



# Children's mobile communicative practices and locational privacy

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## Abstract

Children start using smartphones increasingly from early ages. This makes it more difficult for them to develop an understanding of online privacy and managing their personal data. Many parents monitor and regulate children's online media use. However, they also encourage using smartphones to ensure the safety and security of their children. This study explores how children use smartphones in relation to their understanding of privacy of communication, content, data, and location. It examines data from 7 focus groups with arts-based methods conducted with 37 children in UK. The findings suggest that children think of their smartphones as a private communication technology and a private place, and they manage their locational privacy based on the necessity of using a mobile app and through adjusting the location settings on their phones. The findings also suggest that privacy of mobile data and user content are dependent on where mobile communication takes place.

## Lay Summary

This article presents the results of a study conducted with UK smartphones users who were 8- to 11-years old. The study had two aims. The first aim was to explore and understand the social and physical settings where children use their smartphones, and what kinds of communicative practices they engage with while using their smartphones. The second aim was to explore and analyze what children know about privacy in relation to where they use their smartphones and how they use them. The findings of the study suggest that children think of their smartphones and the content of their mobile communication as private. Their understanding of privacy can depend on the where they use their smartphone and what kinds of communication takes place on their smartphones. The findings also reveal that children who are 8- to 11-years old can value the peace of mind that their smartphones give to their parents more than their own locational privacy.

**Keywords:** children, smartphones, privacy, locational privacy, arts-based methods

Children own and use smartphones increasingly from early ages. There are several reasons why this is the case. First, smartphones have almost become compulsory for parenting because constant mobile connectivity is essential for families to micro-coordinate in daily life (Lim, 2020). Second, parents use smartphones to supervise, help, and support their children whenever and wherever they may need (Lim, 2020). For example, according to a UNICEF (2017) report, children start using mobile devices even before their first birthdays because parents use smartphones or tablets to help children sleep. Furthermore, smartphones are associated with the feelings of safety and security (Ling, 2004). Especially with the introduction of apps designed for tracking the location of family members like Life 360, many parents started to engage in intimate surveillance practices to ensure their children's safety (Leaver, 2015; Lim, 2020; Sukk & Siibak, 2021). Some parental control apps like Famisafe also provide options to create geofences for safe areas where children are allowed. Interestingly, many adult smartphone users turn the location tracking features of their phones off to protect their own locational privacy (Zickuhr, 2013). However, when it is about tracking the location of their children, perceived safety is prioritized over locational privacy (Sukk & Siibak, 2021).

Concerns for locational privacy arise when who may have access to location data is not clear (de Souza e Silva & Frith, 2012). Tracking their own children's location can be acceptable for many parents. On the other hand, children usually lack the agency to resist such parental surveillance (Leaver, 2015). Additionally, research shows that children just begin

to understand privacy management when they are between the ages of 8 and 11 years (Stoilova et al., 2019). Therefore, using smartphones during such young ages can make it more difficult for children to develop an understanding of privacy and management of their personal data. This is especially a cause for concern when commercial and government surveillance practices are normalized due to parental surveillance. As a result, children can become more vulnerable to privacy risks like commercial exploitation of personal data, profiling, and discrimination (Macenaite & Kosta, 2017).

Smartphone use that increasingly starts at early ages, parents' use of child location tracking apps, and children's lack of agency over such parental surveillance raise many questions about the future implications of mobile communications and locational privacy. For example, what do children know about privacy in relation to mobile communications? How do they experience such privacy? What do they think about location tracking? To what extent are they prone to privacy risks due to location tracking? This article aims to shed light on these questions and develop an understanding of how children negotiate their locational privacy.

Although academic interest in locational privacy started more than a decade ago (e.g., de Souza & Frith, 2012), the societal implications of locational privacy have recently started to gain public attention (e.g., Grose, 2020). This renewed interest coincides with the introduction and implementation of new data protection legislations around the world that safeguard personal data like location data, and especially the

General Data Protection Regulation (GDPR) in the European Union (EU) in 2018.

Before GDPR came into force in 2018, there was a two-year transition period. In this article, I present findings from arts-based focus groups conducted with 8- to 11-year olds ( $N = 37$ ) in the UK right after this transition period, and at the start of the implementation in 2018. My aims were to capture the key concerns of children about mobile communication and locational privacy before the change of data protection regulation, to inform policy-making in the UK about future policy changes, and to provide the children with the opportunity to raise their concerns about mobile communication and locational privacy.

In the UK, with the Data Protection Act 2018 (the name of UK's own data protection regulation after Brexit), collection and processing of location data were defined in detail for the first time. In 2020, UK also introduced the Children's Code (CC) to regulate online and data services for children. According to CC, "The use of geolocation data in relation to children is of particular concern" (ICO, 2020, p. 58). Therefore, it was timely to study children's mobile communication practices and their understanding of locational privacy.

There are multiple reasons for choosing UK as the site for research. First, UK can be thought of as a unique case in terms of parents' involvement in restricting and monitoring their children's smartphone use and the contexts of that use (Mascheroni & Cuman, 2014). Second, UK has the highest percentage of both parental supervision and children using smartphones outside home (Mascheroni & Cuman, 2014). Third, as Mascheroni and Ólafsson (2015, p. 21) argue, UK is "a paradigmatic example" of "protected by restrictions" [EU] countries (Helsper et al., 2013). Therefore, the UK context offers a unique angle to understand children's use of smartphones not only in a highly private space (i.e., home); but also in public spaces including schools.

As Stoilova et al. (2021) noted, there are "substantial gaps in current knowledge" about children's understanding and negotiation of privacy (p. 557). These gaps are due to fewer studies about younger children, less attention to commercial contexts, fewer studies looking at data traces and metadata, and less common studies that focus on media literacy and child consent. Therefore, another aim of this article is to contribute to these gaps in the 8- to 11-year age range about what children know about locational privacy and location data. Given that location data can also be metadata when acquired through GPS (ArcGIS, nd.), this article also contributes to the gap about metadata privacy mentioned by Stoilova et al. (2021).

The neighborhood where I conducted the focus groups is in Haringey, a borough which has the third highest knife crime rate and the second highest rate of drug use (excluding Cannabis) among 15-year-olds of all London boroughs (Haringey Council, 2021). Thus, 15% of the residents say they feel unsafe when outside in their local area after dark (Haringey Council, 2021). Although this neighborhood is deemed to be safe, the majority of the participants were warned by parents and teachers about interacting with strangers on the way to school and advised to walk in groups. It is evident from existing research that parents track their children's locations for safety concerns (Gilmore, 2020; Lim, 2020; Sukk & Siibak, 2021). Therefore, I chose this neighborhood to make sure that in my participant sample there were children whose location were tracked by their parents.

In the following sections, I review the existing literature about mobile communication, locational privacy, and safety, and then, introduce the research questions. Before presenting and discussing the results of the study, I provide detailed information about methods for data collection and analysis, and the research process and procedure.

## Literature review

### Privacy and mobile communication

Privacy is social, contextual, and networked (Marwick & boyd, 2014). As Dourish and Bell (2011) assert, privacy should be understood as a "flexible and fluid concept" (p. 143). Solove (2006) discusses privacy under "taxonomy of privacy," which indicates that any understanding of privacy should focus on activities of people, businesses, and governments; not only on the technology itself. Nissenbaum (2004) offers an alternative approach that focuses on normative accounts of privacy—social norms and information flows—which she calls the "contextual integrity." For boyd (2011), privacy is not simply "control of information," instead "privacy is the ability to assert control over a *social situation*" (boyd, 2011, online, added emphasis).

In the existing literature, young people are found to be not very different from adults in terms of their attitudes toward online privacy (Marwick & boyd, 2014). However, they (aged 12–18 years) "constitute some of the most voracious but vulnerable users of social media" (Pangrazio & Selwyn, 2018, p. 2). According to a recent study about data privacy, 5- to 7-year-olds have low-risk awareness and 8- to 11-year-olds "struggle to identify risks or distinguish what applies online/offline" (Stoilova et al., 2019, p. 10). Although 12- to 17-year-olds are aware of privacy risks, they are "less personally concerned or aware of future consequences" (p. 10). Additionally, researchers agree that privacy issues increase with the use of mobile phones especially for children (Pybus et al., 2015).

There are recent works that contribute to this established literature. For example, in addition to the EU Kids Online in the UK and EU, there is a growing body of work from around the world (e.g., the Australian Research Council Center of Excellence for the Digital Child in Australia). There are works about mobile communication and parenting (e.g., Lim, 2020), and parental control and surveillance (e.g., Gilmore, 2020; Sukk & Siibak, 2021). While Lim (2020) covers location tracking as one of the discussions with parents from her fieldwork in Asia, her work does not specifically focus on privacy and children's understanding and experience of locational privacy. Sukk and Siibak (2021) focus on Estonian pre-teens' experiences about child-tracking technologies. Although their research participants cover the 8–11 age group, their sample is from Estonia. Gilmore (2020) provides a critical analysis of child-tracking technologies with a specific focus on geofencing. However, this work is about a child tracker device called Jibot, not about children's experience and understanding of locational tracking. Therefore, there is still little knowledge about the innovative mechanisms that younger age groups might develop for achieving their privacy in relation to mobile communication and locational privacy (c.f. Marwick & boyd, 2014).

Mobile communication is about social practices, using mobile devices and their services, and accessing media content

while on the move (Campbell, 2020). Mobile communication researchers discussed mobile phones as integral parts of young people's everyday life where users carry out social interactions while carrying their phones with them (Ito & Okabe, 2005). Ling (2004) found that the sense of having someone with you was related to the feelings of safety and security, which he concluded to be one of the reasons to own a mobile phone.

In the growing mobile communication research, "youth was of intense interest for researchers seeking to understand the nature of mobile communication" (Goggin, 2013, p. 83). Early research about young people and mobile communication focused on both teens (12- to 17-year-olds; e.g., Ling & Haddon, 2008) and children (younger than 12-year-olds; e.g., Stald, 2013). Mobile texting and use of instant messaging were found to be the key mobile communication practices (Ling & Yttri, 2006). Following the communication practices of texting and instant messaging especially in relation to privacy, intimacy, and gender, mobile sexting attracted critical attention (e.g., Vanden Abeele et al., 2014).

With the increased mobile access to Internet, researchers paid attention to mobile social media use among teens. Especially with the longitudinal survey studies like EU Kids Online and Net Children Go Mobile (Livingstone et al., 2014), young people's use of mobile Internet in Europe was widely studied. In these projects' comparative report (2010–2014), researchers concluded that home is the most common place for young people to go online (p. 6). However, young people are increasingly online when they are "out and about" using mobile phones (2014). In both studies, online risks and harms include cyberbullying, accessing to sexual content, underage use of social media, and sexting. These reports do not discuss mobile communication and privacy specifically.

Considering the above, one of the aims is to contribute to this existing body of work and answer the following questions:

RQ1: What are the defining characteristics of children's use of smartphones (i.e., how are they using them, and what are they using them for)?

RQ2: What do children think about privacy in relation to mobile communication practices?

### Locational privacy and physical safety

Location-based services (e.g., Apple's "Find my iPhone") and applications (e.g., Foursquare's Swarm) make use of smartphone users' location and mediate users' experiences of places (Humphreys, 2011). At the same time, these locative features also pose threats to individual, group, and collective privacy (Mantelero, 2017). Some definitions of locational privacy are concerned with systematic and secret recording of locations (Blumberg & Eckersley, 2009), while others also include access and disclosure of geographical data (Elwood & Leszczynski, 2011).

For de Souza e Silva and Frith (2010), privacy concerns influenced how smartphone users experience physical spaces. In their study of discourses of locational privacy, they identified two main areas: "the control these devices offer over public spaces and the lack of control users have over their location information" (p. 503). Lack of control over one's location information attracted critical academic interest (e.g., Leszczynski,

2017). Monmonier (2003) discussed lack of control over one's location data including access and ownership where Internet cartography (i.e., web maps) was understood to pose a threat to locational privacy (p. 98).

In their works on locational privacy, Monmonier (2003) and de Souza e Silva and Frith (2012) discussed locational privacy in terms of distinctions between other privacy concerns. For Monmonier (2003), locational privacy brings different concerns about collection, use and processing of geographically referenced data. This is because location tracking is not only driven by government initiatives around the world but also, and most importantly, by commercial interests. For de Souza e Silva and Frith (2012) locational privacy is different from other online privacy issues because location data can help with potentially identifying individuals and groups with minute details. In this article, I build on these existing definitions of locational privacy and refer to it as having "the agency over ownership and processing of location data" and following boyd (2011), I add "having control over social situations that are mediated through location data practices."

Despite its significance, locational privacy is a relatively under-researched topic (Wilken, 2019). Recently, research on locational privacy and children has started to gain momentum (e.g., Gilmore, 2020; Sukk & Siibak, 2021). Tracking the location of children provides some assurance about children's safety, and makes children feel safer and more secure (Lim, 2020). Researchers found that parents' fear of strangers influences the independent mobility of children negatively even though independent mobility has benefits for children's physical and mental health (Foster et al., 2014). In a comparative study of 16 countries including UK, researchers concluded that "mobile phone ownership corresponds to a higher level of independent mobility" in 15 of the countries studied (Shaw et al., 2015, p. 36). Therefore, parents use location tracking apps that notify them when children arrive at school, or roam outside of a predefined secure area through geofencing (Gilmore, 2020).

In this context, there are studies that focus on mobile media and children in relation to parental supervision and monitoring (e.g., Gilmore, 2020; Lim, 2020; Nansen, 2020). Additionally, research on children and teens' understanding and experience of privacy in relation to mobile media and mobile communication is rich (Dias & Brito, 2020). However, there are not many studies that specifically focus on locational privacy and children's own experiences of social and physical spaces (except for Sukk & Siibak, 2021). A recent call about locative media ethics has no discussion of young people's right to locational privacy (Zeffiro et al., 2020).

Considering the above, another aim is to fill these gaps and further the understanding of children's experiences of locational privacy through the following questions:

RQ3a: What do young people know and think about locational privacy?

RQ3b: How do young people manage and negotiate their locational privacy?

### Methodology

Following the approach to young people's online practices developed by Sonia Livingstone, I employed a "child-centered

approach” to research that “prioritized children’s voices and experiences” (Stoilova et al. 2019, p. 8). I use mixed research methodology—focus groups and arts-based visual methods—that allows the children to describe and discuss their experiences of smartphone use and locational privacy in ways that they are comfortable with.

### Focus groups and arts-based practices

Focus groups are common in communications research. They are effective especially “for immediate comparison and cross-validation of practices and experiences between participants that could not be revealed in individual interviews” (Metzger et al., 2010, p. 418). Focus groups are also usual for research with children (e.g., Ling et al., 2014), especially where arts-based methods are used (Krueger & Casey, 2015).

Employing arts-based methods gives voice to children by providing them with tools that help them express their experiences and emotions using tools that they feel comfortable with (Hickey-Moody et al., 2021). Therefore, using art created by children for elicitation is a common method (Driessnack, 2005). As Gauntlett (2007) argues, such methodologies should involve three basic research elements: “the process and thoughtful experience of taking time to make an artefact, the artefact itself, and the person’s own interpretation of the artefact” (p. 127). Consequently, children should be encouraged to describe, comment on, and reflect upon their own artefacts. I followed this process.

During the focus groups, I asked children to draw maps of their neighborhood to describe and discuss how they use smartphones in specific places, build LEGO brick models that metaphorically represent what is private for them, and Play-Doh figures to discuss how they feel about their locational privacy. I used their visual artefacts as prompts for group discussion instead of analyzing the drawings, models, and figures created by the children as a researcher (i.e., art-as-process; Hickey-Moody et al., 2021). So, I asked them to explain and discuss each other’s creative work. This allowed them to have the agency over their creations, ideas, and thoughts, and helped them critically reflect on their own interactions with smartphones in specific contexts.

### Procedure and participants

In the UK, the national curriculum is organized in key stages (KS). I managed to gain access to KS2 (ages 7–11 years) at Rhodes Avenue Primary School in Muswell Hill, London. I conducted seven focus groups with a total number of 37 children (8- to 11-year-old) in June 2018 (see Table 1). The school is in a high earner neighborhood of Haringey Borough. Ethnic makeup of Haringey is 62.3% white (British, Irish, and other) and 37.7% BAME (Black, Asian, and minority ethnic) (GLA, 2018). However, this was not representative of the participants.

In Haringey, deprivation levels are high. It has “the 2nd largest proportion of residents earning below the London Living Wage” (Haringey Council, 2021). More than 25% of the children (aged 0–15 years) live in families that are income deprived (GLA, 2018). However, the westernmost wards of Haringey, including the ward where I conducted the research, there are not any of the most deprived Lower Super Output Areas (Haringey Council, 2021).

I chose school as the site of research to ensure children’s familiarity with the environment, which is important for feeling comfortable and safe (Hickey-Moody et al., 2021). I made

**Table 1.** List of participants

Focus group	Name (pseudonym)	Age
1	Bill	9
1	Susie	8
1	Susan	9
1	Jason	9
1	Lola	8
2	Alex	10
2	Jess	11
2	Andy	11
2	Martin	10
2	John	10
2	Emily	10
3	Georgina	10
3	Pablo	10
3	Martha	10
3	Dani	11
3	Tom	10
3	Jeanette	11
4	Selena	11
4	Mary	10
4	Eric	11
4	Jimmy	10
4	Jane	9
5	Carlo	11
5	Marie	9
5	Lily	10
5	Roger	10
5	Sam	9
6	Wendy	9
6	Claire	8
6	Jonathan	8
6	Mike	9
6	Kate	8
7	Jack	11
7	Rosy	10
7	Philip	11
7	Jean	11
7	Mark	10

four visits to the school. In recognition of the students’ and schools’ involvement and support to the study, the school received a £75 Amazon voucher per focus group to purchase new teaching equipment for the KS2-level.

Initially I planned for eight focus groups with a total number of 40 students. However, I only managed to conduct seven focus groups due to last minute dropouts and parental permission. Figure 1 shows the focus group setup. Each focus group was 1 h long. I recorded the audio from the focus groups for transcription and data analysis. After I anonymized the recordings (removed any identifiable information such as names from the recordings), I sent them to a professional transcription company for verbatim transcription.

### Data analysis

I analyzed the transcriptions to find identifying themes that emerged from the data (Glaser & Strauss, 2017). For the analysis to be systematic and verifiable, I used the constant comparative method (Krueger & Casey, 2015). First, I coded each transcript based on the focus group protocol. I then categorized each code and created a document with all the sections of the coded transcripts that met the following criteria: frequency, specificity, emotion, and extensiveness (Krueger & Casey, 2015). From these categorized data, I identified the emergent themes (Metzger et al., 2010). To protect the



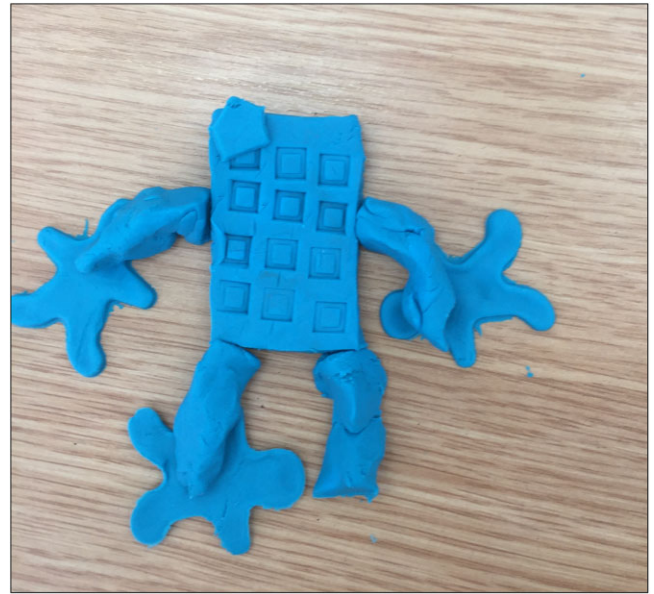
**Figure 1.** Focus group setup at Rhodes Avenue Primary School in London, UK.

identity of the participants, I used pseudonyms while presenting the findings.

I did not analyze the visual artefacts as they were part of the research process for elicitation, and they were not the outcome of research (Sewell, 2011). Instead, children explained and discussed their own creations during the focus groups. Additionally, as Hickey-Moody et al. (2021) assert, “It can therefore be helpful if the child or children themselves can explain the intentions, emotions and storylines that inform their pieces” (p. 61). However, I also spotted some common elements such as human figures, depiction of home, use of colors, and use of different perspectives in their artefacts based on gender, age, and family background and relationship (e.g., children of separated parents, children with siblings, migrant children). I reflected on those observations where I present the findings and where they were common in the focus groups to provide further context to the participants’ background and the research location.

## Results

There are five themes that emerged from the study. These themes were related to smartphones as a private communication technology, where communication and use of the phone takes place, privacy of user content, privacy of user data, and locational privacy in relation to location tracking. While participants’ understanding and experience of privacy in relation to location-awareness of smartphones varied, there were commonalities among acceptable and ethical practices of location sharing and locational privacy.



**Figure 2.** Play-Doh model of a participants’ smartphone depicting how she experiences communicative interaction with Siri.

I discuss how some of the themes relate to each other in the discussion section that follows the presentation of the study findings. From here onwards I use “FG” while referring to focus groups.

### Privacy of the smartphone

Almost all participants seemed to have agreed on the fact that smartphones are private devices that need to be protected with personal passwords, and they are used for private communications with immediate family and close friends. On the other hand, mobile social media use was discussed as something that can change from being private to public depending on the setting of the account holder or the phone user.

Well, it depends on what you believe. Because many people have to set a private account where only your friends can see stuff. But some people have public account for many social medias [sic], which makes phones not that private. (Jess, 11, FG2)

This was in line with some participants’ understanding and experience of what is public and what is private.

Public is when everyone can use it. And then, private is when only certain people can use it or see it. (Georgina, 10, FG3)

In one of the groups, participants discussed how they see their smartphones as “friends” (see Figure 2). This was an agreement especially among girls. The way that they could converse with Siri on iPhone was experienced as an intimate and private interaction with their phones. In another FG, smartphones were discussed as “boxes” or “walls,” which were spatial metaphors some of the participants used to refer to their own privacy through phone’s being a box where the communication takes place.

Mine is like a box. So, when you are on your device, you think you are in a box and no one can see what you are doing. (Selena, 11, FG4)

The participants who described their phones as being private devices tend to protect their phones from strangers. This has led them to not use their phones in public and crowded places because they thought that someone can easily snatch their phones. Some of the participants reported that if they need to use their phones in public places, for example when walking home alone, they go into a shop, put their back behind a wall and then take their phones out of their bags. The phone was not protected because of its monetary value. It was protected because of the information that it contained about the user, which I discuss under the themes of privacy of user content and privacy of data.

### Places of mobile communication and connectivity

There was a relationship between how participants thought of smartphones as private or public and where they used their phones. For example, in one of the FGs, participants discussed how they see the smartphone as a device that belong to private spaces. When I asked whether they would use their phones in public or private spaces, all participants in FG 7 responded: "Private." Home was the mostly discussed private space, which was protected with curtains, stained glass windows, or security cameras.

Feelings associated with home as a private space were always positive and mostly revolved around feelings of safety, security, coziness, and happiness. For example, Susie (8, FG1) described the privacy of her home and how she feels in it through a model of white cotton wrapped with a red pipe cleaner (see [Figure 3](#)). For her, cotton depicted purity and comfort of the privacy at home while red wrap around it represented being surrounded and protected by the love of her family.

There was an apparent relationship between the ways through which participants experienced privacy of places and



**Figure 3.** Suzie's depiction of the privacy of her home and how she feels about it.

what they thought of as being private for them. In FG 1, participants discussed this in detail:

You could have a private chat, which kind of means no one else is listening or knows what's going on. I guess it's just kind of having your own secret. (Jason, 9)

I think privacy is when I am alone and no one can bother me, when I am in my bed. (Lola, 8)

Place of communication was also related to where interaction with smartphones is acceptable and in what type of social situations one can use their smartphones. Some expressed that they would find using their smartphones in the presence of others as antisocial. For that reason, some of them preferred to use their smartphones when they were on their own, and at their home. The most common uses were for chatting with friends on WhatsApp and Snapchat, playing games, and searching things online for their homework.

In contrast to some participants' preference for using smartphones in private spaces and when they are on their own, other participants explained why they prefer to use their phones in public places. For example, one of the participants told the group how he uses free Wi-Fi in public places as a motivation to take his phone with him.

I take it when I go to KFC, Nando's and McDonalds because they have free Wi-Fi. Especially McDonalds. They have free Wi-Fi and sometimes I don't eat there. I just wait for my sister there and use their Wi-Fi. (Pablo, 10, FG3)

Although the research was conducted in a high earner neighborhood, many participants had either very limited data allowance on their phones, or they were only allowed to use data (some discussed this as "going online" and "being on social media") only for communicating with family members when "out and about." This was one of the motivations for some to use free Wi-Fi. Using public Wi-Fi can make them more vulnerable against unethical data practices. Additionally, such public access to Internet is not necessarily in safer places. Despite the differences in preference of where mobile communication takes place, all participants agreed on how the content of their communication was strictly private. I discuss this theme under next section, privacy of user content.

### Privacy of user content

Participants reflected on what type of content they thought of as being private. There was common consensus among the participants of each FG that photos of one's self were highly private and that they should not be shared with everyone, or only shared with people that one can trust, on platforms that one has control over. They told me that this was a topic discussed at school and at home especially when they were given their first ever mobile phone with a camera feature. For some participants, trust was associated with feelings of safety and security. For others, it was also about having familiarity with specific people and/or about specific social and physical settings. They were also very aware and careful about cyberbullying, and hence, they approached the subject of privacy of user content on phones with caution. Control over one's content was one of the key aspects of privacy of user content.

Privacy is you can judge whether you're the one who controls who sees it, who sees what you want them to see. That's for you to control if people can it or not [sic]. (Andy, 11, FG2)

The sense of control over the content was dependent on the app's privacy settings and whether one could fine tune who can access one's account or content. Some participants reported how they would feel "left-out" if their content was shared without their consent and knowledge with their peers. Jonathan (8, FG6) depicted this feeling using Play-Doh where he created a group of three friends whose content was protected with privacy settings of the mobile app and one friend who did not have any control over their content (see Figure 4). Similarly, this was a common discussion topic among other groups.

On my phone, on every app you can share stuff, you can have a private setting. And on every one of them I have the privacy setting on. Which means only me and my friends and people who I want can see it. (Marie, 9, FG5).

Parental supervision and teacher mediation about privacy and specific app settings was common in all groups. However, it was geared more toward accessing the camera, photos, or videos, but not about personal data. In one of the FGs, privacy of user content was referred to as a "right" just as one's right to privacy of their own body:

It's a right that everyone should have. (Mary, 10, FG4)  
My body! (Claire, 8, FG6)

They explained to me how they would feel scared and threatened if that right was taken away from them. Such feelings and perceived level of threat led to specific reactions ranging from turning Wi-Fi off, location services off, or deleting certain apps. When participants felt that they have no full control over their content, they tend to delete the app completely:

I have this game on my iPhone, it's called Crossy Road [sic], and at the beginning, it says to take a picture of yourself. (Rosy, 10, FG7)

Moderator: Take a picture of yourself?  
Rosy: Yes, like take a picture of something.



**Figure 4.** The visual representation of how one would feel left out and unhappy when they do not have control over the privacy of their content on their smartphones (Jonathan, 8, Focus group 6)

Moderator: So, did you do that?

Rosy: No, I deleted the game. Because if they're taking a picture of me, they could send it anywhere.

Not knowing the "place" of where their content may end up was described as "unsettling" and "sad" (see Figure 5). When I asked why this was a common reaction, many participants started discussing who owns their content once it is shared. Some thought that once they share their photos using their smartphones, the platform that they used to share those photos would become the owner of those photos. Thus, privacy of mobile user content, place of where that content ends up, control and ownership of the user content were strongly related to each other.

### Privacy of data

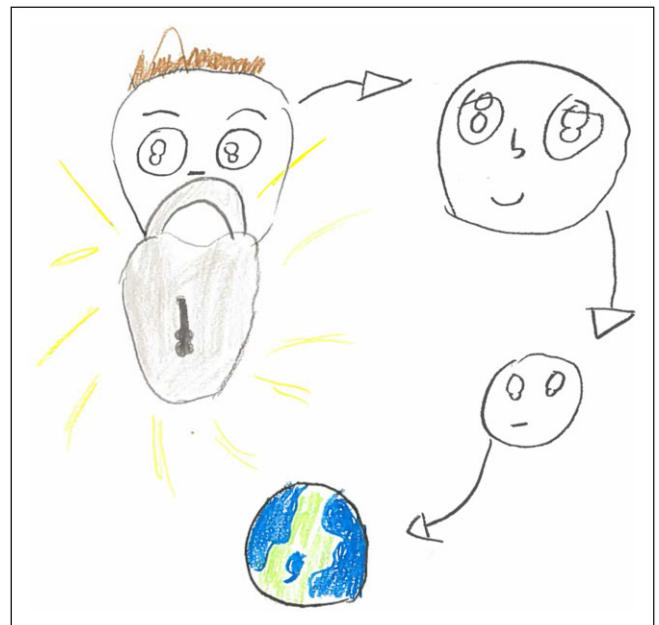
In all groups, we discussed what data are. One of the common discussions was about the places of data—where data were found and where it can be used.

It's everything on your phone (Wendy, 9, FG6)  
Data is normally found on a computer (Lola, 8, FG1)

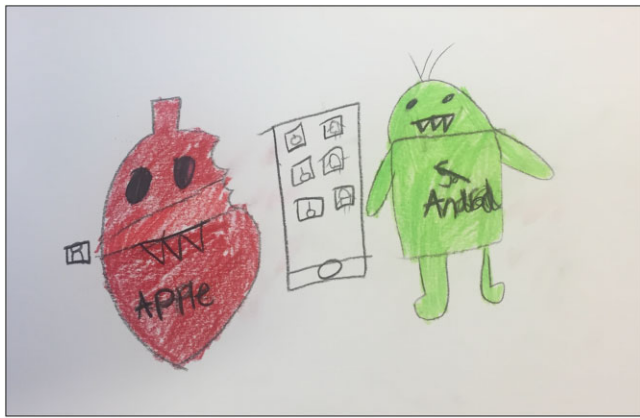
Participants referred to data as information about someone. Some of the other descriptions were passwords, phone numbers, and bank account details.

It's kind of information about things. Yes, if you have it on your phone, it's information about your settings and stuff. (Jason, 9, FG1)

Participants did not feel that they had much control over their data's privacy in comparison to user content that they create or share using their smartphones. The same box metaphor



**Figure 5.** Sam's (10, Focus group 6) visual depiction of how sad and unsettling the feeling of not having control over one's mobile user content is. Sam explained to me that the padlock represents control over user content. When one does not have control, the content could be shared with "the whole world."



**Figure 6.** Mike's (9, Focus group 6) depiction of Apple and Android as platforms that have access to his data on his phone.

was used (under “the privacy of the smartphone” theme); but this time the box had holes in it:

It is like a box with holes. Because nothing is really private. You can never actually trust anyone about privacy [...] The makers of the phone. They always have access to it. You may not know it, but there is someone who can actually know what you are doing. There is no such thing as privacy, but you may think there is. (Mike, 9, FG6)

To illustrate his thoughts, Mike drew Apple and Android as the “makers of the phone” that have access to his data (see Figure 6). In other groups, we also discussed who may have access to their data and what they may do with that data. The group which had some participants from the school's coding club seemed to have developed a more in-depth understanding of mobile platforms and their data practices.

They can turn it into data, like Cambridge Analytica, when they did it with Facebook. You could use it to make a new app (Roger, 10, FG1).

When I asked whether many companies were engaging in similar practices, in one group they seemed to be convinced that regulations and fines were stopping the companies from engaging in unethical data practices.

I don't think they do that because of Mark Zuckerberg. I think he got in loads of trouble because he did that. He sold some information on people and got some money, and he then got fined a lot. (Philip, 11, FG7)

They could do that, but if they get caught, they probably have to pay a fee that's even bigger than what they sell. (Jean, 11, FG7)

In two of the groups, we discussed whether we should be concerned about companies' interest in our mobile data. Trustworthiness of companies and their practices seemed to be a key factor in determining whether participants were happy with their data being shared or not.

Not really, because in the cookies and terms and conditions it's for business purposes.

You can trust Google because they are worldwide. (Eric, 11, FG4)

Like companies' interest in users' data, some of the participants discussed how they thought government agencies and the police could make use of mobile user data.

Like if you were a criminal, they could track your phone and then see and then... If something happened and they think it might be you that did something, they can go through your phone. (Lily, 10, FG5)

This relates to feelings of safety and security because some of the participants expressed how they would feel secure if they knew “bad people” could be caught quickly if they were in danger.

### Locational privacy

Location was consistently discussed as something that is private. This is a common conception in studies about locational privacy (de Souza e Silva & Frith, 2012). In all FGs participants started discussing location sharing features of their smartphones when I asked whether one can understand where they are from their smartphones and the content that they share with each other. The most common app that was discussed was iPhone's Find My Phone.

My mum uses this tracker thing for my phone. So, she knows where I am at all times. Say she is not sure where I am. She can check on her phone where I am. Or maybe if I've lost my phone and she can use her phone to find it again. (Martin, 10, FG2)

Mine [mum] doesn't, because she trusts me to be sensible. (Martha, 10, FG3)

Some participants told me that sometimes their parents track also each other:

Sometimes my dad uses it when mummy is at sea, or where like my parents are and when they'll be back from work [sic]. But apart from that it is always turned off for me (Jane, 9, FG4)

For some of the participants, it was not very clear whether their parents were tracking them or not:

I don't know really, because they keep it as a secret. When I first got my phone I was so excited; but they told me once that they would be tracking where I have gone. But I haven't gone anywhere I shouldn't be. (Jimmy, 10, FG4)

Following whether their parents were tracking where they were on their phones, we discussed how they feel about location tracking. Among the ones who felt happy about being tracked it was not their own safety and security that was important, but their parents' peace of mind and safety.

I want her [mum] to feel safe. So, I'm happy. (John, 10, FG2)

Yes, same. I don't want her to get worried. (Tom, 10, FG3)



On the other hand, some were worried about location tracking. They were worried that a stranger might know where they are if their parents' phones were stolen. This worry—having their own or their parents' phones stolen—was a recurring theme across different discussions we had about privacy and mobile communication. This feeling of worry was also related to having, or losing, control over content, data, as well as privacy settings of the phone. Therefore, many of the participants felt the need to turn their location services on and off constantly depending on what they need to use their phones for and whether the services they use would need their location data. Therefore, it can be argued that the participants have developed an understanding of different types of data and what they could be used for.

Like Google Maps, if you want to know exactly where you are, then you have to [have location services on]. But what you could do is, when you find out where you are, you can turn it on, then turn it off after you've done that. So, then it goes back to being private. (Jack, 11, FG7)

It depends. If I'm using a map app then I'd have it on. But if I'm using something like Safari, and I don't really need it, then I just turn it off. (Carlo, 11, FG5)

Although this made them feel in control of their locational privacy, some of them also found this uncertainty around when and which apps might need to use their location unsettling, limiting, and disempowering.

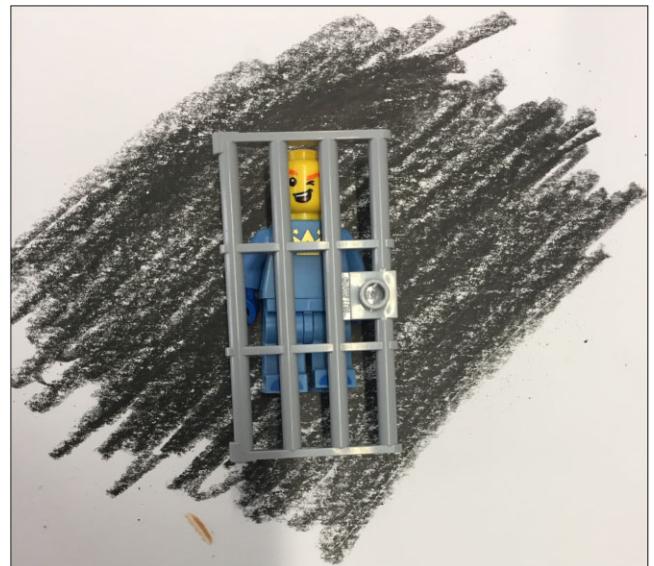
I would just feel like I can't do anything. I would just feel like I am always being watched. I don't have anything. Everything I make, they are watching, they are listening and watching, and I don't really have freedom to do what I want by myself. I feel like I have no power over myself. (Bill, 9, FG1)

Bill depicted this feeling through a drawing and LEGO model where one was imprisoned in a dark space (see Figure 7).

## Discussion

Throughout the study I sought to understand (a) how young people embed mobile communication technology into their everyday lives, (b) how they integrate location-aware features of mobile communication technology in meaning- and place-making, (c) how young people understand and experience locational privacy, and (d) what kinds of issues and concerns do young people have about their locational privacy. My methodological approach was aligned with my objective—to give agency to young people and provide them with a platform to share their own voices about mobile communication and locational privacy. Through FGs that I conducted at a primary school in London, UK, I aimed to understand and describe young people's perspectives about mobile communication and locational privacy.

Although the study was initially designed to focus on locational privacy, it was inevitable that privacy in general was also discussed including privacy of communication content, social media content, and data. This was a natural flow of discussion on privacy, where children were not specifically guided to speak about locational privacy but were first asked to critically think about privacy in general terms. The themes



**Figure 7.** Bill's (9, Focus group 1) depiction of how uncertainty about control over one's location data made him feel imprisoned and debilitating. (Because all LEGO human figures had smiley faces, he specifically underlined the fact that the happy facial expression of the "LEGO man" is not how he feels).

of privacy of the smartphone, privacy of user content, and privacy of data demonstrate the ways children understand privacy in relation to mobile communication as a fluid concept (Dourish & Bell, 2011). This also suggests that their understanding of privacy is contextual and social (Marwick & Boyd, 2014; Nissenbaum, 2004).

The study also shows that children understand smartphones as private places where their personal content and data are kept safe and secure; but which is also open to threats from outside. The perception of threat from strangers was one of the key reasons why some of the participants managed how they use their smartphones in public places (Stoilova et al., 2019). In a similar way that parents' fear of strangers limits independent mobility of their children (Foster et al., 2014), young people's fear of strangers limited the mobility of their phones (i.e., not using it in public places). This contradicts some of the earlier works on mobile communication. While having someone on the other end of the phone brings the feelings of safety and security with it (Ling, 2004), some of the participants expressed how they avoid using their phones because of the risk of theft to their phones in public places, and hence to the privacy of their content on their phone. Additionally, this practice contradicts what de Souza e Silva and Frith (2010) had found, because participants in this study did not use their phones to have control over public places. Instead, their phones' perceived privacy controlled how they could act in public spaces, and hence, how they could socially and physically interact with their environments. Thus, instead of social norms and parental mediation guiding them about how to interact in public places, the risk to privacy of the smartphone was guiding their behaviors.

For some participants social norms had an influence on what they thought of as private or public (Spottswood & Hancock, 2017). The study demonstrated that control over the access to one's smartphone assured the privacy of the phone, content, and data. That is why participants also discussed hacking as a key concern and threat to the privacy of

their content and data on the phone. This resonates with what [Stoilova et al. \(2019\)](#) also found from their work on data privacy with children. For example, the participants of the study were able to identify privacy risks associated with both online and offline interactions ([Stoilova et al., 2019](#)). Having private profiles on mobile social media and messaging apps was a common practice among young people of this study. Studies conducted with adults showed similarities with this finding ([Lewis et al., 2008](#)). Thus, this study also provided insights about how young people's practice of sharing mobile content is consistent with [Nissenbaum's \(2004\)](#) contextual integrity.

The themes of places of mobile communication and connectivity, and locational privacy show how young people's understanding and experience of public and private spaces are mediated and transformed through location-aware feature of smartphones ([Humphreys, 2011](#)). For the participants of the study, location was an inherently private concept ([de Souza e Silva & Frith, 2012](#)). Therefore, they engaged in privacy preserving methods like turning location services on their phones off, which helped them manage their locational privacy ([Baruh et al., 2017](#)). Given the age bracket of the participants of this study, they were particularly literate about location-awareness. The future consequences of location sharing or invasion to locational privacy were not as well-established as compared to other data traces, although they were highly aware of Facebook and Cambridge Analytica Scandal, GDPR, and the commercial value of their data. In [Stoilova et al. \(2019\)](#) such awareness about institutional and commercial privacy was common in 12- to 17-year-olds, not 8- to 11-year-olds. This difference could be explained based on the homogeneous composition of the participants and the socioeconomic conditions of their families.

The study also suggests that young people in this age group value the safety of their families more than their own locational privacy. This was in line with the premise of "privacy paradox," where trust was proven to be a significant factor when users evaluate the safety of sharing personal information ([Norberg et al., 2007](#)). Therefore, it is not surprising to see children between the ages 8-11 feel safe and secure as a result of their parents' tracking their locations. Location tracking had a positive influence on the participants of this study. While the perceived threat of strangers was guiding how comfortable they were using their phones in public places, being tracked by their parents gave them an extra level of freedom to roam around with fewer concerns. This was important not only for their own personal safety, but also the safety of their phones, as their parents could easily locate where their phone was if it was stolen. However, location tracking by advertisers or technology companies was understood as a direct violation of their locational privacy.

## Conclusion

The findings presented in this article contribute to our understanding of the implications of smartphones and their location-aware features on young people's understanding and experience of place and privacy, and the ways through which they make meaning of concepts like data, user content, and location tracking. They also shed light on the issues of control and ownership of one's mobile content and data, trust, and safety and security. Most importantly, these findings highlight the importance of employing arts-based methods in FG settings with children where their voices are heard, and where

they are provided with a platform to share their opinions and concerns in ways that are suitable and comfortable for them.

This study has several limitations. As a small-scale qualitative study, the findings from this study are not generalizable to other young people's understanding and experience of mobile communication and locational privacy. I managed to get access to only one primary school in London, UK. The school was in a high-earner neighborhood. Therefore, the young people that participated in the study had access to or owned multiple mobile devices including smartphones and tablets. The homogeneous demographic of the neighborhood was also reflected in the selection of the participants for the study. Although the norms of privacy for the studied group of young people varied, their privacy expectations are related to their social background and context of the information flow ([Nissenbaum, 2004](#)). Therefore, future research should explore young people's use of smartphones and locative media based in different socioeconomic, cultural, and ethnic contexts and neighborhoods. Additionally, research from other countries and especially from Global South and developing countries should be prioritized as the implications of mobile communication, and understanding and experiences of privacy would vary across national and cultural boundaries.

In this context, young people's use of smartphones and their location-aware features deserves critical academic attention where young people are given the opportunity to describe and discuss how they understand and experience locational privacy, and how they establish a sense of place in relation to constant connectivity and location awareness when they use mobile media. It is important to hear from the young people themselves, because we need more child-centric approaches to study and understand their own perceptions and concerns about privacy ([Stoilova et al., 2019](#)). When adults discuss these issues with researchers, the children's agency is taken away from them. That is why it is important to have children's own voices in this matter.

Future research could investigate the implications of parental location tracking on children's physical and mental development and well-being, and their understanding of safety, security, and trust. Additionally, the literature would benefit from research with younger age groups, which could provide researchers and policymakers the opportunity to brace for how privacy in general and locational privacy in particular would be understood, and how we could support children in terms of digital skills, data literacies, and privacy management tools and tactics for the future. Finally, this study was conducted before the Covid-19 pandemic and the implementation of the Children's Code in the UK. Therefore, it would be fruitful to have similar studies with this age group to understand their implications.

## Data availability

The data underlying this article cannot be shared publicly due to the conditions of research ethics approval and to protect the privacy of participants.

*Conflicts of interest:* None declared.

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