






ICT Use and Parental Mediation Perceived by Chilean Children

Uso de las TIC y mediación parental percibida por niños de Chile

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ABSTRACT

The use of Information and Communication Technologies (ICTs) has extended to all contexts of our lives in the last few years, modifying our communication, learning, entertainment and socialization habits. The aim of the present research is to investigate about primary-age children's habits with these tools, as well as these children's perception of parental mediation in this area. In this study we used an ex post facto descriptive methodology by survey. A questionnaire was applied for data recollection to 422 children of private schools in Santiago de Chile aged between 9 and 12 years old. The results point to an early access to electronic devices and the transversal and homogeneous use during childhood. There is no doubt that ICTs play an active role in daily life for most of these children. No significant differences in age or sex were detected in our study, but we encountered risky behaviours in how children use ICTs and in their perception of parental mediation. The complexity becomes more evident the more time they have with electronic devices connected to the Internet without adult supervision. This finding raises the need for the application of intervention programs on parental mediation of children's use of ICTs in order to promote a safe, responsible and ethical use of these tools.

RESUMEN

El uso de las tecnologías de la información y la comunicación (TIC) se ha ido masificando en los últimos años, modificando los hábitos de comunicación, aprendizaje, entretenimiento y de socialización. Hemos investigado sobre los hábitos de los menores con dichas herramientas, además de su percepción de la mediación parental en este terreno. Se presenta un estudio exploratorio, en el que se emplea metodología «ex post facto» descriptiva por encuesta, con un cuestionario como instrumento de recolección de datos aplicado a 422 niños/as de 9-12 años de colegios privados de Santiago de Chile. Los resultados indican que las TIC forman parte de la vida cotidiana para la mayoría de los niños/as. A pesar de no apreciarse diferencias significativas, en edad y género, se encontraron comportamientos de riesgo entre las características de uso y en la percepción de la mediación parental, por lo que vislumbramos la necesidad de implementar programas de intervención sobre mediación parental en el uso de las TIC, para así promover un uso seguro, responsable y ético de las tecnologías de la información y la comunicación. De los resultados deriva la reflexión en cuanto a la importancia de formar y fomentar desde temprana edad en el uso idóneo de las TIC, considerando que estas herramientas son utilizadas de forma cada vez más transversal y homogénea entre los más jóvenes.

KEYWORDS | PALABRAS CLAVE

Elementary education, minors, parental intervention, parental control, risks, digital competencies, educational research.
Educación primaria, menores, mediación parental, control parental, riesgos, competencias digitales, investigación educativa.

1. Introduction and state of the art

Technological advances have changed our daily lives: communication or news reading are digital activities now. The most significant increase in the use of Information and Communication Technologies (ICTs) took place among the younger population. Minors are exposed, from a very early age, to ICTs (Lepicnik & Samec, 2013) and they use them without any specific training (Area, Gros & Marzal, 2008). They are active members of the «e-society» (MacPake, Sthepen & Plowman, 2007), who have a considerable proficiency in digital technologies that provides them with «hyperconnectivity» and ubiquity. This creates a digital gap between children and adults. Although the use of ICTs entails a series of advantages, it can also involve some risks for minors.

We analyse here how ICTs are used by 9 to 12 year-old children and how they perceive parental mediation. The study covered four of the technologies more widely used by children (the Internet, television, video games and mobile phones). We studied how they were used (weekly frequency, place, time and whether they were accompanied or not) and also parental mediation in that use (times, activities and contents). The variables of sex and age were also taken into consideration.

1.1. Children and ICTs

Research (Gutnick, Robb, Takeuchi & Kotler, 2010; Bringué & Sádaba, 2008; Sádaba & Bringué, 2010; Bringué, Sádaba & Tolsá, 2011) has shown some worrying data about children's use of the Internet: 80% of children between the ages of 5 to 9 surf the Web regularly and 60% of them say they do it without supervision. Research carried out by Bringué & Sádaba (2008) in Chile offers some data about possible Internet risks for children, pointing out that 5% of 10-year-old users have occasionally accessed pornographic websites and that 13% accessed violent contents. More recent research (Bringué, Sádaba & Tolsá, 2011) shows that more than half of the children aged between 6 and 9 are autonomous users and that 30% of minors use social networks such as Facebook. They also state the worrying fact that 50% of 10-year-old boys and 33% of 10-year-old girls state that they have met in person somebody they first met online. Although the Internet is a useful tool for the development of minors, some specialists (Bringué & Sádaba, 2008; Bringué, Sádaba & Tolsá, 2011; García & Bringué, 2007; Garmendia, Casado, Martínez & Garitao-nandia, 2013; Livingstone, 2013) have shown the risks of accessing the Internet unsupervised or without

having proper training: violence, pornography, addictions or cyberbullying, among others.

One could think that the presence of technologies that allow interactivity, ubiquity and mobility would have replaced the use of the television. However, recent research carried out by Mediametrie and Eurodata TV for the 8th edition of «Kids TV Report: Trends & Hits in Children's Programming in France, Germany, Italy, Spain & the UK» (2013) shows that daily television consumption among Europeans between 4 and 12 years of age during 2012 was 2 hours and 16 minutes. Research in Chile (CNTV, 2010; CNTV, 2012a; CNTV, 2012b) points out that the average television consumption time by children between 4-12 years is 4 hours a day. This figure means that they practically double the time of European children, although the most worrying fact is that 78.2% of them watch television programs for adults. Several authors have pointed out that access to inappropriate contents can result in behaviour problems due to the lack of appropriate topics and structures and the minor's low level of maturity and lower capacity for assimilating contents.

The use of video games is very extensive among children. Video games are multi-platform leisure programs (for computers, mobile phones and consoles) (García & Bringué, 2007), where the variety of narrative structures and interactivity schemes allows the user to adapt the game to their rhythm and style (Rangel, Ladrón-de-Guervara, Goncalves & Zambrano, 2011). This is precisely what has allowed children to access video games at an early age, as research by (Lloret, Cabrera & Sanz, 2013) shows: in Spain, 90% of children between 6 and 9 years of age play video games. In Chile, 57% of children have this hobby (Bringué & Sádaba, 2008). Regarding sex and age of Chilean «videogamers», research by (Bringué, Sádaba & Tolsá, 2011) concludes that 70% of children are already users at the age of 6, with no difference in sex. Between 7 and 10 years, that figure increases in boys and decreases in girls. It is important to point out that this activity promotes the acquisition of digital competencies, which favours the link with the educational context. Some researchers (Rojas, 2008) warn that video games have a certain amount of violence and that a continuous exposure to it might lead to increase of hostility and aggressiveness and lack of empathy. However, maybe different variables are responsible for the increase in aggressiveness.

Finally, in the last few years, mobile phones have become part of children's daily lives: «In Europe, one out of three mobile phones are in the hands of a

minor. In Spain, half of the children between 11 and 14 years of age have a mobile phone» (García & Bringué, 2007:111). A transnational study carried out in Japan, India, Indonesia, Egypt and Chile (Livingstone, 2013) shows that 65% of minors between 10 and 18 years of age have access to a mobile phone, 81% owns a new mobile phone and 20% owns a «smartphone». In Latin America, more than half of children between 6 and 9 years of age is a mobile phone user (Bringué, Sádaba & Tolsá, 2011). In Chile, researchers established that children have their first mobile phone at approximately the age of 10. However, between 6 and 9 years, they already use them, mainly to play and talk, with similar percentages in boys and girls (Bringué, Sádaba & Tolsá, 2011; Livingstone, 2013). It is clear, therefore, that Chilean children start using mobile phones at an early age. Accordingly, it is fundamental that adults promote a responsible and safe use of these devices to avoid risks such as addiction, cyber bullying, «grooming», «sexting», among others.

1.2. Parental mediation and ICTs

The massive use of ICTs during the last decade has caused a number of social changes, as can be seen in the denominations that our current generations receive in literature: digital natives, «e-society», «touch» generation or «multi-screen» generation (MacPake, Stephen & Plowman, 2007; Prensky, 2011). These minors have grown up using ICTs, whereas adults have learnt on the fly, which has caused a digital gap between both generations. Probably, the lack of knowledge about the effects of using ICTs is the cause of the little concern in some parents, who just supervise the time and obviate contents that would require parental mediation (Garitaonandia & Garmendia, 2009; Garmendia, Casado, Martínez & Garitaonandia, 2013; Livingstone, Hadson, Görzig & Ólafsson, 2010). Research carried out in Chile (Bringué, Sádaba & Tolsá, 2011) shows that 50% of children declare being asked by their parents about their online activities and 36% of them consider that they are being watched by their parents as they surf the Web. The activities which are more frequently forbidden are online shopping (47%) and giving personal information (46%). Chatting, downlo-

ading files and playing were forbidden for 7% of the children and accessing a social network was forbidden for 3% of the children surveyed. Parental mediation is very important because parents establish security and responsibility criteria for an appropriate use of ICTs and they play a role in the development and acquisition of adequate behaviours in the use of these technologies (Livingstone & Helsper, 2008).

2. Material and method

2.1. Sample selection and research instrument

The sample is intentional and the sample size is N=422 (50.5%, 49.5% female) between 9 and 12 years old, with an average of 9.8 years of age and a

Due to its importance in cognitive development, we propose here parenting schools that promote training in the appropriate use of technologies with a safe, ethical, integrative and responsible way, so that children's times in front of a screen can be controlled and the contents they access can be supervised.

typical deviation of 0.906 years. The average in males is 9.86 years of age, with a deviation of 0.903. In females, the values are 9.74 and 0.878 respectively. They are pupils in the 4th, 5th and 6th years of Primary Education in 5 private schools in Santiago de Chile.

A survey was used to collect the following data: socio-demographic data (age, sex, year, school); how children between 9 and 12 years of age use ICTs (weekly frequency, place, time and what company they have while using them); how they perceive parental mediation when using ICTs (times, activities and risks).

2.2. Design

This is an exploratory study of empirical-analytical type, where an ex post facto descriptive methodology by survey has been used.

The survey was checked for reliability before being applied. The reliability test was $\alpha=0,87$, and therefore, considered satisfactory. The survey was validated by two specialists and it was conducted among

30 children in order to modify the items that lead to error. The definitive version was conducted during the 2013 school year. Respondents answered the survey anonymously and with previous consent of their legal tutors.

3. Analysis and results

A descriptive statistical analysis with frequencies and percentages was carried out using the SPSS statistical software program (v. 21.0). In order to check independent variables (sex and age), the X² test was applied.

3.1. Use of ICTs by children between 9 and 12 years of age

Table 1 shows the data provided by the sample regarding weekly frequency; place, company and time spent using ICTs. Results show that half of the children surf the Web any day of the week, over a third of the children connect from anywhere and that most of them access the Web without supervision. The small number of children surveyed that use the Internet accompanied by their parents is remarkable. Those who have no time restriction are about the same number as those who can log on less than an hour a day.

Regarding television consumption, most of them watch television any day of the week and this is done normally in the living room, mainly accompanied by brothers/sisters. The fact that 37.2% say that they can watch television as long as they wish is worthy of note.

On the topic of the use of video games, there are practically no differences between the percentages of those who play any day of the week, those who only play at weekends and bank holidays and those who never play. Most of them play in the living room and unaccompanied. Only two children play with their parents. Regarding daily use, results are homogeneous: 29.6% are allowed to play less than an hour and the same percentage is allowed to play as long as they wish. Mobile phones are used by more than half of the

Table 1. Children's use of ICTs

	Access the Internet		Watch television		Play video games		Use mobile phones	
	f	%	f	%	f	%	f	%
N=422	422	100	422	100	422	100	422	100
Use of ICTs								
Any day of the week	211	50.0	296	70.1	134	31.8	218	51.7
Only on school days	24	5.7	75	17.8	30	7.1	16	3.8
Only at weekends and bank holidays	139	32.9	28	6.6	127	30.1	43	10.2
I never do it	48	11.4	21	5.0	123	29.1	137	32.5
No answer	-	-	2	0.5	8	1.9	8	1.9
Place of use								
My bedroom	72	17.1	67	15.9	29	6.9	96	22.7
Living room	154	36.5	265	62.8	276	65.4	11	2.6
Brother/Sister's bedroom			4	0.9	12	2.8	1	0.2
Anywhere	167	39.6	80	19.0	19	4.5	193	45.7
I don't use it	28	6.6	2	0.5	82	19.4	119	28.2
No answer	1	0.2	4	0.9	4	0.9	2	0.5
Company while using ICTs								
On my own	246	58.3	154	36.5	143	33.9	248	58.8
With my mum and/or dad	40	9.5	30	7.1	2	0.5	19	4.5
With my brother/sister	60	14.2	208	49.3	118	28.0	13	3.1
With friends	24	5.7	1	0.2	36	8.5	11	2.6
With family or acquaintances	22	5.2	27	6.4	17	4.0	17	4.0
I never do this	29	6.9	2	0.5	98	23.2	98	23.2
No answer	1	0.2			8	1.9	16	3.8
Time spent using ICTs								
Over an hour	105	24.9	124	29.4	111	26.3	56	13.3
Less than an hour	146	34.6	125	29.6	125	29.6	90	21.3
Any time I wish	155	36.7	157	37.2	125	29.6	193	45.7
None, I am not allowed	4	0.9			36	8.5	61	14.5
No answer	12	2.8	16	3.8	25	5.9	22	5.2

children any day of the week from anywhere and mainly without any time restriction. The fact that 32.5% declare that they do not use it is worthy of mention.

3.2. Perceived parental mediation while using ICTs

Table 2 shows the main results concerning how parental mediation is perceived by children. Half of the children surveyed indicate that they have no time constraints when they use the computer, surf the Web or watch television. Time limits are present, however, when they play video games. In other activities of their daily life (doing homework, sleeping, meals), most of them say they do have fixed times.

As regards allowed Internet activities, most of the children state that they are allowed to log on to social networks (Facebook), to upload pictures and videos, to download movies and music, to watch videos on YouTube, to be online for a long time and to play online video games. The forbidden activities are online shopping, filling in forms with personal details and contacting strangers.

These results show risk behaviours. Accessing social networks such as Facebook is one of these risks, taking into account that the subjects surveyed are all under 13 of age, which is the legally required mini-

imum age to create a profile in that website by filling in a form with personal details. Furthermore, it is very easy to contact strangers in this social network. The other activities allowed entail certain risks such as access to inappropriate contents (violence, pornography), giving away personal information, addiction or contact with strangers. Therefore, there is a contradiction that shows a certain lack of knowledge about the dangers that these activities imply in the children's lives.

As for television programs, most of the children surveyed indicate that they are allowed to watch programs at night, soap operas and the news. Forbidden programs are those with adult or highly violent contents. These results show a paradox, as programs allowed do have adult contents and show explicit or implicit violence in some cases.

Regarding parental mediation perceived while playing video games, the high percentage of children who are allowed to play on their own is worthy of note and also that more than half of the children say they do not have any parental restriction for violent games. Risky behaviours can be noted: 46.4% of the children have parental permission to play for a long time and 31.5% state that they are allowed to play with strangers online. On the other hand, most of the

children state that they talk with their parents about the risks of ICTs, especially about the topic of contacting strangers.

3.3. Age and sex in the use of ICTs

To analyze the influence of «age» and «sex», Chi-square tests were conducted in contingency tables, which prove the association between the variables analyzed. If we selected «age» with four categories (9, 10, 11 and 12 years old) the requirements for the test (minimum expected values of less than 5 per cell) would not be met. To solve this problem, we group «age» in two blocks (9-10 and 11-12), although this creates categories with two ages and this will alter the true behaviour between the variables. Despite the fact it is a significant figure from a strictly statistical point of

Table 2. Parental mediation perceived when using ICTs

Have fixed times for the following activities	Yes		No		No answer		Total	
	f	%	f	%	f	%	f	%
Use the computer and surf the Web	201	47.6	208	49.3	13	3.1	422	100
Watch television	194	46.0	214	50.7	14	3.3	422	100
Play video games	209	49.5	190	45.0	23	5.5	422	100
Do homework	331	78.4	72	17.1	19	4.5	422	100
Go to sleep	335	79.4	68	16.1	19	4.5	422	100
Have lunch and dinner	365	86.5	38	9.0	19	4.5	422	100
Activities allowed by parents while surfing the Web								
Buy things online	85	20.1	324	76.8	13	3.1	422	100
Fill in forms with personal data	54	12.8	355	84.1	13	3.1	422	100
Log on to social networks (Facebook)	303	71.8	106	25.1	13	3.1	422	100
Upload photos and videos	247	58.5	162	38.4	13	3.1	422	100
Download movies or music	332	78.7	77	18.2	13	3.1	422	100
Watch videos on YouTube	378	89.6	38	9.0	6	1.4	422	100
Contact strangers	41	9.7	368	87.2	13	3.1	422	100
Be online for a long time	209	49.5	200	47.4	13	3.1	422	100
Play online	368	87.2	48	11.4	6	1.4	422	100
Watch programs for adults	86	20.4	323	76.5	13	3.1	422	100
Programs that parents allow them to watch on tv								
Watch programs at night	277	65.6	132	31.3	13	3.1	422	100
Watch soap operas	283	67.1	126	29.9	13	3.1	422	100
Watch the news	342	81.0	67	15.9	13	3.1	422	100
Watch violent programs	146	34.6	263	62.3	13	3.1	422	100
Activities allowed by parents while playing video games								
Play for a long time	196	46.4	213	50.5	13	3.1	422	100
Play on his/her own	372	88.2	44	10.4	6	1.4	422	100
Play violent games	220	52.1	189	44.8	13	3.1	422	100
Play pirated games	307	72.7	102	24.2	13	3.1	422	100
Play with strangers online	133	31.5	276	65.4	13	3.1	422	100
Conversation with parents about the dangers of ICTs								
Dangers of contacting strangers	329	78.0	45	10.7	48	11.4	422	100
Harm it causes you watching adult contents online	279	66.1	112	26.5	31	7.3	422	100
The need to contrast information online because not everything is true	247	58.5	117	27.7	58	13.7	422	100

Table 3. Summary of ICTs use with age variable

ICTs	X ²	gl	Valor-p
I watch television	34.031	9	0.000
I play video games	34.809	9	0.000
I use a mobile phone	20.584	9	0.015
Place where I watch television	31.163	12	0.002
Place where I play video games	22.510	12	0.032
Company while surfing the Web	33.720	15	0.004
Company while using the television	29.358	15	0.014
Company while playing video games	47.634	15	0.000
Company while using the mobile phone	28.622	15	0.018
Daily time watching television	22.192	6	0.001
Daily time on the Internet	18.384	9	0.031
Daily time playing video games	17.918	9	0.036
Daily time using the mobile phone	57.104	9	0.000
Activities parents allow them to do while surfing the Web (logging into social networks like Facebook)	11.709	3	0.008
Activities parents allow them to do while surfing the Web (watching videos on YouTube)	8.668	3	0.034
Activities parents allow them to do while surfing the Web (playing video games on their own)	15.022	3	0.002
Argue with their parents about time allowed to play video games	7.426	3	0.059
Argue with their parents about time allowed to watch tv	14.771	3	0.002
Argue with their parents about time allowed to use the mobile phone	32.473	3	0.000

view, 53.5% cannot be considered as representative. Significant results should be greater when the sample increases.

When doing a crosstab between variable «sex» and the results obtained in ICTs, 96.0% of them show no significance. However, we appreciate a certain significance in the activity «watch videos on YouTube» [$\chi^2=4.170$; $GL=1$; $p=0.041$] and the perception of digital skills that they consider they have in comparison to their family, friends and teachers [$\chi^2=8.056$; $GL=3$; $p=0.045$]. Significance in the case of males is slightly greater than in the case of females.

4. Discussion and conclusions

According to our analysis of how children use ICTs (frequency, place, company and time), most of the children surveyed have access to the Internet, half of them access the Web any day of the week and more than a third do that from anywhere. Compared to previous years, this shows a change in the place of access that can be explained due to the massive proliferation of 3G devices, which provide ubiquity and hyperconnectivity, important characteristics of children of this generation. Regarding the company they have while surfing the Web, 58.3% state they do it on their own, only 9.8% are accompanied by their parents while they are online and 36.7% has no limit to be online. We can appreciate that there is a risk in children using the Internet without parental supervision (Casado, Martínez & Garitaonandia, 2013; Livingstone, 2013).

Regarding television consumption, results show that 70.0% of the children watch television any day of the

week, although is important to point out that this activity takes places mainly in the living room and they are accompanied, mostly by their siblings. If the television is in a common space and they are accompanied there are less probabilities that they may have access to inappropriate contents. However, 37.2% state that they watch television as long as they wish, which is coherent with results from (CNTV, 2012a).

As regards mobile phones, results indicate that most children have a mobile device and more than half of them uses a mobile phone any day of the week from anywhere and has no time limit to use it. This corroborates data by (Bringué, Sádaba & Tolsá, 2011; Livingstone 2013), who insist on the need for parental supervision on the use of mobile phones due to the risky behaviours observed.

As long as perceived parental mediation in the use of ICTs is concerned, results point out that half of the children do not have specific times to use the computer, to access the Internet or to watch television. They do, however, have time limits when playing video games. Establishing fixed times for activities is a fundamental part of setting boundaries and, as well as helping in a better use of ICTs, it contributes to the prevention of risky behaviours.

As regards Internet activities allowed, the high percentage of children allowed to log on to social networks (Facebook), to upload pictures and videos, to download movies and music, to watch videos on YouTube, to be online for a long time and to play online video games is worthy of note. The forbidden activities are online shopping, filling in forms with personal details and contacting strangers. There is a paradox in the fact that despite the fact that children are not allowed to provide personal information or to contact strangers, most of them are allowed to use Facebook. The subjects surveyed are all under 13 of age, which is the legally required minimum age to create a profile in that social network by filling in a form with personal details. Furthermore, it is very easy to contact strangers

on Facebook. The other activities allowed entail certain risks such as access to inappropriate contents (violence, pornography), giving away personal information, addiction or contact with strangers. This information shows a certain lack of knowledge about the risks that these activities imply in the children's lives. Therefore, family dialogue should be encouraged to agree on the right times and places for use of ICTs and on the accepted digital contents, web services and people that can be contacted (Berríos & Buxarrais, 2005; Buxarrais, Noguera, Tey, Burguet & Duprat, 2011).

Concerning television consumption, children declare that their parents allow them to see evening programming, soap operas and the news, whereas adult and violent programs are forbidden. This coincides with data by CNTV (2012b). These results show a contradiction, as programs allowed have adult contents and show explicit or implicit violence in some cases. This lack of attention might lead to children's misunderstanding of what they are watching, experiencing strong emotions without expressing them or lack of a critical point of view towards the information received. The positive aspect is that most children surveyed watch television in common spaces, which facilitates supervision.

Most indicate that they talk to their parents about the risks of using ICTs such as contacting strangers, harm derived from watching adult contents or reliability of documents online.

According to the variables analysed (age and sex), in the four age ranges there is no difference in the use of ICTs, although there is a link between age and use. For television and video games, space is generally closely linked to common areas of the house. When using each device, there is a correlation with age, use and company. They use ICTs mostly on their own. No significant differences were found between males and females either in use of ICTs or in how children perceive parental mediation. This contradicts previous research by (Bringué & Sádaba, 2008; Bringué & Sádaba, 2009; Bringué, Sádaba & Tolsá, 2011).

We can appreciate that ICTs are part everyday life for most of the 9-12 year-old children surveyed. The Chilean interactive generation surpasses the average of other countries in the region, due to the access to all technologies (Bringué & Sádaba, 2008). There is no doubt that this is a generation with early access to the technological world (Aguaded, 2011): at pre-school age, they already have access to ICTs at home (Plowman, McPake & Stephen, 2010; Plowman, Stevenson, Stephen & McPake, 2012; Plowman, Stephen & McPake, 2012; Lepicnik & Samec, 2013).

Due to its importance in cognitive development, we propose here parenting schools that promote training in the appropriate use of technologies with a safe, ethical, integrative and responsible way, so that children's times in front of a screen can be controlled and the contents they access can be supervised.

The main limitation of this study is that the research instrument was applied only in private schools of high socio-economic level. Therefore, results could hardly explain the reality of state schools and publicly-funded private schools, mainly due to the social segmentation present in Chilean education. As a prospective expansion of the research, the survey will be conducted with children from state schools, publicly-funded private schools and private schools to establish a comparison between all three realities. Also, a qualitative section will be incorporated to take into consideration families and teachers.

The study shows innovative contributions regarding the children's perceptions concerning parental mediation in the use of ICTs within the Chilean context. Being an exploratory study, it is only an initial study of this topic.

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