whole, which gives access to a wider variety of extracurricular and recreational activities that families with fewer economic resources can hardly afford. Another possible explanation (which does not invalidate the previous one) is that mothers with a higher level of education are also more attentive to research on children's issues (Looze, 2014) including those that warn of the risks of failing to set limits on screen consumption. It is necessary to reflect on the results from this structural perspective in order to avoid making the mistake of blaming mothers with lower educational and professional levels.

Children from disadvantaged families receive less mediation from their parents, for a variety of reasons. Hence, initiatives promoting the digital inclusion of children should remain a priority (Garmendia et al., 2016; Katz et al., 2018). Considering the implications that the mothers' educational and professional variable has on the family upbringing system, as well as on the expectations for children's behavior, is an important piece of information when designing family guidelines for children's media literacy. This possible intervention should also consider the needs of the child in order to mediate as effectively as possible in the use of technology (De-Haan & Livingstone, 2009). Thus, the findings of this study represent a clear opportunity to design a family plan for healthy media use (Chassiakos et al., 2016). Such a plan should present an appropriate balance between screen time and other offline activities, set limits on access to content, guide the viewing of personal information, encourage critical thinking and age-appropriate digital literacy, and support family communication and the implementation of consistent rules on media use.

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