

Location Tracking of Children in Denmark

A Tool for Safety or a Tool for Control?

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Abstract—This paper sets out to predict a possible implementation of tracking technologies as parental tools in Danish families, as it is not yet a common phenomenon. Through a qualitative focus group it examines the opinions of Danish parents toward using location-based services to track children. Despite already established practices of mobile phones in micro-coordination, the participants are skeptical of tracking technologies, as they attach much importance to children's private lives.

Location-Based Technologies, Parenting Tools, Trust, Security, Tracking Children, Mobile Phones, Modern Family Life

1. INTRODUCTION

Mobile phones have become an essential element in today's coordination of family life and the current generation of Danish children and adolescents has not experienced a life without them. As technology gets more profound, new functionalities will be introduced to users; adding new possibilities to the combination of the mobile phone and everyday activity.

Location-based services (LBS) are getting more common; thus, enabling users to access geographically attached data everywhere. LBS can be used in various contexts, but this paper focuses on the use of location awareness within family settings, specifically in domestic relations between children and their parents. Studies [1,5] show that there are different motivations among parents to use location tracking of their children. While location-based tracking is increasingly being used as a parenting tool in countries like England and United States, it is still not commonly used in Denmark. However, among other indications, a possible future tendency is seen in technological products on the Danish market as the Danish developed WiGOMO [15] is specifically designed to be children's first mobile phone. One of the key functionalities of WiGOMO is the GPS-transmitter that enables parents to locate their children on Google Maps.

Naturally, the capabilities of tracking pave the way for new family structures and parental issues to be taken into considerations when parents raise their children in modern society. The remote access to children's whereabouts makes it possible to be a parent, no longer just in physical presence, but also at a distance. This enables parents to make sure their children are safe when they are not at home, but also to confirm that children are following house rules.

Although, tracking of children is not a common phenomenon in Denmark, it is a possible future – maybe not

far away – as highly developed Danish IT skills and increasing adoption of mobile phones in family relations [9], may lead the way to new forms of digital parenting. However, as with all new technology, the adoption is a process, and requires acclimatization before it is fully integrated into everyday life [3]. Because of this, it is expected that Danish parents are not yet ready to accept all aspects of digital tracking of their children.

This paper examines, through Danish parents' current view on digital tracking of children, the possible future of location-aware technologies in Danish parental settings.

Literature on the role of mobile phones in micro coordination, new research on location tracking of children, as well as a focus group with Danish parents will form the basis of a discussion on the current position towards LBS in Danish families.

2. RELATED WORK

Castells [3] explains how the mobile phone in domestic relations is fundamentally used as a security and coordinating tool of family members, but also Ling [11] gives an in-depth description of micro-coordination.

The mobile makes it possible for children and teenagers to develop their own private sphere of social relations; hence, contributing to teenagers' transformation from child to adult [14]. Whereas adults use the phone for coordinating purposes, children and teens use the mobile phone more as an expressive tool [14].

Because of new spatial dispersions and the penetration of the mobile phone [5], new ways structuring family relations are becoming possible. A study by Christensen [5] examines how an experienced practice of remote presence is emerging in Denmark. This enables family members to feel an emotional connectivity, though physically distant.

As LBS for tracking will become common in everyday life, new possibilities of parenting are provided. A study by Boesen [1], of four Londoner households, shows how the technology strengthens safety of children as well as functioning as reassurance for the parents. But at the same time it raises questions about the notion of trust and the surveillance in digital parenting.

Though, not directly linked to the relationship of parents and children, Scklovski et al. [16], examines how the power-balance is staggered between the one being tracked and the observer.

With no precedent work in the field of location tracking of children in a Danish family setting, this paper sets out to examine the current view on mobile monitoring. As I am exploring the opinions on location tracking, the paper contributes only as a conjecture of possible future technological adoption in families.

3. BACKGROUND

Today's families can be characterized by each family member being included in many different non-family activities [6]. 95% of the Danish population (16-74 years) owns their own mobile phone [10]; hence, the mobile phone functions as a central tool in coordinating family life. Modern communication technologies have been integrated into Danish society and in many social practices [6]. Castells et al. [4] explains how this is because of the pervasive nature of mobile phones. As the use of mobile phones is dominated by horizontal communication [13] the mobile phone acts as a prime factor in the maintenance of social relationships. Ling [14] argues the role of the mobile phone as an important socializing tool in the stages of personal development from child to adult. For this reason it is particularly interesting to study how parents and children adopt mobile phones in the period of the children acquiring their first own phone.

3.1. Location Based Services in a Danish Family

Denmark is a highly developed country when it comes to the population's IT skills. 8% of all Danish mobile users navigated by their mobile phones GPS-functionalities in 2009 [9], which was an extensive increase compared to 2008. These numbers indicate the high potential of mobile technologies in Denmark, which forms the foundation of assuming LBS to increase within few years. Although the use of location tracking is not commonly used in England, Boesen et al. [1] studied four households who were using LBS as a mean of family coordination. The participants in their study were found to use the tracking systems for two main motivational aspects: 1) Safety of the children. Because of the urban area and the use of public transportation in London the mobile phone would create a safer stay in the city. 2) Being able to access the location of the children, reassured the parents that the children were safe.

Most relationships between parents and children, in terms of power, are in favor of the parents, as they are to teach their children the social values to successfully understand the cultural norms. However, monitoring children raises questions on how the power balance of parents and children is being affected. A study [16] among parole officers and parolees show that even though the nature of the power balance from the beginning favors the parole officer, the introduction of LBS, as a working tool, entails new responsibilities and working procedures. The difference between parole officers and parents, as well as parolees and children is not to be mistaken, but the findings from the study can be used as an indication on how the power balance in family relations is also displaced from the use of LBS.

3.2. A Tool for Security or a Tool for Control?

The main motive for getting a mobile phone is security reasons [11]. After being purchased it is primarily used as a social tool. However, in family relations the security aspect remains highly prioritized, as the mobile phone gives the possibility of remote parenting – *'taking care' of children at a*

distance. In practice it includes elements of safety, as found in the Londoner study [1], but also control [6]. Control is not only considered negatively, as it also includes children phoning their parents to get approval of something [6]. Parents have two possible ways of monitoring their children's movement. Besides imposition of leaving the house, the parents can digitally access the location of their children [3].

Boesen et al. [1] found the reason for the initial use of LBS was due to issues of trust, where children had broken house rules. The use of LBS enabled parents to check up on children's activities to make sure they were following the agreements; thus, making the tracking an extension of parenting, as it expanded the area in which the parents were able to control their children. The study also shows how the use of LBS would decrease after their adoption, due to more an honest and well-balanced behavior [2].

4. METHOD

The study in this article will be elucidated by methodical work done in collaboration with Vita Thomsen and Line Mulvad, as we researched within the same area of mobile technology and micro coordination.

Due to the expected difficulties of establishing contact to Danish families actually monitoring their children's mobile phones, we investigated the attitude towards tracking-technologies among parents with 8–12-year-old children. These opinions were explored in a dynamic focus group with three parents.

4.1. Target group

The study was directed towards parents with children in 3rd to 6th grade in Danish Primary School. This group was chosen due to the fact that Danish children get their first mobile phone when they are between 8-12 years of age (in 2009 91% of children in Danish 5th grade owned their own mobile phone [9]).

4.2. Participants

Three mothers of children within the target group, agreed to participate in the focus group. However, due to illness on the day of the focus group, only two of the anticipated mothers were able to attend. Fortunately, we were able to retrieve a last-minute stand-in. The final group of parents consisted of two mothers and a father, all with children in the requested target group. The first mother (M1) had a 6-year-old and an 8-year-old girl. She owned an old Nokia mobile phone, with dial-up and text-message functionalities. Her daughters did not own phones because of their age. The second mother (M2) had three children: A 6-year-old daughter, a 9-year-old son, and a 12-year-old daughter. The two latter both had the same Nokia mobile phone, as the mother herself. Her son often had to be reminded to bring his phone, but her oldest daughter did not go anywhere without it. Besides regular phone functionalities, their Nokia phones also included a music player. The last participant was a father (F1) to a 6-year-old daughter, and two sons (9 and 12 years). His sons had their own mobile phones, but they only used them occasionally. The father had a Sony-Ericsson Android-phone. None of parents had ever tried tracking their children or other people with mobile technology. All the participants' children were enrolled in the same school and lived in the same town, in the north of Zealand.

Needless to say, it will of course not be possible to draw any general conclusions of a larger segment of Danish parents, as only three parents participated in the study. Instead, it must be considered as a commentary on the theoretical discussion on the development of location-based tracking in Denmark.

4.3. Design of the study

The focus group consisted of four parts, where the first and last parts were 'introduction' and 'debriefing'. In the introduction the participants were shortly presented to our study and given a brief explanation of the increasing use of tracking technologies in other countries. Furthermore, it was emphasized that we were not, as such, interested in the participants' technological knowledge, but their viewpoints and experiences of mobile telephony and tracking of children. The second part focused on the general use of mobile phones among children. The discussions were facilitated by scenarios¹, which would introduce situations where the mobile phone could possibly enter as a pivotal element. The main objective of the scenarios was to enable the participants to contextualize their opinions to certain experiences. The scenarios in the first part, touched upon issues like '*your child getting lost*' (1A), '*everyday micro coordination*' (1B), as well as '*expenditure and socializing*' (1C). The participants were asked if they recognized the situations, and what role the mobile phone (if any) had played in resolving the dilemma. The interviewer would gradually expand with elaborating question as the discussion evolved. The second part had two primary goals, the first being to get a sense of each participant's view on children and mobile phones in general. The other goal was to ease the transition to the discussion on tracking technology.

The third part of the focus group centralized around how location-based services could possibly be used in four scenarios: '*Riding your bike alone in the traffic*' (2A), '*taking the train alone*' (2B), '*home-alone in a weekend*' (2C), and '*Partying and agreements*' (2D). As none of the participants had tracked their children, the discussion was of a very hypothetical nature, which was minimized by the introduction of the scenarios along with a supportive interviewer.

Because of weather conditions, the focus group was delayed by half an hour, with no possibility of prolonging it in the other end. This trimmed the extent of the focus group extensively, and did not leave much time for thorough discussion, which entailed some topics, only to be touched upon shallowly.

5. RESULTS AND KEY FINDINGS

The focus group interview was conducted on December 2nd 2010 in a small-sized city outside Hillerød, in the north of Zealand, in the public swimming facilities where the participants children were attending their weekly swimming lessons.

5.1. Reflections upon the study and the participants

The chosen target group and the approach to the research area did not entail the presumed data. The participants had several opinions on their children's use of mobile phone, but when it came to tracking and location-based services it was a different matter. It was obvious that this technology was

¹ Each scenario was represented on a cardboard with a picture and an explaining title and text.

completely hypothetical to the participants, who had not previously taken a stance to it. Also, the pre-created scenarios did not address only the age group of the participants' children; thus, adding even more hypothetical layers to the discussion. We did not imagine it to be this difficult for parents to discuss matters, only a few years into the future. This may not be the general case, but scenarios that would bring their children into the adolescent-stage in combination with a distant technology, did not facilitate a proper discussion on safety and control.

A way of minimizing the above problematic, could have been to target parents with children already in their adolescence; thus, removing the challenge of imagining your child being in a process of independence and in stages from child to adult. That being said, the opinions of parents with children getting their first mobile phones are interesting, because they are in the beginning of the on-going process of forming their approach to children and digital devices.

However, interesting results did come from the focus group interview, both in terms of general mobile use, but also of aspects of location-based tracking of children. These results will be described in the following section and be discussed and compared to the literature.

5.2. Key Findings

The focus group confirmed the assumption of Danish children getting their first mobile phones when they are between 8-12 years old. M2 and F1 had 9-year-old sons who both owned their own mobile phones. However, it is noticeable how both children had elder siblings. This could suggest that M2 and F1 were differently positioned to their second child getting a mobile phone, since they already went through the opinion making with their first child. M1's oldest child was 8 years old and none of her children owned a mobile phone, which was explained by a deliberate choice as it was her "*...opinion that they are not old enough yet*" (M1).

It was also seen how the families micro-coordinate, and how the mobile phone is used for changing agreements and to ask permission to play with friends:

"Yea, then they would call me. And we have an agreement that if they do something else than we agreed, they have to call me. Kasper is in 3rd grade and is enrolled at an after-school centre, and he will always go there, unless he is going home to play with one of his friends, he always goes there after school. And then if he wants to play with Andreas at his home, for instance, then he will call and ask 'is it okay I do this?'" (M2)

Although the 8-year-old daughter of M1 regularly asked to get a phone, the focus group indicated that the 9-year-old children were not yet dependent on their mobile phones. M2 explained how she had to remind her son to bring his phone, and F1 said "*(t)he boys have a mobile phone... if they remember to bring it*". One of the parents explained that it was a completely different case with her 12-year-old daughter, who never leaved the house without it. The few years between the oldest daughter and her 9-year-old son seem to make significant changes to what extent the mobile phone is embedded into their lives. Additionally it is worth mentioning how the parents accept this:

"(...) Kathrine, who is 12 years, always have it (the mobile phone) on her. Also, when she has friends over – but then it is just lying next to her. But it is simply a tool for her in this age." (M2)

In a discussion on how the families prevented to lose sight of each other in Tivoli², two of the families brought mobile phones to be able to reach each other. However, all parents used more traditional methods to ensure the safety by writing their phone number on the children's arms, in case the children should get lost, other adults would be able to connect directly to the parents. One family used the mobile phone as a coordinating element when they visited Tivoli, allowing their daughter and her friend to walk around on their own with the mobile phone. This way they could call each other and agree on where to meet.

In general the parents did not believe the phone would provide more secure situations for their children. Although, M1 argued that her daughter would get her own phone when she would begin to walk home from school herself, she and the two other participants strongly believed the phone could not ensure safety:

"Hmm, I just can't see how it (the mobile phone) would help. If I am not able to get to her, it will not make me any less nervous that she has a mobile phone, I still can't get to her if anything should happen, so I can't see how it would make me any more secure. I would be worried anyway. (...) All she could do was to call me and say 'hi, I have been assaulted', but I would still be at work" (M1)

M1 contextualizes, in a made-up example of being away for a weekend and her children being home alone, how she could only be deeply frustrated of being away from her child, not being able to physically care for it. F1 told how he gives his children mobile phones when taking the trains by themselves. However he explained that this is for the sake of the children, and was primarily of social reasons, rather than safety, which were entrusted to the train personnel.

On the other hand the participants already had routines with their children to ensure their safety. M2 had an agreement with her daughter to send a text message if she bikes to visit her friends, to make sure she arrived safely. Also, the participants agreed on the phone as an important tool if their children were to be home alone.

When it came to controlling their children, the parents did not yet have any issues with their children not doing as agreed without asking for permission. However, as already mentioned M2 made her daughter send text messages when she arrives at her friends' homes. Offhand, she considered this as a safety precaution, but if anything were to happen to her daughter, she would be notified; thus, removing the need of the text message. Also, she stated how sending the text message made her daughter *"follow the rules, and if not she will hear from me (laughs) if it's a problem."*

Their children attended parties at the local youth club. The parents arranged transportation, and when the children were at the club there were several adults to make sure everything was under control; thus, leaving no need for the parents to check up on them. However, they mentioned that this would probably change, as the children get older and would begin to attend different social activities.

In terms of tracking their immediate response was that this was very far away from their experience of Danish mobile use:

M1: *"I think it sounds quite Americanized, in a way"*

M2: *"Yes, that was also my first thought, what you just said."*

In general the participants found it difficult to even take a stance to the use of LBS in the scenarios. Instead they would discuss the general use of mobile phones. Nonetheless, the main discussion topic, in terms of location awareness, was how tracking removed the children's private spheres. It was essential that the children would experience their relationship to their parents as dominated by freedom with responsibilities, which would be undermined by the use of tracking technologies.

M2: *"It is also a question about freedom with responsibilities. I mean giving them the responsibility to move freely around and keep the agreements you make with them."*

M1: *"Yes, and also, I think it is insulting to the child, to be followed like that. It really don't like it"*

As this indicates they were not fond of the idea of tracking their children. M1 hoped her children to get upset with her if she ever tracked them, as this will ensure that they have a sense of responsibility for themselves and their private lives.

The participants drew their opinions on their own upbringing, where they said they did not have any problems living without the mobile phone, and how they appreciated the ability to live without their parents observing their every move. However, F1 mentioned that it would probably be a matter of time before this new technology would be adopted, and become used as a common tool.

6. DISCUSSION

In the study of four Londoner households, Boesen et al. [2], found that a way to avoid being tracked was for some of the children to leave their phones at home. Castells [3] points out safety as the reason of purchasing a mobile phone; thus, tracking undermines the initial purpose of the mobile phone. Additionally, the participants of the focus group claim that the mobile phone itself cannot increase the actual safety of their children. This contradiction of the participants' understanding of the security aspects of mobile phones can possibly be explained by the hypothetical nature of the discussion. The participants, themselves, said that the situation would change, as the children get older and would have new ways of socializing.

The mobile phone acts as an important tool in the transformation from child to adult [11], and our focus group emphasizes the importance of allowing the children to go through this process. They feel tracking would undermine the children's right to have private lives, and they even say:

"(It is a part of being a teenager, that sometimes you don't do as your mother or father say. As long as it is on a level where they feel comfortable." (M1)

Again, it is important to emphasize that these parents have not yet experienced their children doing things that were in

² Tivoli is a Danish theme park, with almost 4.000.000 visitors each year, making it the third most visited amusement park in Europe [18]

contradiction with house rules as such. Boesen et al. [2] actually find how the use of tracking even gives a more open and honest relationship between parents and their children.

Another important aspect of touching children's private sphere is the power balance, which is modified from using tracking technologies [4]. A Danish study [17] shows how young Danes accept surveillance as a safety precaution, rather than as a privacy invasion. Although it must be seen in the context of preventing crime, it indicates openness towards the technology and may in the future enable for tracking as a common everyday activity. The participants were not willing to use tracking technologies but were nonetheless already using mobile phones to ensure a safe trip with e.g. the train. As Christensen [5] finds how mobile phones are connecting parents and children in a closer relationship, the notion of remote parenting and connected presence may seamlessly adopt tracking technologies as common practices.

The participating mothers did not define the mothering roles in the focus group, but it was clear how they did not regard it as a parent's right to be able to keep track of every action of their children. This is in somewhat contradiction to how Ling [13] argues how particularly mothers exerts a control of children's after-school activities. The mothers in the focus group refer to their own upbringing, where there were no troubles without the mobile phones. The scope of this paper is not to look for a historical explanation; however, national differences in nurture structures could possibly influence the view on technologies in children/parent relationships. The were all brought up by parents influenced by the Danish youth revolt of the 60's, which may have emphasized the focus on freedom with responsibilities³.

The adoption of LBS used for tracking, might just be a question of time. Although the participants were skeptical towards tracking as a parenting tool, they also imply how they believe it will be a technology to be used in the future, as it gets adapted. Already, they use dial-up and text message functionalities to maintain their parenting role outside the homes; thus, the dissociation may not be of structural concerns, but an acceptance of technological acclimatization.

7. CONCLUSION

This study shows how the involved Danish parents think of tracking and the mobile phone in general as a tool, which should be used in a way that respects the private lives of children. Digital technology should not replace talking to children and teaching them how to commit to society. However, the mobile phone is already embedded into their every practice and in micro-coordinating the family members' activities.

The participants belong to one of the last generations in Denmark not to have experienced the mobile phone from a young age, and as already mentioned, they do not yet have children who have expanded their social lives beyond the local community. This is reflected in their opinions towards LBS. Because of this, a clear answer cannot be given to the Danish parent's current view on digital tracking, as it is still too hypothetical.

³ The Danish youth revolt of the 60's was an expression of the hippie movement. The revolt took its toll in society, e.g. in family relation, and can still today be recognized [8].

Question of the technology and how it alters the relationship of parents and their children, should be re-investigated as the technology gets widespread in Danish families. This paper only gives indications of a skeptical perception of tracking technologies, and stresses the importance of accepting the private spheres of children.

As Ling [11] points out new technology will be gradually phased into society, and the attitude towards it will follow this process of implementation. As with mobile phones, new users must master the technology in order to acquire the social and cultural understanding of it. This is also the case for location tracking; Danish parents, as well as children, will need to recalibrate their ways of being families to be able to implement tracking technologies as a benefit for all family members.

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