National Report of Spain:
“A Day in the Digital Lives of 0-3 Year Olds”

PAPERS INFANCIA _C Nº 22
April 2019

Authors:
Mitsuko Matsumoto**, Cristina Aliagas*, Marta Morgade** and David Poveda**
*Universitat Autònoma de Barcelona
** Universidad Autónoma de Madrid
EXECUTIVE SUMMARY

This report summarises the work carried out by researchers in Spain as part of the ‘A Day in the Digital Lives of Children Aged 0–3’ project research of DigiLitEY COST Action (IS1410) Working Group 1 ‘Digital Literacy in Homes and Communities’. 13 families from six European countries participated, and in the case of Spain, two families participated, being recruited one each from Madrid and Barcelona. The research methodology was mainly a qualitative case study approach drawing from the ‘Day in the Life’ approach (DITL) (Gillen et al., 2007; Gillen & Cameron, 2010) - using a combination of interviews, observational field notes and video recordings to collect data - focusing on one day in the life of the child and their family. Additionally, we collected comparable quantitative data in the form of inventories, such as those of technologies available in the home. In this report, we share the findings on the two cases from Spain, following a common report guideline drawn up for the project: 1) a summary of the process of data collection (recruitment, the first visit, the ‘day’, and the final interview); and 2) responses to the research questions. In appendices, additionally, we include the summary or transcription of the interviews with the parents and the inventories of digital devices and activities by the two focal children.

KEYWORDS

Digital literacy, young children 0-3, home, parental mediation, A day in life methodology, observation.
# Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive summary</td>
<td>2</td>
</tr>
<tr>
<td>Keywords</td>
<td>2</td>
</tr>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>Research Questions</td>
<td>5</td>
</tr>
<tr>
<td>The Structure of the Report</td>
<td>5</td>
</tr>
<tr>
<td>Methodology</td>
<td>5</td>
</tr>
<tr>
<td>Catalunya Family</td>
<td>7</td>
</tr>
<tr>
<td>Madrid Family</td>
<td>14</td>
</tr>
<tr>
<td>References</td>
<td>20</td>
</tr>
<tr>
<td>Appendices</td>
<td>22</td>
</tr>
<tr>
<td>Appendix 1-A: Contextual information about Roser’s family</td>
<td>22</td>
</tr>
<tr>
<td>Appendix 1-B: Summary of the responses to the prompt questions in the iterative interview</td>
<td>23</td>
</tr>
<tr>
<td>Appendix II-A: Contextual information about Gloria’s family</td>
<td>28</td>
</tr>
<tr>
<td>Appendix II-B: Summary of the responses to the prompt questions in the iterative interview with Gloria’s parents</td>
<td>29</td>
</tr>
<tr>
<td>Appendix III: inventories of digital devices and activities by Roser and Gloria</td>
<td>35</td>
</tr>
</tbody>
</table>
INTRODUCTION

This report summarises the work carried out by researchers in Spain as part of the ‘A Day in the Digital Lives of Children Aged 0–3’ project research of DigiLitEY COST Action (IS1410) Working Group 1 ‘Digital Literacy in Homes and Communities’. The ‘A Day in the Digital Lives of Children aged 0–3’ project aims to identify the way in which digital technologies inform the lives of very young children and their families. Most research focusing on the benefits and challenges associated with children’s use of technology has, so far, mainly targeted 9-16 years olds (e.g. Byrne, Kardefelt-Wither, Livingstone, & StoiLOva, 2016; Livingstone, Haddon, Görzig, & ÖLafsson, 2011; Mascheroni & CUMAN, 2014). Over the past few years, however, the digital practices and literacies of children under eight have been the focus of relevant research, and the area of study is rapidly growing (e.g. Chaudron, 2015; Chaudron, Di Gioia, & Gemo, 2018; Sefton-Green, Marsh, Erstad, & Flewitt, 2016) while a wide range of media may be accessible from infancy (Marsh et al., 2015). Children are going online at younger ages, too, which may involve risks as well as providing new developmental and learning opportunities (Byrne et al; 2016). And, their digital practices and skills developed at home have important implications for their learning in school (e.g. Sefton-Green, Marsh, Erstad, & Flewitt, 2016). Different networks of researchers involved in the area of study propose that increasing the body of research on younger children especially children aged under five continues to be a priority (ÖLafsson, Livingstone, & Haddon, 2013).

The research programme A Day in the Digital Lives of Children Aged 0-3 responded to the call; it focuses on children below 36 months of age and centring on video recording and observing one full day of a child’s activity, rather than relying on parents’ (self-)reports or retrospective interviews with them as is often the case in existing studies. Our study is transnational, involving children of varying ages within this group and takes a dynamic view of culture. The research team is multidisciplinary, including from Media and Communications Studies, Education and Cultural Psychology. Data was collected in 2017-18.

Two cross-national reports have been produced so far.


The findings of this study have also informed a policy brief (Gillen et al., 2018b). Further publications will develop analyses and theoretical considerations. We also anticipate that in the future further studies will be undertaken, indeed in Finland one further case study is already underway.
RESEARCH QUESTIONS

The aim of this project is to answer the following questions:
1. How does technology inform the daily lives of children aged from birth to three?
2. What digital literacy skills and competences do children in this age group develop as they engage with technologies?
3. How do parents or carers mediate young children’s use of technologies?
4. What are parents’ or carers’ perceptions of and attitudes towards the current and potential future use of technologies by their young children?

THE STRUCTURE OF THE REPORT

We first share the methodology of the project as a whole. Then, we report on the two cases from Spain, following a common report guideline drawn up for the project: 1) a summary of the process of data collection (recruitment, the first visit, the ‘day’, and the final interview); and 2) responses to the research questions. In appendices, additionally, we include the summary or transcription of the interviews with the parents and the inventories of digital devices and activities by the two focal children.

METHODOLOGY

The researchers visited 13 families from six European countries (England, Spain, Israel, Finland, Sweden and Portugal), with the focus on one child in each family (see details of the participants in Gillen et al. 2019). In case of Spain, the focal children were two girls: Roser, aged 19 months from Catalunya and Gloria, aged 21 months from Madrid. Both of the families were already known to the researchers personally. Both families were enthusiastic about contributing to the research, while recognising that participation involved a substantial commitment.

The researchers used the ‘Day in the Life’ (DITL) methodological approach (Gillen et al., 2007; Gillen & Cameron, 2010) - using a combination of interviews, field notes and video recordings to collect data - with the focus being on one day in the life of the child and their family. Ethical considerations are integrated into every stage of the research; at the same time formal ethical approvals have been sought for the project locally according to the regime, for example as regards institutional or regional requirements. In case of Spain, we had obtained ethical approval from Research Ethics Committee of the Universidad Autónoma de Madrid.

Video-recording a full day of a child’s activities helps build a holistic understanding of young children’s engagement with digital media and parents’ mediation strategies. It also allows a multiplicity of lines of analysis, including discrete and even new areas for investigation that are not possible to be anticipated in advance. A combination of different methods such as video recording and subsequent interviews can be revelatory as to tensions, for example in this project how one family stressed their resistance to technologies at the same time as video recording revealed their embedded nature in family life.
In this study, researchers carried out a preliminary discussion with the parents (either in person or by telephone) followed by three visits to the family which took place in late 2017/early 2018:

1. During a familiarisation and pilot visit the research team meets the family, fully explains the project and gains initial consent for the research, while stressing that this will be an ongoing process. The researcher also gathers basic demographic, health and lifestyle information working with a common interview schedule and also pilots videoing of the child’s activity for about half an hour.

2. During the main ‘Day in the Life’ the child’s activities are recorded for a minimum of six hours in total, turning the video off during periods of sleep, bathroom activities and whenever the family wish. Almost all the time, two researchers were involved in this process, one researcher video recording the activities while another took field notes.

3. A few weeks later the lead researcher returns in the ‘Iterative Stage’ review and discusses the recordings with the parents. The researchers have compiled extracts from the day, totalling around half an hour in length. They discuss this data with the family, while (audio) recording this discussion. The purpose is to review and discuss the clips (thereby including the parents in the initial analysis process) as well as to ascertain their attitudes to technology and thoughts and concerns about their children’s usage of it. As instruments for this final interview, two materials were used:
   - About a half hour compilation video of clips where the focal child is in some relation to digital technology, selected and compiled by the researchers who conducted the visit.
   - Interview prompts to help cover the common issues related to the parents’ attitudes to technology if they have not emerged during the discussion of the compilation video.

In addition to these, we all completed a survey regarding the technological devices owned by the family, devices and applications accessed by the child, and the competences demonstrated by the child. The researchers completed this during the various stages of the research.

To help the comparative analysis among cases, a common report was drawn up and completed by each research team - according to which this national report is structured as mentioned above (see the section above ‘Structure of the Report’). The lead researchers from each country also met physically in Lisbon in February 2018 to share analyses and since then various team members have met, face to face and remotely, in various combinations to discuss results, analyse, present conference papers (e.g. Sandberg & Jorge, 2018) and develop writing.
Section 1: Essential Information

<table>
<thead>
<tr>
<th>Name of case</th>
<th>Cristina Aliagas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researchers</td>
<td>Mitsuko Matsumoto</td>
</tr>
<tr>
<td>Location (Country; region)</td>
<td>Spain - Catalunya</td>
</tr>
<tr>
<td>Family (pseudonym)</td>
<td>Vavi</td>
</tr>
<tr>
<td>Name of the child (pseudonym)</td>
<td>Roser (19 months’ old on the day of filming)</td>
</tr>
<tr>
<td>Visit 1 date</td>
<td>10 November 2017</td>
</tr>
<tr>
<td>Visit 2 date</td>
<td>15 November 2017</td>
</tr>
<tr>
<td>Visit 3 date</td>
<td>17 November 2017</td>
</tr>
</tbody>
</table>

Process Summary

Recruitment of the family was initiated by Cristina. Having known the family in Madrid uses little technology for the child, the Spanish team discussed and agreed on finding a family in Catalunya that uses comparably much more technology. The parents are acquaintances of Cristina and she approached them because they had a small conversation about Roser’s fondness for the iPad and mobile phones. During the first interview, the Father mentioned that period that had been the focus of that initial conversation: “she had a period when every [object] that looked like a phone, she putted it on the ear. Now she has loosen the interest towards mobiles. I guess she don’t understand, but at the beginning with the finger” (va passar una època que tot el que s’assemblés a un telèfon, a l’orella com si fos un telèfon. Ara ha perdut l’interès amb els mòbils. Imagino que perquè no s’aclara, però al principi amb el dit - 26:00).

After listening to the research proposal, the father quickly agreed to participate in the study. He said that he was happy to help with the research. He added that he had been the focal child in a doctoral research on language development that was conducted by someone in his family long time ago and that for this he liked her daughter to have a similar experience. However, the mother needed more explanations about the aim of the study and the research protocols since she was worried with the involvement of video data. Cristina explained carefully all the details and she accepted to participate. The parents are from a suburb city of Barcelona where they live now. The mother works as a lawyer, and the father is an electrician working in maintenance (at the time of our fieldwork, he was taking a paternity leave for the birth of the younger child who was 4 months at the time of the fieldwork). Roser is 19 months’ old at the time of filming. She has a varied vocabulary and communicates with words and gestures. She does not go to a nursery school. When both parents work, she stays with her grandparents during the day; and recently also with her newborn brother.
The first visit was done by Cristina alone and lasted about one hour and half, including 30 minutes of filming. Project information was shared and discussed, and consent forms signed in duplicate by the father. Cristina explained that only four researchers from Spain have access to the raw data, and when shared more broadly, the identification of the child and the family would be obscured. The visit went very well. Roser was not at all anxious by the visitor in her home and she did “her life”, playing in the living room, during the conversation. During the pilot, she was very interested in the video camera, and the researcher let her explore it. We had already agreed that the main day of filming would be a couple of days after, since Mitsuko came from Madrid for the fieldwork to happen.

On the main day we arrived at 10:30am and started filming at 10:50am. We stayed in the living room almost all day, but we also followed their walk to a pharmacy (stopping at the park in front of their house and also by her grandparents’ flat to drop off an amazon package). Almost all day Mitsuko filmed (although when it was possible she set the camera up on a tripod) and Cristina took field notes, occasionally taking photos and filming videos from a different angle. At around 1:15pm Roser slept and stopped recording but Cristina stayed in the flat and chatted with the father. Around 3:30pm we resumed videoing, but we stopped at 4:50pm and had to leave because they got a medical appointment for Roser’s younger brother who was sick. So at the end we only got 4 hours of recording only.

After filming, Cristina and Mitsuko discussed what to include in the compilation video. Having agreed on, Mitsuko made the clips and shared with Cristina. Cristina and Mitsuko visited their house for the iterative stage discussion two days after the main day. At first only the father was present for the discussion (and in the house), but the last part was joined by the mother (with the presence of the two children). As well as covering the themes suggested by the project, we also asked questions about what happened after we left on the main day, to have a fuller picture of Roser’s day. We video-recorded the discussion as well as an audio-recording. We have summed up the discussion and key quotes have been transcribed to support the summary.

We feel the overall process went very well. The family and the children were very supportive to the project and recording, and we feel we were able to generate very rich data although unfortunately we could not have a 6-hour recording. We had suggested them to film a couple of hours at night but they could not do it. Cristina tried to meet them again in three more occasions, but unsuccessfully. We understand the complex situation of the family, with a baby and a toddler, and we fully thank them for their effort and involvement in the study.

Section 2: Responses to Research Questions

RQ1: How does technology inform the daily lives of children aged from birth to 3?

Roser is surrounded by technology all day long, above all in the compact-sized living room where she stays much of the time when she is at home. In the living room, there is a large TV, and a Tablet with keyboard is on the lower table where Roser has breakfast, lunch and dinner. When we were in the house, TV was on almost all day and the Tablet was available. The father’s phone rang or sounded several times along the day and engaged in quite a few phone conversations.
When we arrived at the family house Roser was having breakfast, watching a cartoon in Catalan called “Mic”, that is an orange character with long legs (she also had that cuddly toy in her cot).

When we came back from a walk, the father put Roser on a high chair to feed her lunch, and again put the same cartoon on.

While Roser had afternoon snack and played in the living room - after her nap in the afternoon -, the TV was on in the background, although the program was not for her.

At one point when they were playing, Roser asked her father to take a selfie, saying ‘photo, photo’ and the three of them, - Father, Roser and her younger brother - took a selfie (see Image 2 below).

Other activities she was engaged during the day was:

- Roser went for a walk with Father, stopping at a play park for Roser to play. They went to a pharmacy and also stopped by briefly at her grandparents’ place to drop off a package from Amazon.
- While Father was preparing her lunch in the kitchen, Roser was standing on a stool in the kitchen, playing to prepare a pumpkin purée.
- Roser played with other toys in the living room, such as cubes and some electronic toys.
- When Mother came back from work, Roser sat on the table, talking with Mother and eating a bit of food that Mother was eating.
Regarding the activity of watching cartoons, we observed Roser watching all the advertisements with interest.

**RQ2: What digital literacy skills and competences to children this age group develop as they engage with technologies?**

Roser knows that on the tablet she can watch her favourite cartoons. She knows where the tablet is kept (usually in a lower shelf under the TV or in the lower living room table) and takes it out when she feels like watching a cartoon. In terms of her actual ability and knowledge regarding the operation of the device, she can close it by taking down the screen, but, on the other hand, she cannot open it. She usually closes the tablet herself, in an exasperated gesture, as a way to express that she does not like something she is watching.

F: "There is a chapter [of the Mic cartoons] where there is one that comes out with a salt-cellar and the sea. She cannot even see it. She closes [the tablet], as she knows that it folds ... like "pum" (the sound of closing a tablet). She turns it off. She cannot open. When she wants us to put it on she brings the Tablet to us."

F: “Hay un capítulo [de los dibujos Mic] donde hay uno que sale con un salero y sala el mar. No lo puede ni ver. La cierra [la tablet], como ya sabe que se plega... es pum. La apaga. Abrir no. Cuando quiere que se la pongamos coge la Tablet y nos la trae”.

Roser tries to touch the keyboard of the Tablet but the parents do not let her. Moreover, she did notice that the screen is interactive and she has tried to press the "play", as her parents do when they put cartoons for her. She also tried to press the “skip” button for avoiding the advertisements.

F: "sometimes she tries to touch the keyboard, but we try to say no, do not touch it ... The screen itself is yes she touches it, because she already knows that we press the ‘play’ and she does sometimes try to give it a go but I do not think she knows why she does it."

F: “a veces intenta tocar el teclado, pero le intentamos decir que no, que no lo toque... La pantalla sí, porque ella ya se fija que le tocamos al play y ella sí que a veces intenta darle pero no creo que sepa porqué lo hace”

Roser also knows that when an advertisement comes in in the middle of watching a cartoon, it does end and that the cartoon comes back. So she recognises the advertisements as short bits of videos embedded in her favourite cartoons and has learned to tolerate them. Before, she used to get angry but now she has “learned to wait” for the parents to skip the advertisements for her. The father remembers that a few months ago she did try to press the square sign to jump the ad. She did it because she saw her parents doing it.

F: "Before she got angry. When the Mic disappeared she got angry. Now, she knows that it [the Mic] comes out [again]. Well, she has learned to wait, but it is true
that before when an advertisement came out on Youtube she used to make a scene.”(00:18)

F: “Antes se enfadaba, a la que desaparecía el Mic se enfadaba. Ahora como sabe que después sale (otra vez, el Mic), pues ha aprendido a esperarse, pero sí que es cierto que antes cuando salía un anuncio en el Youtube montaba un pollo” (00:18)

About the mobile phone, when the father’s phone vibrated during the first interview, Roser brought it to the father immediately. The father thinks that Roser does not understand that the vibration means a phone call. However, from her behaviour we can infer that she at least knows that mobile vibration requires an action by the mobile owner. The father said, “If [the mobile phone] lights up and vibrates, it draws her attention and then she will look, but I do not think that she interprets that there is a call” (“Si fa llum i vibra, li crida l’atenció i aleshores mirarà però no crec que per interpretar que hi hagi una trucada”).

In the first interview with the Father, he explains that Roser likes to talk by the phone: “she has realised that she can talk” (se’n dóna compta que pot parlar).

RQ3: How do parents or carers mediate young children’s use of technologies?

Parents consider, as argued by the father, that the girl is too small to interact with digital applications: “We still see her too small to interact (with technology)” (Aun la vemos demasiado pequeña para que interactúe). This is reinforced by the personal vision of the mother, who believes that technology dehumanise and separate human beings. Because of this they have not searched for apps for children to play. They strongly believe that the game is “on the carpet”.

However, the family actively uses technology in particular situations and with certain functions. For instance, the tablet is used at home to put cartoons, especially during lunch and dinner. It is a resource for the girl to be stay still during the meals: “Normally we put the cartoons when we want her to be a little quiet and stay still.” (Father) (“Normalmente le ponemos los dibujos cuando queremos que se esté un poco quietecita”). Tablet is used at home but they occasionally use the mobile in a restaurant if necessary. In the context of a meal or at the grandparents’ house they do not put it on if she is entertained in other ways.

Beyond the tablet, parents tolerate ‘light technology’ embedded in toys, like a little house with electronic noises for each window and door, or a musical die. In the interview we learned that some of these toys have actually been presents by family members.

Regarding the TV, parents have noted the ‘abduction’ effect that it has on his newborn baby by seeing him move his head to watch the images on TV. Being aware of these powerful effects, they put him in a way that his back faces the TV and so he does not watch TV.

Parents actively promote Roser to interact by phone with family members, or to answer the intercom. They also promote Roser helping to call the elevator by clicking the button.
RQ4: What are parents’ or carers’ perceptions of and attitudes towards the current and potential future use of technologies by their young children?

In this family, the Mother and the Father have different views regarding the use of technologies by their child and the young children in general. The Father thinks that the goodness of technology depends on the uses. He says “I think that technology is as good as it is bad”. He elaborates on this idea arguing that “It is important to know how to use it and have knowledge to use it in your favour and so that it won't go against you”. Based on this idea, he sees the potential that technology has for “studying” and “acquiring knowledge” but at the same time he sees technology as “an open door to evil”.

F: "I consider technology to be as good as it is bad. And you have to know how to use it and have some knowledge to use it in your favor and not to play against you. With your children you have to share the moments and teach them the good and also teach them that there are very bad things. But I see it very advantageous in terms of study and knowledge and you have the doors to everything but at the same time you have the doors open to evil. According to how it is used ".

The Mother defines technology as "horrible". She thinks is better to postpone the entrance to the tech-world as much as possible. She also considers that it is important to enter in the tech-world “knowing what there is inside”. Building on this idea, she argues that childhood is a key phase in life when it is important not showing to the children the easiness of accessing technology: “I think that if from very young you teach that the access is easy and then [during the adolescence] you restrict and cut them, it will be more difficult [to educate them on the uses of technology]".

M: "horrible, zero. The later you enter this [technological] world, the better. And when you enter you should know what is there. I think that if you teach [the children] from when they are small, that access is so easy and such, and then to cut it is much more difficult if good comes with some ideas that you try to instill (...) it is better when you have more use of reason and know the pros and cons. If in the future she wants to do facebook, I will explain the problems that may exist, to put the window to the public and let everyone know what you do ... "(05:40)

From these differences, the way they mediate the uses of technology by their children also are different. The Mother thinks that they will need to “control” the online activity while the Father frames this as an opportunity to learn collaboratively: “I want her to do the same or to show the same attitudes and competences when is with me or when is alone”.

At the same time, both of them think that Roser is too young for interacting with technology and that there is always time for everything in life. For that reason, the family has not yet bought any specific hardware or software for Roser. They also consider that there are “principles of knowledge” that should be assumed before introducing technology. For instance, handwriting or maths.

F: "Technology, I think, is good but it is counterproductive if you lose many principles of knowledge that are necessary before arriving [to it] ..."

They argue that “technology must be complementary to a basis” and that “the basis is know who to write, know how to read a book, the pleasure of taking a book and turning the
pages...”. On this regard, their concerns point at the school. They think that the academic system in Spain is not achieving to balance technology with the basis of knowledge. They agree with the projects for integrating technology in classroom learning but “after learning to write by hand”.

They also have some concerns and fears regarding technology.

1) Commented by the Mother, is the dehumanization that technology entails. She complains about the social practice of buying online, as this involves not interacting with anybody. Her fear is that machines might reduce the social interaction between human beings.

   M: Dehumanize, the technological world. The fact of how to treat people. We purchase online. Where has it been seen to go to the market and not to give the turn? Good morning and such. We are dehumanizing. And people on the street with helmets. All this is what we get is really that we do not mix with each other. (...) Everything is with a machine. (08:00)

2) Another shared concern that they anticipate is the arrival of social networks to their children. The Father argues that they will both need to carefully think about security and privacy issues in order to educate their children.

   F: "At the moment there are no worries. They will come when they [the children] go to school and start with social networks. (...) Each time they start earlier, maybe with seven years already they start asking. It is not a worry or a fear. When it arrives it will arrive ".

   F: "I think I can speak for (the mother) too, that we will have to encourage us in looking at security and privacy issues of social networks."

3) Children will learn quicker than the adults, which positions the adults in a critical situation, in the sense that the adults might struggle understanding applications or traits of the digital culture or even helping the new generations to become critical users of technology.

   F: They will be faster than us in many things and I will have to catch up to the level (...) When I saw her one day with a mobile phone doing so (touching the screen) I thought that if I had been given the mobile I would not know how to pass the finger. I did not have my mobile phone until I was 14 years old. (11:26)

4) the possibility that societies can for some reason abandon technology. For this, he thinks it is important to learn from the basis, being the basis the activity of learning without the mediation of technology.

5) The integration of technology in the Catalan/ Spanish society. The father says that “there are some countries in Europe that besides English they also requires children to learn coding”. He thinks that Catalonia/ Spain is behind in both needs.
MADRID FAMILY

Section 1: Essential Information

<table>
<thead>
<tr>
<th>Name of case: ‘Gloria’ - Madrid (Spain)</th>
<th>David Poveda; Mitsuko Matsumoto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researchers (mark lead and RA if applicable)</td>
<td></td>
</tr>
<tr>
<td>Location (Country; region)</td>
<td>Spain, Madrid</td>
</tr>
<tr>
<td>Family (pseudonym)</td>
<td>Rivas</td>
</tr>
<tr>
<td>Name of the child (pseudonym)</td>
<td>Gloria (21 months old on the day of filming)</td>
</tr>
<tr>
<td>Visit 1 date</td>
<td>29 November 2017</td>
</tr>
<tr>
<td>Visit 2 date</td>
<td>2 December 2017</td>
</tr>
<tr>
<td>Visit 3 date</td>
<td>11 December 2017</td>
</tr>
</tbody>
</table>

Process Summary

Recruitment of the family was initiated by Mitsuko. The family and Mitsuko live in the same residential area. The family told the researcher that they are willing to take part if it is for research as the mother works for a company that provides data resources to universities around the world and felt it was her obligation to support research, as well as telling us that they get on well with Mitsuko and her family. The parents have been living in the same residential area for 10 years, and the mother, an Italian, works full-time, while the father, a Spaniard, takes care of the child. Gloria was 21 months’ old at the time of filming. She talks well with a varied vocabulary, considering her age. She goes to a nursery school for three hours a day in the morning (9am - 12pm).

Mitsuko conducted the first visit. All the family members were present and the visit lasted about an hour, including 30 minutes of filming. Project information was shared and discussed, and consent forms signed in duplicate by the father. Mitsuko explained that only four researchers from Spain have access to the raw data, and when the data is shared more broadly, the identification of the child and the family would be obscured. The visit went very well. Gloria was not at all disturbed by having a visitor. At first, she was keen to interact with the researcher, but soon she started to play on her own, and even when the filming started she did not pay too much attention to the camera and continued doing what she was doing. We had already discussed and agreed on the main day over online communication, which was four days after the first visit.

On the main day, we arrived around 10:20 am and started videoing around 10:30h. Our filming was held mainly in the living room and in the kitchen, but we also followed two walks that Gloria had (in the morning to an ecological grocery shop and in the afternoon a family walk). Most of the day Mitsuko filmed (although when it was possible she set the camera up on a tripod) and David observed, occasionally taking photos and filming videos from a different angle. When the family started lunch (around 2:10pm), we left their flat, and we went back around 5pm when they were about to wake up Gloria from a nap. We
stayed with the family until 7:10 pm when Gloria started to play again after making a pastry with her mother.

David and Mitsuko discussed which clips to include in the compilation videos. Mitsuko edited the clips and shared with David first. As they became quite a number of them David selected 8 clips among them. We had the iterative stage discussion at Mitsuko’s house as the family lives with a dog and David had strong allergic reactions after all-day filming. As planned, we filmed and audio-recorded the whole interview.

We are very happy with the process of data collection. The family was very collaborative, including Gloria, and we feel we were able to generate very rich data, which in the coming months we hope to analyse from different angles.

Section 2: Responses to Research Questions

RQ1: How does technology inform the daily lives of children aged from birth to 3?

The main and only way that Gloria directly engages with digital technology that we have observed is watching cartoons and music videos on TV or on a laptop. She did so in three occasions while we observed her activities.

- Breakfast

When we arrived on the day of observation, Gloria was sitting on a high chair, watching a music video on Youtube (in the ISD the mother told us she was watching ‘Opera Imaginaria’). The father told us in the ISD that Gloria has her breakfast, - which is a bottle of formulated milk -, very slowly. Therefore, they put on a cartoon or music video she likes and she takes breakfast, normally taking 30 minutes. They told us this is also a routine that is maintained during the week when she goes to a nursery.

→ After 30m or so, she said she wants to go down, saying “bajo” and started to play other non-digital toys.

- Snack time

She was not in a good mood after waking up from a nap (she was given a natural yogurt, but it was too sour for her and she started to cry). The father put on a cartoon (Mickey Mouse old cartoon) and later on a music video that she likes. About this in an interview, the father said putting a cartoon or music video she likes helps calm her down, but it does not help her eat, if she does not want to eat.

- Shaun the Sheep

When we were there for the pilot filming on a weekday evening, Gloria asked the parents to put Shaun the Sheep DVD on TV. She watched one episode and requested another to put on, but before the second one finished she got bored and she started to play with other things, also prompted by her father.

Gloria’s parents confirm that she does not engage with digital technologies at her nursery school. In other family members’ house, at her grandfather’s house, she sometimes watches some cartoons, but not too long as the grandfather does not stand it too long.
Other activities she has done on the ‘day’ were:

- going for a shopping in an ecological shop with her mother
- cooking lunch and dinner, and making pastry with her mother
- going for a family walk in the afternoon
- playing with other toys, such as puzzles, drawing, reading books with her mother.

Gloria’s main play area at home, based on our observations, is the living room. There is a full section of the living room devoted to her toys, mostly wooden puzzles, books and figures with a carpet and a comfortable play area. The living room has a large color tube-TV that is not connected to the antenna and is only used to watch DVDs. There is an old PC computer (without internet connection) and a hi-fi analogic music set. As shown in Image 1, the lap-top is also in the living room and is the only digital device Gloria used in the home.

Although Gloria’s activity directly engaging with digital technologies are limited with these, her parents were engaging with technologies much time of the day around her.

- Her mother and father using laptop and having conversation about the contents on the screen of the laptop.
- Her mother has her mobile phone around, even leaving it on the table while she read books to Gloria (see Image 1 below):
RQ2: What digital literacy skills and competences to children this age group develop as they engage with technologies?

In Gloria’s case, based on what we observed and parent's discussion during the first visit and ISD, she has "limited" direct contact with digital technologies in the home. The only device she uses is the laptop computer, which is exclusively used to watch videos / movies (mainly from Youtube). She also knows that DVD movies have to be inserted in the DVD player and will make indications about this when she wants to watch a movie.

However, her parents do make use of other digital technologies, such as the lap-top computer, a smartphone (only one, owned by the mother) and an e-reader. The family does not own a tablet device. Gloria observes many of these uses and some of them are directly targeted towards her. For example, during the recording of the full day we left the camera with the family so they could record themselves over lunch. At one point during the meal, Gloria started to drop food to the ground intentionally and the father took the smartphone and said he was going to record if she did so again to send the recording to her teacher.

We would argue that, even in apparently "low-tech" families as this one (see below) quite a number of competencies might be developing through observation and broader participation in out-of-family contexts. In terms of research, this is something we would like to explore: how children learn about technology through observation and apparent little direct engagement - as this is something that requires detailed examination of observations and might not be often/easily verbalized in interviews with parents.

The parents also have a vision of technology as something that is easy to use and learn to be used (is "designed for dummies") so they are not concerned that Gloria will have difficulties learning to use technology or is at a disadvantage because of her limited exposure to digital technologies at this age. The mother said that if her 70-year old father can use technology without difficulty, learned how to use Whatsapp and the tablet quickly Gloria will too. If she has curiosity and a willingness to learn, which they try to instill in her, she will learn without difficulty. In fact, they think that at this point it is more important to engage in other activities. For example, Gloria's father paints a lot and Gloria likes to paint too and, in her mother's terms, the "coordination skills and connections between brain and hands that develop through this are much more important."
RQ3: How do parents or carers mediate young children's use of technologies?

- The parents are careful not to bring in unnecessary digital devices to the home. The mother told explicitly her siblings not to buy a technological gift for Gloria. They themselves do not possess many digital devices, they only possess a mobile (the mother's, the father does not have one), a TV in the living room that is not connected to the antenna, a laptop, an old desktop, and a Kindle. Although the mother used to work as a technician related to electronic devices, they just try buying technological devices that they think are necessary (the mother made a comment saying that they are like electrical household appliance). More broadly they are against consumerism.
- They mediate in a warm, caring style (when she wanted to watch a cartoon 'Shaun the Sheep' the mother and the child negotiated how many episodes they would watch. When the child was too close to TV, the mother warmly invites the child to sit with her and watch).
- Also, the way Gloria watches video in the laptop: with the lap-top placed on the table and her strapped in a high-chair, allows parents to engage in other activities while Gloria is relatively safe and engaged.
- The child herself mediates her use of technology. After around 30m of watching she would tell her parents "Abajo" letting them know that she wants to come down from the high chair and play with other things. and for the cartoon on the TV, she got bored of watching in the middle of the second episode, and started to look for other things to entertain herself.

RQ4: What are parents' or carers' perceptions of and attitudes towards the current and potential future use of technologies by their young children?

- They are not against the use of technologies by the young children per se. They do not have any restriction by age or so. If it is something useful for the life of the child, they do not have problem, but just for the sake of consumption, they are against it.
- The parents present themselves as relatively "low-tech" and basically interested in other activities (outdoors, cooking, playing other games, etc.). For example, they explained in the interview that for them it is much more important to invest their money in good quality sound and hi-fi equipment than on the latest digital devices. As the explain (see Appendix

3) they only own one smartphone and have a relatively old lap-top and even older PC computer (and no tablet devices). However, this does not mean they are technologically "illiterate" or have an aversion to digital technologies. Professionally, the mother works for a company that provides digital information services to universities and research institutions (the mother describes herself as an "advanced user") and the father's training and previous employment was in fine arts and teaching, where he used various graphic design software. They also have a high-speed internet connection in the home which they maintain and can handle without difficulty. Also, the mother explained how he has used/uses social media in her parenting:

"there is a breast-feeding group that started from the local clinic and it might seem like a stupid example but we have supported each other a lot, for example, if at three in the morning you are awake in the middle of breastfeeding crisis you go to Facebook to get
advice from other moms who are also awake at three in the morning with the same shit going on"

When we asked about how they might approach the use of technology in the future, given their preferences for non-digital activities at the moment, the parents explained that maybe "after she is 5", when she starts asking for it, they start to use it at school or someone recommends she starts using some digital technology because it has educational value. Also, given their position towards consumerism and that the mother's family is described as very consumerist and tech-savvy, they expect that Gloria's first tablet device will be a hand-me-down from her extended family.

When asked about future schooling (to explore if how schools use technology will be a factor in their selection), they explain that this is not relevant at all and are much more interested in the fact that local public schools in the area are good with collaborative projects and have a good history of family involvement in schools - the locality is well known for this educational tradition and they looked for a home there for this reason.

They also talk about Gloria becoming a critical user of digital technologies, to be able to read critically the information she might get through internet or Google, how digital technologies control our lives and the consequences of social media. In this discussion, the father draws examples from his experience in how his teenage students used social media and how little aware they are of the risk involved in sharing information or of the non-legal nature of many of their actions.
**REFERENCES**


Appendix A: Contextual information about Roser’s family.

- General makeup of the family i.e. numbers of parents, children and anyone else living with the family: Father, Mother and the focal child (19m), a younger brother (4 months).
- Age of parents/carers. Father (34), Mother (39).
- Employment information for each parent or carer: Father: Electrician working in maintenance (at the time of our fieldwork, he was taking a paternity leave for the birth of the younger child). Mother: Lawyer
- Highest educational attainment of each parent/carer: Mother: Bachelor degree in law. Father: Technical degree in electric installations (Técnico superior en instalaciones electricas de baja tensión).
- Estimated annual income of the family, including any government benefits. (This may be omitted if felt to be culturally insensitive)
- Ethnic background/family history of the family: Catalan.
- Languages spoken in the family: Catalan
- Date of birth for each of the children in the family: 22 April, 2016
- For the focal child (aged 0-3) – information about health and development to date: she does not go to a nursery school.
- Historical background of the family i.e. how long they have been living in the home, previous location and so on. 4 years living in the flat, the mother had bought the flat before they met, and after they started to be together, he moved into the flat.

The home was the main context for the “day” (see Figure 1) but the father decided to go to the pharmacy because the son was ill and make the best of the outing to approach the grandfather’s house and give an amazon packing. When the father went out, with Roser and his brother in the pushchair, Roser saw the playing area in the plaza in front of their house and stopped there for about 30 minutes. At the end of the day, a short outing to the pharmacy took more than an hour. A draw of Roser’s house is provided (just the first floor as the researchers did not go upstairs) (Figure 1). A sketch of the outside spaces that were accessed by the child during the “day” is also provided (Figure 2).
Appendix 1-B: Summary of the responses to the prompt questions in the iterative interview

1. How confident would you say you are yourself in the everyday use of technology?

The Father feels that he does not know enough about technology. He would like to master technology in order to avoid feeling “vulnerable” online. He links the feeling of vulnerability with social networks. He has a Facebook and an Instagram account but he laments that he “is in the darkness of the affordances” that on these social networks he feels that he could be “hurt from all sides” (“me podrían fastidiar por donde quieran”). He would like to have “more time and dedication” for changing this situation.

J: “Me gustaría saber mucho más de lo que sé, por ejemplo en redes sociales” (02:02) “Tengo Facebook y Instagram pero desconozco todas las posibilidades. Podríamos decir que mis perfiles en las redes sociales son totalmente vulnerables porque me podrían fastidiar por donde quieran”. Le falta tiempo y dedicación.

F: "I would like to know much more than I know, for example in social networks" (02:02) "I have Facebook and Instagram but I do not know all the possibilities. We could say that my profiles on social networks are totally vulnerable because I could be hurt from all sides. I am short of time and dedication."
Considering his feeling of online vulnerability and the fact that the mother does not have any account in social networks, the father thinks that “we will need to encourage us to [update] on security and privacy issues in social networks”

F: “creo que puedo hablar por (la madre) también, que nos tendremos que poner un poco las pilas en temas de seguridad y privacidad de las redes sociales”.

F: "I think I can speak for (the mother) too, that we will need to encourage us on security and privacy issues in social networks."

2. Is your use of technology in the home influenced at all by external factors, such as work?

At home, they try to focus on the needs of their children and to play with Roser without technology or with a little input of technology. However, they use technology (mainly their phones and a laptop) when they are at home. In the case of the father, the uses of technology that are related to the job are phone calls. He receives calls from co-workers and talk about particular tasks to do. Since he was a self-employed worker until a couple of year ago, he also receives calls or text messages asking for “small jobs” to do. The calls he receives at home can be directly related to job issues, family organization or leisure. In the mother’s case, when she is using the laptop at home she is typically working, answering emails or preparing official documents. As she is a lawyer, she receives calls from her clients any day at any time, but she chooses to take it or not.

The Father considers that they (father/mother) have different attitudes towards calls and WhatsApp messages. While he responds immediately even for saying “I can’t speak now, I will call you later”, the mother prefers to leave the phone on the vibration mode and let the phone ring if the call comes in not at a good moment.

3. What technological hardware or software have you purchased for the focal child, and why?

The family has not yet bought any specific hardware or software for Roser. The main device they use for her is a Tablet with an attached keyboard that they already had. They argue that Roser is too young for interacting with technology and that there is always time for everything in life. They have not sought information about specific tech-products for children. Because of all these reasons, they have not been interested in putting her to the scene “meterla en el mundillo”. They are conscious that having technological hardware/software is the first step to enter in the tech world.

F: Todavía no hemos comprado nada para ella [de tecnología]
C: ¿Por alguna razón? ¿por qué?
F: Seguro que hay algo específico para ella pero todavía no hemos tenido interés en meterla en el mundillo
(04:46)

F: We still have not bought anything [of technology] for her.
C: For some reason? why?
F: Surely there is something specific for her but we have not had an interest in putting her to the scene yet.
4. What are your views on young children's use of technology in general?

The Father thinks that the goodness of technology depends on the uses. He says “I think that technology is as good as it is bad”. He elaborates on this idea arguing that “It is important to know how to use it and have knowledge to use it in favour and so that it won’t go against you”. Based on this idea, he sees the potential that technology has for “studying” and “acquiring knowledge” but at the same time he sees technology as “an open door to evil” (“las puertas abiertas al mal”).

F: “Yo considero que la tecnología es tan buena como mala. Y que hay que saber usarla y tener unos conocimientos para usarla a favo y que no te juegue en contra. Con los hijos hay que compartir los momentos y enseñarles lo bueno y también enseñarles que hay cosas muy malas. Pero la veo muy ventajosa para el tema del estudio y el conocimiento y tienes las puertas a todo pero al mismo tiempo tienes las puertas abiertas al mal. Según cómo sea utilizada”.

F: "I consider technology to be as good as it is bad. And you have to know how to use it and have some knowledge to use it in favor and not to play against you. With your children you have to share the moments and teach them the good and also teach them that there are very bad things. But I see it very advantageous in terms of study and knowledge and you have the doors to everything but at the same time you have the doors open to evil. According to how it is used ".

The Mother defines technology as “horrible”. She thinks is better to postpone the entrance to the tech-world as much as possible. She also considers that it is important to enter in the tech-world “knowing what there is inside”. Building on this idea, she argues that childhood is a key phase in life when it is important not to show to the children the easiness of accessing technology: “I think that if from very young you teaches that the access is easy and then [during the adolescence] you restrict and cut them, it will be more difficult [to educate them on the uses of technology]”.

M: “horrible, zero. Cuando más tarde entren en este mundo, mejor. Y que cuando entre sepa lo que hay. Creo que si de pequeños les enseñas que el acceso es tan fácil y tal, y luego coartarles y cortar es mucho más difícil si ya de buenas viene con unas ideas que le intentas incultar (...) es mejor cuando tenga más uso de razón y que sepa los pros y contras. Si el día de mañana se quiere hacer facebook, le voy a explicar los problemas que puede haber, de poner la ventana pública y que todo el mundo sepa lo que hace...”(05:40)

M: "horrible, zero. The later you enter this [technological] world, the better. And when you enter you should know what is there. I think that if you teach [the children] from when they are small, that access is so easy and such, and then to cut it is much more difficult if from the beginning they come with some ideas that you try to instill (...) it is better when you have more use of reason and know the pros and cons. If in the future she wants to do facebook, I will explain the problems that may exist, to put the window to the public and let everyone know what you do ... "(05:40)

Both parents consider that there are “knowledge principles” that should be assumed before introducing technology. For instance, handwriting or maths.

F: “La tecnología yo pienso que es buena pero es contraproducente si se pierden muchos principios de conocimiento que son necesarios antes de llegar…”

F: "Technology, I think, is good but it is counterproductive if you lose many principles of knowledge that are necessary before arriving [to it] ..."
In the first interview with the Father, he also expressed his fear of very young children consolidating “bad habits” with technology.

F: Es que també en s fa una mica de por que no ens agafi... vicis, saps? La tablet per veure el Mic i ja. A mi també em fa por que s’enganxin i es quedin autistes, que es quedin el dia jugant amb el mòbil. Perquè això tampoc ho desitjariem, la veritat. Prefereixo que agafin un llibre per a entretenir-se. (27:0).

F: It's also a bit scary for us to think that she can develop bad habits, right? The tablet to watch the Mic and that's all. It also scares me that they [their children] can stick and became autistic, that they stay the day playing with the cell phone. Because we would not want that either, really. I'd rather prefer if they take a book to entertain themselves.

5. [If there are two parents/ carers] How far do you and your partner agree on the approach to be used in terms of introducing your child to technologies?

According to the Father, the Mother is comparatively “more radical”. They show this divergence through an example of how they imagine the moment when their children will claim for accessing social networks. The Mother thinks that they will need to “control” the online activity while the Father frames this as an opportunity to learn collaboratively: “I want her to do the same or to show the same attitudes and competences when she is with me or when she is alone”. The Father justifies his position arguing that “a paternal negative entails rebellion”. The mother replies with a counterargument: “if I control and she needs to hack my computer, I will perhaps convert her in someone very smart!”.

6. What concerns do you have, if any, about your child's use of technology?

The parents agree on the importance of introducing technology after the children have assumed what they call “knowledge principles”, referring to handwriting and maths. They argue that “technology must be complementary to a basis” and that “the basis is know who to write, know how to read a book, the pleasure of taking a book and turning the pages...”. On this regard, their concerns point at the school. They think that the academic system in Spain is not achieving to balance technology with the basis of knowledge. They agree with the projects for integrating technology in classroom learning but “after learning to write by hand”.

F: “Deberían existir unos conocimientos mínimos con las tecnologías.Pienso que en las escuelas se intenta pero no se consigue. Todo ya es tan moderno que lo normal es tomar apuntes con una tablet”

F: “Hay que aprender a escribir bien, a mano. Es necesario como sumar, restar y dividir sin máquina”.

M: “la tecnología tiene que ser un complemento a una base” (...) “La base es saber escribir, saber leer un libro, el gusto de coger y pasar las páginas, etc.”.

F: "There should be minimal knowledge with the technologies. I think that in schools they try but they are not getting it. Everything is already so modern that it is normal to take notes on a Tablet"

F: "You have to learn to write well, by hand. It is necessary to add, subtract and divide without a machine".
M: "Technology has to be a complement to a base" (...) "The basis is to know how to write, how to read a book, how to pick up and turn pages, etc.".

The Mother points out another personal concern: the dehumanization that the technological culture entails. She complains about the social practice of buying online, as this involves not interacting with anybody. Her fear is that machines might reduce the social interaction among human beings.

M: Desumaniza, el mundo tecnológico. El hecho de como tratar a la gente. Hacemos la compra online. ¿Donde se ha visto de ir al mercado y no dar la vez? El buenos días y tal. Nos estamos deshumanizando. Y la gente por la calle con los cascos. Todo esto lo que consigue es realmente que no nos mezclemos entre nosotros. (...) Todo es con una máquina. (08:00)

M: Dehumanize, the technological world. The fact of how to treat people. We make the purchase online. Where has it been seen to go to the market and not to give the turn? Good morning and such. We are dehumanizing. And people on the street with helmets. All this is what we get is really that we do not mix with each other. (...) Everything is with a machine. (08:00)

Another shared concern that they anticipate is the arrival of social networks to their children. The Father argues that they will both need to carefully think about security and privacy issues in order to educate their children.

F: “De momento no hay preocupaciones. Vendrán cuando vaya a la escuela y empiece con las redes sociales. (...) cada vez empiezan antes, quizás con siete años ya te empiecen a pedir. No es una preocupación ni un temor. Cuando llegue llegará”.

F: “I think I can speak for (the mother) too, that we will have to encourage us in looking at security and privacy issues of social networks.”

7. What are your hopes with regard to your child’s use of technologies in the future?

Linked to the concern attached to social networks, the Father comments on the importance of being a “critical user of technology” and “having an opinion of things that occur, considering risks and opportunities”. He argues that those who nowadays are successful in life are those who “know how to manage resources, technologies and information”. How to achieve this with his daughter and son is one of his goals and at the same time one of his concerns.

8. What are your fears with regard to your child’s use of technologies in the future?

The main fear that Roser’s parents share are privacy and security in social networks. However, the Father brought up three other general fears.

The first, was the sensation that children will learn quicker than the adults, that puts the adults in a critical situation, in the sense that the adults might struggle understanding applications or traits of the digital culture or even helping the new generations to become critical users of technology.
F: They will be faster than us in many things and I will have to catch up to the level (...) When I saw her one day with a mobile phone doing so (touching the screen) I thought that if I had been given the mobile I would not know how to pass the finger. I did not have my mobile phone until I was 14 years old. (11:26)

The second fear is the possibility that societies can for some reason abandon technology. For this, he thinks it is important to learn from the basis, being the basis the activity of learning without the mediation of technology.

The third fear is the integration of technology in the Catalan/Spanish society. The father says that "there are some countries in Europe that besides English they also require children to learn coding". He thinks that Catalonia/Spain is behind in both aspects.

9. **What kind of advice or guidance would you feel your family would benefit from in terms of your child's use of technologies?**

They were interested in the findings of previous studies. They also were curious about what other families did. They also wanted what we find out through the study in the European level.

10. **Do you have any other comments that could inform the study about your child's use of technologies?**

The best advice that the Mother can think about for another family is "don't rush, don't force". She argues that children is surrounded by technology and that is why s/he will naturally and autonomously discover technology. She thinks it is better to progress in technology issues at the children’s rate.

M: “no corran y el niño ya irá recibiendo en cada etapa de su vida lo que toca. Que no lo fuercen. El niño ya experimenta. El niño ya coge un teléfono cuando suena y ya va descubriendo. (...) avanzar al ritmo del niño, que no lo hagan crecer, que crezca él. No forzaría nada. Total, el niño si será tecnológico o no lo decidirá él. (...) En la vida cotidiana ya hay tecnología” (18:00)

M: "Do not rush, and the child will be receiving already what it corresponds at each stage of his or her life. Do not force it. The child already experiments. The child already picks up a phone when it rings and is already discovering. (...) move forward with the child's rhythm, do not make it grow, let him or her grow. I would not force anything. Overall, the child will be technological or not he or she will decide it. (...) In everyday life there is already technology”(18:00)

**Appendix II-A: Contextual information about Gloria’s family**

- General make-up of the family i.e. numbers of parents, children and anyone else living with the family: **Father, mother, the focal child and a dog**
- Age of parents/carers: **Father: 41, Mother: 39**
Employment information for each parent or carer - Father: unemployed (the main carer for the child), Mother: administrator in a global information-content and technology company

Highest educational attainment of each parent/carer - Father and mother: Bachelor degree in Fine Arts

Estimated annual income of the family, including any government benefits. (This may be omitted if felt to be culturally insensitive): 30,000 euros (gross income)

Ethnic background/family history of the family: Father: Spanish, Mother: Italian.

Languages spoken in the family. Mainly Spanish, mother sometimes talks in Italian to the child.

Date of birth for each of the children in the family: 6 February, 2016.

For the focal child (aged 0-3) – information about health and development to date. No particular problem. Weight quite average, height a bit higher than the average.

Historical background of the family i.e. how long they have been living in the home, previous location and so on. They have been living in the flat for 10 years. Before that each partner was living with their own parents. The rough plan of the areas of the house and outside spaces that may be accessed by the child during the “day” (Drawn by the father)

Appendix II-B: Summary of the responses to the prompt questions in the iterative interview with Gloria’s parents

1. How confident would you say you are yourself in the everyday use of technology?
The father and mother use computer on a daily basis. In addition, the mother uses mobile and kindle (although since the birth of Gloria she hasn’t used Kindle much). Mother said in the ISD, “[The father] is a user, and I am a fairly advanced user because I have been a technician etc.”

2. Is your use of technology in the home influenced at all by external factors, such as work?
Mother said “for work (managing on the computer)”, and Father said “for leisure, knowledge and mental expansion.”

3. What technological hardware or software have you purchased for the focal child, and why?
They have not bought anything. Mother said, “It is more, I have forbidden my very technological siblings not to buy Tablet or anything like that... in fact, there is something that we have very clear: we encourage very little consumerism. For this Christmas, we told her [my sister] if she was going to bring something for Gloria, there is something of my niece’s toy that we know Gloria would like
very much, and we told her, recover that toy from the storage room, clean it, put the battery, and give it to us, we do not want other things.”

4. What are your views on young children's use of technology in general?

Mother: “After all, technology is made "for dummies", I want to tell you that you will learn to use it when you need it... but I need her [Gloria] to learn to use a pencil because they are not for dummies... She likes painting... and she will be all day painting if she can. For me that's more important. It is something to learn over the years, the connection of brain with your hands helps develop other capabilities."

-------

Mother: “I have worked with the technologists and I am still working. For me, technology is like an domestic appliance. If it's useful, it's fine, but if not, I do not use it.”

Father: “Look, I sometimes sell things in milanuncios.com (an online platform to sell secondhand goods). Having the platform on the internet is very good, it opens the world, yes. But for other things, to know my expulsions or my rhythm... [I don’t use it].

Father: “As I see it, [technology] is a tool. The moment you need something, take it, I have no problem. but it is not, how do I say, like alcohol, right? You can take it well but drink to drink I do not see any sense.”

Father: “In the technical drawing class I did my PDFs and sent them so that it was easily printed and it could be opened in any program... the exercises step by step... the solutions... I sent them the exam; as they finished the exam, I got into the computer and sent them the exam already done, so they could see how they should have answered and, to their 'annoyance', the possible paths to arrive.”. Or I sent them what was given in class and enlargement or what I had done on the board. Yes, I agree [technology] is a clear and valid tool.”

Mother: “We spent more money on the music sound system than on the laptop.”

Father: “Maybe, yes.”

Mother: “Because the quality of sound or the radio that we have should be high ... We think that it is an important value that we have a great sound quality... However, for the laptop I picked up with an offer from Carrefour. Well, it's true, as I have been a technician and so, I chose the brand that I knew what I had to do, but yes, the laptop was to discontinue ... well nothing, I took it. That's how it was. but we have not thought about it.”

Poveda: Later on, how old can Gloria start using technology?

Father: Until 5 or so, I do not know ... according to her request, or necessity, or through the friends that go before [her using technology] at the nursery or the school .... for example, then yes.

Mother: “There is also an advantage of having very technological brothers, that is, they throw away a lot of technology very often. So, if ever my daughter will want a tablet [we will inherit from them].

Mother: “...Yes, we are worried about consumerism.”

David: “Is it then about consumerism more than technology that you are worried about?”
Mother: “Yes. For me for example it is important that Gloria is raised in an environment that is fine…. Consumption is important in two senses. For us, ecology is important. We are aware of consequences in the personal level…

Father: “[technology] is a tool. If we have to change a car, we do, but according to our possibilities and necessities. Well now, it is different I have been and I am without job, but it is something big, so we choose one that does not consume much…. but we don’t need to buy an iPhone because we like it better etc.

Mother: “But, we did spend money on Gloria’s carseat… Also I never looked at the money we spent on Gloria’s books. That I do not worry…

Poveda: Thinking of the future, maybe there will be children who have technology around Gloria?

Father: “That will be. But I also think there are benefits of not having much….It is also something that happens to you always. But if it becomes necessary or for socialisation or whatever, we will see, we will talk, but if there is no strict necessity… With Gloria, we do not have a fixed plan, with the ideas and depends on how things develop.”

5. [If there are two parents/ carers] How far do you and your partner agree on the approach to be used in terms of introducing your child to technologies?

Mother: Actually, we have always coincided at the end … We have never discussed technology. Maybe I’ve wanted to change the computer before you [Father] because I'm more technological. I have used more advanced program. [Father] is a user, and I am a fairly advanced user because I have been a technician etc. So if I like that within the technologies that I have, it is in good use … There didn’t have to be much talk [about the use of technology] since Gloria was born because the vision of technology is very similar … Social networks have been very useful, when raising Gloria and know that there is a breast-feeding group that started from the local clinic and it might seem like a stupid example but we have supported each other a lot, for example, if at three in the morning you are awake in the middle of breastfeeding crisis you go to Facebook to get advice from other moms who are also awake at three in the morning with the same shit going on.”

6. What concerns do you have, if any, about your child’s use of technology?

Mother: “What I would like is not [for technology] to become something dominant but I want that she understands like me that it's like a household appliance … it's very good to find information on a database (that I also work on) but that there are books and that you have to learn the difference between an alphabetical order and something that gives you an automatic response. And learn to select information, for me it is important. And that's why printed books are important so that she learns that the printed book is different from the information found on the internet. And that I would like that in the future Gloria learns to read information not to accept it joyfully. She would not accept Google as if it were the bible and this kind of thing. Do not accept Google as something irrevocable and wise."

…

Father: “In the technical drawing class I did my PDFs and sent them so that it was easily printed and it could be opened in any program because the exercises step by step the solutions I sent them the exam, as I finished the exam, I got into the computer and sent them the exam already done, so they could see what I had to go out, to the chagrin of them with the possibilities paths for arrive. Or I sent them what was given in class and enlargement or what I had done on the board. Yes, I agree [technology] is a clear and valid tool.”
Mother: “Regarding a digital board if you do not have something behind or not. I found it funny with a nursery that says we have a digital board and look at me. I am like ‘what you are contributing’. I mean, with a digital board what you are going to contribute from behind. I do not see any foundation from behind and maybe it’s more important then the people who are doing digital board projects with linux and a playstation 3. Maybe it's cheaper and it's not necessary to buy a samsung and they are doing more interesting thing than what is offering me as a point in your favor for having something digital that are not being restructured behind and not putting content and not saying what's going to offer behind it? That worries me more. And there is no digital literacy in the teachers. We also have an aged teacher generation because there have not been places for teaching. So the younger interim have to supply what the already consecrated professors with the fixed and immovable seats. How can I say, a lot of times, it's a pity that in Spain content are not decided by the publishers. When those people are trained with training they could elaborate contents for this center, more suited to this geographical area for those kids etc.”

Father: but if they change you every year, every ten months, what a person will do, they cannot do anything. At least, they should be [there teaching] 4 years in one place.”

Mother: “We cannot depend on Santillana publishing company in Spain to have contents. Besides what the publishers have done on the digital level, for example, is to move a webpage the contents that they have been on print. It has very little dynamic content.”

7. What are your hopes with regard to your child’s use of technologies in the future?

Mother: “See if for me to learn to use it so naturally, I don’t think that for Gloria it will be difficult, and I have seen my father with 78 years using WhatsApp and a tablet easily, I do not see why Gloria does not have capacity [to learn to use].

Father: Have a base of inquisiveness, curiosity, and capacity that I think she [Gloria] has, she will learn fast.

8. What are your fears with regard to your child's use of technologies in the future?

Father: also that the technologies have a lot of control over what we do that also scares me a little bit. There comes a point where this technological immersion makes you forget about what you are getting into, and that you are leaving many traces of what you do… because digital data already has a footprint that is not going to be deleted. So, you have to know what you put. What is done with profiles and so scared me a little. We are not very aware of what he created.

Mother: “Really, big data moves over us.”

Father: “ Even light consumption is registered…”

Poveda: Is this something that also concerns you thinking of Gloria?

Father: “Yes yes, they do not realize that the kids play many things even crimes that they are not aware of. [Technology] is a tool, it depends on how it is managed.

Mother: “He [Father] had to report within Youtube kids recording classes and that's illegal.

Father: “… Perhaps you can make life [using technology], but what happens is that you need to have a very intimate connection to Internet and you've already launched [your information] to the air and in addition to that it replicates. That's going to be there already forever, huh?
Mother: “To make an example I did not accept the group of WhatsApp from the nursery. I do not want the images of Gloria to come out and do not want it to spread either because I get frightened that I lose control over that image and if Gloria comes out in some ridiculous way tomorrow it is used for meme. but where those memes of kids doing fools have come from?”

Father: “I think that it is better that less are exposed. Today we do not know what it is going to be used for.

Mother: “We are in a moment of the use of Internet and social networks in which there is a lack of total control absolutely that moves by mobile phone and that I do worry regarding the image of Gloria.

Father: “Of course they [youngsters] are very naive. They recorded themselves doing things and they think they do not have an impact… How many people easily… Girl has had sex with boys, and that extends and suicides, for example. Perhaps it does not reach this mode, but that you do not realize the level that they can enter your privacy and that we will never control.

9. What kind of advice or guidance would you feel your family would benefit from in terms of your child's use of technologies?

Mother: “There should be a tool for parents…”

Father: “That there are studies about when technology should be introduced, in what way.”

Mother: “I think in the educational system in Spain it is missing within the transversal subjects there is no area of digital technology. It is not transversal. The digital education is separated. Computer science is as a subject, technology is as a subject but not the transversal part of [the curriculum]. The digitalization of the kids should start with a coherent digital literacy but coherent. That is not not like "I have a lot of money this year, and so I’m going to invest in that all the kids have a samsung tablet." That's an idiot because it does not carry behind a sensible content because it is in the dilemma of selling digital contents and to see the plan that our government has is when they have remained 30,000 that we cannot spend. That's not a sensible way to spend a government’s fund and it's not a sensible way to face the future of the kids about the technological level.”

……

Mother: it seems to me a lot of resource generated from companies. I mean, there are many Disney resources, you can draw from internet everything you want but I worry about the pedagogical part behind of all the resources are within reach at the moment … Because of course there are people who say “I use a lot of YouTube Kids because it eliminates [inappropriate content for kids], but I say but if I leave this tablet within the reach of my daughter as my co-worker does using youtube kids, I’m not controlling what content interested for example what is forbidden in the nursery. If you are learning the numbers, yes they are watching content that go on that side.”

Father: What worries me is that everything works for money. Then some are pedagogical, but they put the material resources and they have to sell and have to be sellable… To what extent you have a pedagogical load or you are creating future consumers.”

Mother: “ We have been worried is that the elimination of the subject of [Father] is the reason why he is unemployed. They have eliminated the visual literacy in the Secondary School and plastic and visual education is eliminated and eliminate the possibility that the kids see things in a critical way regarding advertisements. For me it is very important that Gloria in the future be a critical
person with what you see. Later she can accept it, of course. I mean, I can decide to wear my hipster beard because I like it, but I want her not to be because she has seen it five times a day in the publicity of Coca Cola."

Father: sometimes consumers are created because at the end of the day he will ask you they pay you something, right? I say yes but sometimes the companies reach a point where they have to sell to make money. When you do and also earn more and you need to foster that, not for individuals but what is best for the company. That makes me a little angry, does not it? The excess of consumerism all that besides seeing on TV all the time the theme of Christmas now, right? That’s tremendous. Taking out the critical spirit is difficult and you participate a part, not that I am against, well, I'm against it… let's see, I do not like everyone raking his head about it. There are a lots of things. I think when I'm missing to me what I need, I take it, if not, I'm not interested…. but I do not deny that our daughter can start to have access to that [technology] when it becomes necessary, we will see, that’s fine.

Mother: “Or when my brother ‘retire’ a Tablet of a child. They are hyper-consumers. I have no problem inheriting things. It facilitates us to access technology.
### Appendix III: Inventories of Digital Devices and Activities by Roser and Gloria

<table>
<thead>
<tr>
<th>Devices the child has access to</th>
<th>Roser</th>
<th>Gloria</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Television set connected to the internet</td>
<td>● Standard TV set</td>
<td></td>
</tr>
<tr>
<td>● Tablet (other)</td>
<td>● PC/ laptop</td>
<td></td>
</tr>
<tr>
<td>● IPhone</td>
<td>● DVD recorder</td>
<td></td>
</tr>
<tr>
<td>● Samsung Galaxy</td>
<td>● Electronic toy</td>
<td></td>
</tr>
<tr>
<td>● DVD recorder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Electronic toy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other devices in the home</td>
<td>● PC</td>
<td>● a smartphone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● an e-reader</td>
</tr>
<tr>
<td>Apps used by the child on tablet/ smartphone</td>
<td>● Audio/musical play</td>
<td>None (but used YouTube on the laptop)</td>
</tr>
<tr>
<td></td>
<td>● Video apps</td>
<td></td>
</tr>
<tr>
<td>Activities carried out by child using a tablet</td>
<td>● Watching video</td>
<td>None – family does not have a tablet</td>
</tr>
<tr>
<td></td>
<td>● Listening to stories/ audio books</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Listen to music</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Looking at pictures/ photos</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Voice/video communication</td>
<td></td>
</tr>
<tr>
<td>Abilities demonstrated by child during tablet usage</td>
<td>● Take photos (with adult’s assistance)</td>
<td>None – family does not have a tablet</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>