

RESEARCH ARTICLE



# Occupying Another's Digital Space: Privacy of Smartphone Users as a Situated Practice

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**Abstract.** A smartphone's screen is commonly regarded as a private space, and the action of looking at it is usually considered a violation of one's privacy both by researchers and designers. However, our study demonstrates how participants in the interaction themselves negotiate moment by moment and achieve an understanding of someone's screen space as public or private. In this paper, we analyze the interactional sequences of uninvited looks at another participant's phone. Drawing on visual ethnography and ethnomethodologically informed multimodal interaction analysis, we video-recorded and analyzed everyday interactions between friends and acquaintances. Our findings show that looking at someone's smartphone display is often performed and oriented to as a resource in interaction rather than an invasion of privacy. We therefore characterize the interactional functions of gazes and glances at another's screen. We also discuss the research and design implications of approaching privacy as a situated practice.

**Key Words:** Co-present Interaction, Ethnomethodology, Multimodal Interaction Analysis, Privacy, Smartphones, Video Data

## 1 Introduction

Ever since smartphones entered the market, they have become intimately intertwined with almost all of our everyday life spheres and practices. Traditionally, smartphones were treated as 'single-user devices' (Hatuka and Toch 2016; Al-Ameen et al. 2021), which is also reflected in the extensive research on privacy perception and privacy-related practices of smartphone users. Accordingly, the design implications of these studies are usually guided by the goal of protecting users' privacy—that is, individuals' rights to control how their personal information and sensitive data are collected and used by others (Tsavli et al. 2015; Zhou et al. 2017; Zhou et al. 2019; Wang et al. 2020). However, recent research has shown that smartphone use is often embedded

in collaborative activities or interactions among people (Brown et al. 2013; Raclaw et al. 2016; Porcheron et al. 2017). Studies have also shown the prevalence of users sharing devices and data (Weilenmann and Larsson 2002; Karlsson et al. 2009; Hang et al. 2012; Hayashi et al. 2012; Matthews et al. 2016; Ahmed et al. 2019; Al-Ameen et al. 2021).

Thus, most of the previous research has either treated smartphones as private and personal devices, with a focus on protecting users' privacy, or explored how participants collaboratively achieve the shareable and shared nature of their devices with a focus on improving the experience of collocated sharing. However, while being co-present with others, participants' categorization of their smartphones as personal or shareable devices can continuously change, and there is a limited understanding of how privacy is approached and negotiated in the absence of an explicit invitation to look at one's phone. This dual nature of smartphones, therefore, requires reconsidering the notion of privacy as a situated and dynamic practice. By studying smartphone users' privacy-related practices in co-present interactions, we can gain a more nuanced understanding of what privacy means in different contexts and situations, and how it is approached by participants as an everyday practical concern.

Before describing our research design, we find it necessary to briefly clarify how we understand privacy in this study. Privacy is a complex concept, and its definition varies drastically from one theoretical framework to another. For example, a recent overview of 'privacy frameworks' (Wisniewski and Page 2022) discusses privacy in the context of information disclosure, interpersonal boundary regulation, context-specific norms, affordances and design, and individual differences of users. Our empirical analysis suggests viewing privacy as a situated practice (see Dourish et al. 2004; Dourish and Anderson 2006; Tolmie et al. 2016; Crabtree et al. 2017; Goulden et al. 2018) within which common research questions are as follows:

- what individuals consider to be personal, private, or sensitive data;
- how the observability of someone's potentially private actions is managed by participants in interaction;
- how participants reveal their personal data to others and how they negotiate what appropriate sharing looks like;
- how they prevent exposure of their private data and actions; and
- how violations of one's privacy are negotiated, accounted for, and justified.

In this paper, we will apply this approach to privacy in situations of uninited looks at another's smartphone screen. As our data show, co-present others (friends, family members, colleagues) often invade this ostensibly private space by looking at the user's screen during face-to-face interactions without

being directly invited to do so. The present study thus investigates the embodied accomplishment of digital space privacy in face-to-face interaction. Utilizing video-based interaction analysis, we discuss contextual factors that affect how co-present participants look at another user's smartphone screen, and how this action is then treated by the smartphone user. Instead of assuming that this looking is a violation of privacy, we analyze how participants themselves orient to these uninvited looks and how they negotiate moment by moment and achieve a common understanding of one's smartphone screen as public or private. From the analysis of naturally occurring interactions, we also delineate natures and interactional functions of glances and gazes at another's phone, thus allowing us to draw implications for privacy design.

## 2 Related research

Privacy in connection to smartphones and other mobile devices has been addressed from various perspectives and in manifold contexts. With respect to friends' and acquaintances' *access to the device*, researchers have studied users' perceptions of privacy risks (Al-Ameen et al. 2021), reasons for and ways of using another person's device (Matthews et al. 2016), challenges that arise when multiple individuals own and share a single mobile device (Ahmed et al. 2019), effects of privacy concerns on willingness to share the device (Karlson et al. 2009), and attitudes toward unauthorized access to smartphones (Marques et al. 2016; Marques et al. 2019). In the context of co-present participants getting *access to another's phone screen*, researchers have studied participants' reactions to the exposure of incoming messages (Min et al. 2014) and their preferences regarding smartphone notifications (Verma and Patil 2021). *Access to a user's smartphone content* has also been studied in the context of parental monitoring activities and institutional surveillance (Green 2002), privacy-invasive apps (Choe et al. 2013), privacy-enhancing tools (Carelli et al. 2019), and built-in options for privacy management, such as locking mechanisms (Egelman et al. 2014). Despite the diverse range of methods and research questions, many of these studies mention similar factors affecting users' management and perception of privacy: context, cultural and social backgrounds, the relationships between participants, type of exposed data, and motivation for access.

### 2.1 Smartphones as personal and private devices

Smartphones are designed as a technology that is mostly operated by a single user (Al-Ameen et al. 2021). A smartphone screen is commonly viewed as a private space as it can reveal sensitive or confidential information about the smartphone's owner. This single user assumption is reflected not only in the design of smartphones but also in a significant part of privacy-related research. Some

researchers even suggest that mobile phones contribute to the development of a ‘portable private-personal territory’—that is, they allow users to extend their personal space while being in public spaces (Hatuka and Toch 2016). Consequently, accessing the content of someone’s phone is often viewed as a violation of their privacy and an illegal or morally problematic activity. In the field of Human-Computer Interaction (HCI), this activity is usually discussed in relation to technologies of surveillance (e.g., mobile spyware, monitoring apps) or observational attacks, such as shoulder surfing or snooping attacks. The latter can be interpreted as an action of ‘looking through someone else’s phone without their permission’ (Marques et al. 2016). The concept of shoulder surfing comes from the field of computer security and is often defined as an attempt to steal someone’s confidential information (e.g., passwords) by discreetly looking at their screen (Aviv et al. 2017; Bošnjak and Brumen 2020). Research ‘in the wild’, however, evinces that shoulder surfing is mostly caused by curiosity and boredom, as opposed to malicious intent (Eiband et al. 2017).

Studies have addressed the protection of users’ privacy and security at the level of the device, operating system, and specific applications (Hayashi et al. 2012; Tsavli et al. 2015; Zhou et al. 2017; Breitingner et al. 2020). xShare has been proposed as a solution, enabling users to specify what they want to share on their phone (Liu et al. 2010). ‘Shared’ and ‘secret’ or more restricted accounts have been proposed in the case of shared devices for the protection of privacy (Matthews et al. 2016; Ahmed et al. 2019). Hidden push notifications have been suggested for situations of device sharing (Hang et al. 2012).

## 2.2 Smartphones as shareable and shared devices

Previous research also shows that smartphones, despite being designed for single users, are often shared among people (Karlson et al. 2009; Hang et al. 2012; Matthews et al. 2016; Ahmed et al. 2019; McGregor 2020; Al-Ameen et al. 2021). Hence, the ‘private’ character of smartphones has been challenged. In research on smartphone use, there is also an observable shift in focus ‘from personal-individual toward shared-multiuser experiences and interactions’ (Lucero et al. 2013, p. 27). In relation to this shift, various design solutions and prototypes have been discussed concerning the technological enhancement of social interaction between collocated people (Olsson et al. 2020).

Smartphones’ support for collocated sharing is, however, limited and is mostly provided by the possibility of showing the screen or handing the phone over to another collocated person (Lundgren et al. 2015). In co-present interactions, phone users can, for example, share the content of their personal messages with others a topical resource (Brown et al. 2018), provide others with visual access to an image displayed on the screen (Raclaw et al. 2016; Avgustis and Oloff 2023), or use map applications to navigate a city together (Brown et al. 2013). While mobile devices and smartphones are often shared with others, people can also

feel uncomfortable when co-present participants look at their phone without permission (Nakamura 2015). Previous studies reveal that users' privacy needs are context-sensitive (Ahmed et al. 2019; Alaqra and Wästlund 2019; Al-Ameen et al. 2021) and are shaped by cultural factors (Alam et al. 2021; Al-Ameen et al. 2021), the type of data to be shared, and the relationship with the sharee (Hang et al. 2012; Matthews et al. 2016; Li and Gui 2022).

Existing studies on privacy behavior in the context of collocated smartphone use are mostly based on data from focus groups, interviews, surveys, and experiments. An absence of observations on the situated sharing of smartphones with others has been mentioned as a limitation (Hang et al. 2012), and research on non-malicious uninvited looks is exceptionally scarce (Eiband et al. 2017). In this study, we fill in this gap by analyzing situations where co-present participants look at another person's screen during face-to-face interactions without being directly invited to do so.

### 3 Data and method

#### 3.1 Data collection and fragment selection

Data for this research consist of video recordings of everyday interactions between friends and acquaintances. The first set of data was collected in cafes and participants' homes in Russia between 2018 and 2020. For this study, five out of the total 14 video recordings (between 1.5 and 2 hours long each) were used in the data analysis. Participants were informed about the researcher's interest in mundane smartphone use, but they were not given any instructions regarding their behavior and actions. All participants in this dataset are native speakers of Russian. The second set of data was recorded in participants' homes in Finland in 2021. Participants are friends of different nationalities: French, Finnish, Indian, Italian, German, and Palestinian-Jordanian. The languages of communication are French and English as a lingua franca. The primary target of this data collection was not specifically smartphone use but rather migrants' sociabilities in Finland during the pandemic and the role of digital technologies in their daily interactions. The dataset comprises 18 hours of video-recorded face-to-face interactions (4 events). From this corpus, we selected three face-to-face social events involving significant smartphone use. Participation was informed and voluntary. All participants signed written consent forms and agreed to the use of video recording for research purposes and to the publication of unfiltered stills. However, participants' names are replaced by pseudonyms and other personal information is anonymized in transcripts.

To fully account for the resources involved in the situated enactment of privacy, this study employed multidimensional in-room video recordings using

multiple static cameras and audio recorders. These were complemented by wearable cameras (worn by participants) and screen capture software (installed on participants' smartphones whenever technically possible) in the first dataset and remote-controlled cameras in the second dataset. The combination of perspectives and the synchronized verbal transcriptions in the resulting videos allow us to analyze the communicative behavior of all participants both off- and onscreen.

In the global dataset, we found 82 instances of uninvited looks at another's smartphone screen. Coding was conducted twice by two of the authors to ensure intercoder reliability. By 'uninvited looking', we refer both to short glances and longer periods of gazing at another participant's phone that occurred in the absence of an explicit verbal (e.g., saying "look") or embodied (e.g., turning the phone toward the other participant) invitation to look at the device. Although a longer gaze can more often be viewed as a violation of one's privacy, short glances are no less important in the discussion of situated privacy, as they are not typical of 'invited looking' and occur almost exclusively in the absence of invitation. Occurrences of invited looks and instances of visibly 'not looking' at someone's screen were not included in the data collection. While instances of 'not looking' could have also provided additional insights into the way people negotiate privacy concerns in face-to-face interactions, we decided to exclude them from the dataset to avoid subjective interpretations of whether a certain instance was an intentional disattending or whether other participants did not notice the presence of a smartphone. We nevertheless discuss the issue of disattending in situations where co-present others shift their gaze away from the phone after glancing or gazing at a smartphone user's screen.

It is important to note that due to the complexity of human interactions, some instances of 'looks' directed at another's phone can pose challenges for categorization. For instance, it might be difficult to discern and assert whether a glance is directed at the phone or not, or whether it is invited or not. In each case, a thorough examination is necessary, and all ambiguous instances were extensively discussed during the categorization process. This potential ambiguity has no impact on the core findings of the study, as we do not aim to offer a quantitative generalization of 'looks' based on the collection of cases. Instead, the study's primary findings are rooted in the detailed sequential analysis of presented fragments, revealing the nuances of 'uninvited looks' as situated accomplishments.

### 3.2 Research methodology and data analysis

Our research methodology draws on an interdisciplinary approach encompassing visual ethnography (Banks and Morphy 1999; Ruby 2000; Pink 2013) as a way to conduct the fieldwork (collecting and processing audiovisual data that

document artifactual practices) and ethnomethodologically informed multimodal interaction analysis (Goodwin 2000; Cosnier 2007; Mondada 2008) to examine verbal, embodied, and artifactual practices. Even though ethnomethodologically informed methods were introduced to the fields of HCI and Computer-Supported Cooperative Work (CSCW) several decades ago (Greiffenhagen and Watson 2009; Blomberg and Karasti 2013; Blackwell et al. 2017; Randall et al. 2021), primarily by the work of Lucy Suchman (1987), they are still not easily accessible for researchers who have not previously used this methodology. We, therefore, find it necessary to briefly clarify our procedures and address concerns related to the reliability and validity of this study.

Ethnomethodologically informed ethnography and interaction analysis are qualitative methods aimed at answering the question of how participants accomplish various social actions, instead of how often or why they accomplish them. Previous studies on smartphone use have also shown that these approaches can be useful for generating design implications (Fischer et al. 2013; Brown et al. 2015; Licoppe and Figeac 2015; Porcheron et al. 2016; McGregor 2020), even though they are not the most important contribution of this type of research (Dourish 2006). These methods were chosen for this study due to their capability of elucidating the situated nature of social practices in face-to-face interactions.

To ensure reliability, we include transcripts of the analyzed excerpts, the detailed analysis, and figures in the article (Peräkylä 2004). This allows the reader to analyze the data themselves and therefore test the validity of our analytical claims (Seedhouse 2005). In this article, the original talk in Russian was transcribed according to Bolden's (2004) transliteration system and translated to English in the presented transcripts. The transcripts in French follow the ICOR convention (Groupe ICOR 2013) and are also translated in English. As the negotiation of one's privacy in co-presence with others also involves the participants' bodily conduct, the transcripts include multimodal annotations with a particular focus on the direction and duration of onlookers' gazes and glances. General transcription conventions are presented in appendix A.1. To ensure the adequacy of the transcripts, they were checked by several researchers and discussed during data sessions with researchers who are not directly involved in this study. While these transcripts are difficult to read for researchers who have not used them before, we present them in an unaltered way as they are a necessary part of the analysis. This study ensures validity by adhering to the emic perspective—that is, 'the perspective from within the sequential environment in which the social actions were performed' (Seedhouse 2005, p. 252). All the analytical claims are based on the data presented in the article.

## 4 Findings

Our findings show that another person's smartphone display is not always treated as a strictly private space. The decision to treat a smartphone display as a private or public space is made in situ. In most situations, participants draw their gaze away quickly after glancing at another's screen, but our collection also includes cases where participants gaze at a screen for a longer time, lean in to get a closer look at the smartphone's screen, and make comments about the smartphone's content or onscreen activity. In doing so, participants treat the screen as a shareable space. However, we also observe 'privacy incidents' where a digital activity that was considered public is reevaluated as private, which leads to a visible interruption of the initiated look. Therefore, digital space privacy is a situated and dynamic interactional practice achieved through a spectrum of embodied actions from an absence of looks to quick glances or intensive gazes and head turns in cases of misinterpretation. In the following subsection (4.1), we will first describe how smartphone users demonstrate the privacy level of their onscreen activities to others and how this privacy level is then collaboratively negotiated by co-present participants. We will then (4.2) focus on the interactional functions of looking at another's smartphone.

### 4.1 Negotiating privacy of a smartphone user's onscreen activity

By holding a smartphone in a certain way, its user not only makes the smartphone's screen less or more visible to co-present others but also demonstrates the privacy level to them. The ways of maintaining privacy by changing the smartphone's position depend on the spatial positions of potential spectators in relation to the smartphone user and their distance from the smartphone user. Smartphone users can control and demonstrate their current privacy level to co-present others *by adjusting their body position, by using other objects in the material environment, or by changing the position of the phone*. Regarding the adjustment of the body position, participants can, for example, cover their screen with their hands or lean back, so their smartphone's screen is out of others' view. As for the material surroundings, smartphone users can use various objects (cups, plants, etc.) as barriers between the smartphone's screen and potential observers. Figure 1 demonstrates different ways of holding the phone in a situation, where participants sit around the table and the potential onlooker is located next to the smartphone user. In this type of seating arrangement, the smartphone user (Nikolai) can make the observability of his onscreen activities easier for the co-present participant (Daria) by keeping his smartphone on the table in front of him or by extending the arm that is holding the smartphone. The user can also demonstrate a more private character of their onscreen activities by moving the phone to the edge of the table, lifting it up, or putting it under the table, thus making it less observable for the



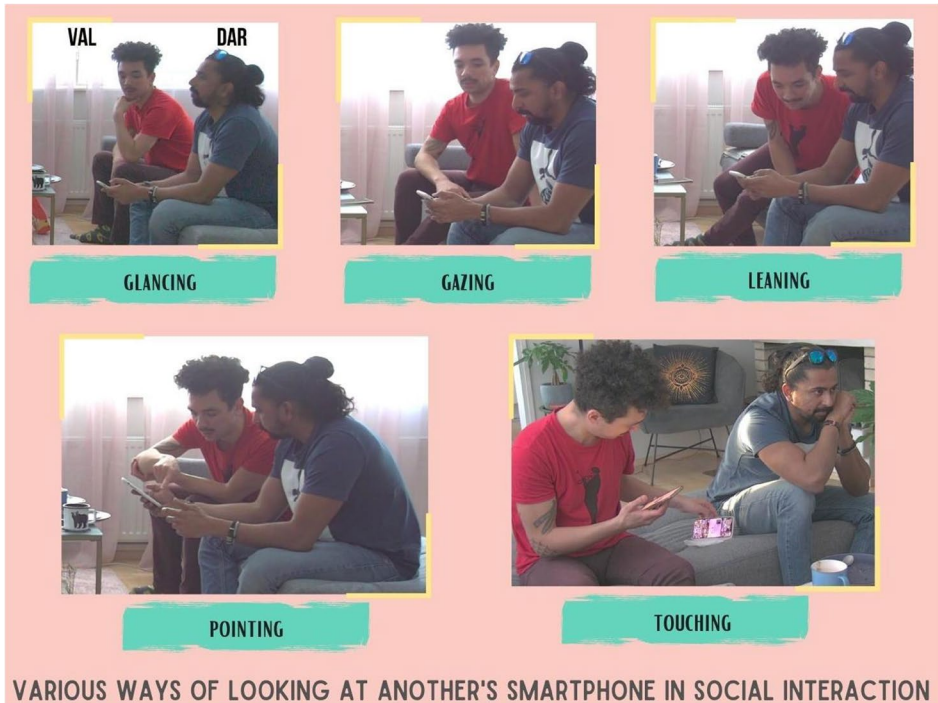
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Figure 1. Ways of holding a smartphone.

participant next to them. By adjusting the angle and height of the smartphone, the user can increase their privacy even further.

Other participants in the interaction can negotiate the smartphone user's demonstrated privacy level through embodied conduct. They may resort to multimodal resources, such as *gaze modes*, *torso rotations*, and *hand gestures*. For instance, in Figure 2, Valentin either quickly glances at Darshan's screen with no considerable alteration to his body position, except for a head turn, or he gazes longer with a slight torso rotation or even leans visibly toward the screen. The observer may also resort to hand gestures to either make the subject of his visual inquiry more precise (here, Valentin is pointing at Darshan's screen wallpaper) or agentively get better sensory access to it (Valentin is slowly and carefully turning Darshan's screen up to see the name of the song currently playing). The intensity and temporality of the gaze/gesture also affect participants' approach to negotiating privacy. One glance compared to multiple glances or a prolonged gaze and a strong grip on the device compared to a slow and smooth grasp all suggest different understandings of the onlooker's right to access the user's screen and the need to make the onlooker accountable for looking. Furthermore, the smartphone user's embodied



**Figure 2.** Ways of looking at a smartphone.

conduct echoes that of the observer. Indeed, when the observer's glance/gaze is not perceived, the smartphone user does not modify their behavior, whereas when it is made visible, the smartphone user might either give more sensory access to their screen (like Darshan here tilting his phone toward Valentin) or limit it even further. Negotiation of privacy is indeed embodied and situated in social interaction by making use of multimodal resources.

As these figures demonstrate, while different ways of holding a phone change the screen's visibility to the other, they do not guarantee that the phone will not be looked at. Factors affecting *the frequency and ways of looking* can be divided into four categories:

- **Space:** The spatial arrangement of all co-present participants affects the level of effort needed to get visual access to another's smartphone, and therefore the frequency of uninvited looks. The smartphone user changes their body position and holds their phone in different ways, thus controlling the degree of sensory access and observability of their onscreen actions. The accountability of looking at someone's screen, and therefore

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the frequency and ways of looking, also depend on the nature of the space in which participants are located (e.g., private or public).

- **Temporality:** While at some moments of interaction, looking at another's phone is not treated as a violation of privacy, and is even expected (e.g., during sharing sequences), one's understanding of one's smartphone screen as a public or private space is dynamic. Co-present others are often unaware of the onscreen activity's type or stage ('bystander ignorance'; Raudasko-ski et al. 2017) before they look at the screen, which means that a certain instance of looking might be oriented to as ill-timed or privacy-invasive.
- **Participants:** The smartphone user's role in the interaction (e.g., speaker or listener) can also affect whether their smartphone will be looked at or not. If the smartphone user talks while holding the smartphone, co-present others often glance at the screen to check whether the onscreen activity is related to the ongoing talk. In the context of parallel interactions (e.g., messaging), the privacy of ex situ participants is also taken into account. The relationship between participants affects both the frequency and ways of looking at the other's screen: close friends or partners look at each other's phones more often and more openly than acquaintances do (see also 'cohort-relevance'; Crabtree et al. 2017). Regarding the number of participants, co-present participants look at a smartphone user's screen more often in a dyadic interaction, usually to check their level of availability and engagement. In a multi-party interaction, however, smartphone users can maintain the private character of their activities for a longer time if other participants are actively participating in the ongoing interaction.
- **Activity:** Participants look at another's phone more often and more openly if the type of onscreen activity is known to them (e.g., if they perceive a camera shutter sound) or if the activity is announced by the smartphone user. When a smartphone user reads something from their phone, others can start looking at the phone as well to gain visual access to the referent, even though they were not explicitly invited to do so. Notifications, which can pop up on a smartphone user's screen at any moment, often lead to a change in the orientation to the smartphone screen as a private space. This is also relevant when the type of activity or content on the screen changes.

It is important to underline that the above-mentioned factors are tightly intertwined; that is, participants orient to several or all of these factors simultaneously in situations of uninvited looks. The sequences analyzed below illustrate how the negotiation of privacy is shaped by the spatial arrangement, the sensory access framework, and the modes of holding and looking at one's smartphone in social interaction. These excerpts also show how participants can demonstrate the

privacy level of their onscreen activities to other co-present participants and how co-present others can orient to the smartphone user's visible actions.

In the first example, two participants (Ekaterina and Maria) sit across from each other at a table. This type of spatial arrangement hinders the observability of other's onscreen activities as it limits the range of possible ways of looking. However, while it is easier for a smartphone user to maintain privacy in this type of spatial arrangement (e.g., by lifting the smartphone up), they can also decide not to do so (e.g., in this excerpt, by keeping the smartphone on the table). The way Maria holds her phone is also interesting considering the type of onscreen activity she is performing—namely, writing a personal message. While accessing another's personal messages is often viewed as a violation of their privacy (Marques et al. 2012), we see that Maria does not demonstrate the private character of her activity in any observable way. By putting her phone on the table, Maria makes her smartphone-based activity observable for Ekaterina. We, however, still categorize the following look as "uninvited", as there is no explicit verbal or embodied invitation to look at the screen. Moreover, while making the activity visible for Ekaterina, Maria does not invite her to discuss it, as Ekaterina's question about the observed activity will be left unanswered.

**Example 1 - Messaging (Russian)**

```

01   EKA   .hh edu kuda-to po delam i do kontsa dnja:
      .hh I go somewhere on errands and until the end of the da:y
02   ja +gde-to v eto- v zhope,
      I'm somewhere in this- in the ass,
mar   +types a message-->
03   (1.4)
04   EKA   pri etom *prixo*ditsja est' v kakoj-nibud' kafexe.
      so I have to eat in some cafe.
eka   *g. SP*
05   (0.4) *(1.1)
eka   *gaze SP-->
06   EKA   s kem# [ty* tam perepi]syvae[sh'sja? ]
      who are [you mes]sagin[g with? ]
07   MAR   [vse takie z- ] [vse ta]kie zanjaty:e.
      [everyone is so b-] [everyone is so] bu:sy.
eka   -->*
fig   #fig.3.a
08   (2.3)
09   EKA   a ty chë?
      and what about you?
10   (1.2)+(0.7)
mar   +sends a message and locks SP->
11   MAR   ha-ha (0.8) a ja net+ ha-†ha
      ha-ha (0.8) and I'm not ha-ha
mar   -->+

```

Prior to the excerpt, Ekaterina has been complaining about a lack of free time and thus the possibility of eating properly, lines 01–04 being the end of



Figure 3. Still images from the excerpt 'Messaging'.

the extended complaint. As Ekaterina talks, Maria unlocks her phone, opens a message, and attaches photos to it. Ekaterina has previously glanced at Maria's phone while talking, and she quickly glances at it again when Maria types a message (1.04). After Maria finishes her multi-turn unit, a lapse emerges (1.5 seconds, 1.05), during which Ekaterina starts looking at Maria's phone again (Figure 3.a), this time, longer than previously. This uninvited look is not perceived by Maria, who continues typing a message while keeping her gaze on the screen. In the absence of an answer from Maria, Ekaterina asks a question about Maria's onscreen engagement ('who are you messaging with?', 1.06). The posing of this question, however, overlaps with Maria's utterance as she finally responds to Ekaterina's complaint ('everyone is so busy', 1.07). By providing this slightly late response, Maria demonstrates her engagement in the ongoing conversation, even though she does not alter her gaze orientation or body position. This utterance is then followed by another question from Ekaterina, this time related to the talk and not to the onscreen activity ('and what about you?', 1.09). After sending a message and while locking her phone, Maria lifts her gaze and answers Ekaterina's second question (1.11). The participants then talk about their current tasks and plans, and Ekaterina's first question related to the onscreen activity (1.06) is left unanswered.

This excerpt shows that the privacy of one's onscreen actions does not entirely depend on the type of activity but is demonstrated and negotiated *in situ*. Maria does not attempt to hide her onscreen activity nor does Ekaterina try to hide the fact that she looked at Maria's screen. On the contrary, Ekaterina exposes her uninvited look by asking a question that demonstrates her knowledge of the activity type (messaging). This instance of uninvited looking is also not problematized by Maria; that is, it is not treated as a violation of her privacy by either participant. We can note several factors that affect the way of looking in this extract. As co-present interaction is dyadic, the smartphone user's decreased level of engagement (lack of gaze orientation or verbal responses) is highly noticeable to the other participant. The position of Maria's phone also makes her onscreen actions, and therefore her concurrent involvement, easily observable for Ekaterina. The fact of looking is exposed by Ekaterina but is not problematized by the smartphone owner, which can be explained by the type of relationship between the participants (close friends) and Maria's preceding actions (putting the phone on the table in the way that makes the on-screen activity observable).

We will further analyze how privacy is negotiated in another instance of uninvited looking, where we can observe the presence of different factors playing a role in the way the looking unfolds. Example 2 illustrates a multi-party configuration where each participant has different sensory access to smartphone use. The onlooker is seated next to the smartphone user, giving her privileged visual access to the screen, even though it is held under the table.

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### Example 2 - Scrolling Instagram (French)

01 CHR c'est: c'est: c'est: genre quand i` y a la nature  
**it's it's it's kind of like there's nature**

02 \*et souvent c'est l'hiver \*  
**and often it's wintertime**

jud \*unlocks her phone-----\*

03 BEN #\*ouais=  
**yeah**

jud \*looks for and opens instagram-->  
 fig #fig.4.a

04 CHR =j'ado:re ça (.) genre t` es tout seul\* .h t` as un paysage  
**=I lo:ve it (.) it's like you're alone and you have a scenery**

jud -----\*scrolls Instagram-->

05 ou un truc ou la forêt ou [t` as une neige ] qui tombe doucement  
**or something or the forest or [you have the snow] slowly falling**

06 BEN [ça:: ]  
 [tha::t ]

07 CHR .h et j` sais pas t` as un moment et #+et j` pense  
**.h and I don't know you have a moment and and I think**

mar +gazes at jud's phone-->  
 fig #fig.4.b

08 CHR mais i` y a un truc méditatif j` trouve dans:  
**but there's something meditative I think i:n**

09 CHR [dans la clope des fois \*parce que tu ]  
**[in a cigarette sometimes because you ]**

10 BEN [nan la clope la clope d' après ] la baise  
**[no the cigarette after ] sex**

jud \*closes instagram-->

11 BEN #+mon gars + i` y a rien d` mieux\*  
**man there's nothing better**

jud -->\*

mar +gazes away +  
 fig #fig.4.c

12 CHR \*oui mais ça\*# [ça en premier en ] premier lieu mais  
**yes but this [this in the first in] the first place but**

13 BEN [voilà incontestable ]  
**[that's it undeniable]**

jud \*locks phone\*

fig #fig.4.d

14 JUD j'ai jamais testé  
**I've never tested**

In this sequence, four friends are having dinner together, and the current topic is the various contexts in which smoking is more enjoyable. While Christian is making a case for smoking in nature (1.01–08), the three other participants, though all active listeners, engage in this conversation in different ways. Benjamin first expresses both his interest in and alignment with Christian's affirmations ('yeah', 1.03, 'that', 1.06) but later suggests another candidate for best smoking time (1.10–11). Marianne is first observing this verbal exchange between Christian and Benjamin with her gaze switching from one to the other. However, when Judith seems to disengage from the conversation by unlocking her smartphone, which is already in her hand under the dinner table (1.02), Marianne's attention is progressively drawn to this new onscreen activity. Indeed, after unlocking her phone, Judith goes through it looking for the Instagram app (1.03–04, Figure 4.a).



Figure 4. Still images from the excerpt 'Scrolling Instagram'.



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Upon opening it, she first checks an Instagram story and then scrolls through her feed. This scrolling activity is displayed here as a private, individual, silent, almost hidden activity not expressly visible to the two active speakers. Nonetheless, Marianne sets her gaze on Judith's screen, looking at her Instagram feed from above (1.07–11, Figure 4.b). Marianne's spectating is made possible by the spatial arrangement of this interaction insofar as the sensory access framework differs from one participant to another. Here, Judith and Marianne share the same bench, while Christian and Benjamin sit at the opposite side of the table. This arrangement, the way Judith holds her smartphone under the table but not close to her face, her friendship status with Marianne, and their current role as listeners in the ongoing conversation are all parameters that allow this prolonged gaze.

Nevertheless, this uninvited look from above does not seem to be perceived by the smartphone user. The onlooker's body is anchored; only her head is slightly tilted down toward Judith's phone. Therefore, the potentially private character of the onscreen activity cannot be negotiated further. When Judith closes her app and locks her phone (Figure 4.c), Marianne seizes the opportunity to look away before Judith raises her head and looks up again (Figure 4.d). The discrete nature of Marianne's gaze withdrawal does not necessarily indicate that it was intentionally hidden from Judith. It mostly highlights how looking at another's smartphone during a social interaction can be done in a way that allows the onlooker to escape the conversation for a moment without disrupting either the ongoing talk or the onscreen activity. Once the latter is over, both the smartphone user and the onlooker verbally resume their engagement in the topic: Judith introduces a joke related to the topic ('I've never tested', 1.14, being the beginning of a joke sequence) and Marianne joins the conversation several moments later. This demonstrates that smartphone activity involving discrete phone holding and gazing allows the user and the onlooker to stay engaged in the ongoing social interaction.

In this subsection, we tried to describe and demonstrate various factors that affect when, how, and why a smartphone user's screen is looked at (spatial arrangement of participants, material surroundings, temporal aspects, type of activity, and relationship between co-present participants). Our data show that the way of holding a smartphone often correlates with the way of looking at the display: the more discrete the smartphone use is, the more discrete the observer's way of looking is. Thus, the more openly the smartphone owner uses their device, the more openly co-present participants look at the display, lean in closer to it, and comment on the onscreen activity. In situations of uninvited looks, participants therefore orient to the smartphone user's demonstrated level of privacy, which is then collaboratively negotiated. In neither of the analyzed examples above is looking treated as a violation of one's privacy. The fact of looking is not hidden from the smartphone user in the dyadic interaction (ex. 1) nor from the co-present participants in the multi-party interaction (ex. 2). We can, therefore, state that looking at another person's screen does not always cause privacy concerns for the participants in the interaction.

## 4.2 Interactional functions of looking at another’s phone

Smartphone users do not treat their devices as strictly personal and private; on the contrary, they often allow others to ‘spy’ on them. In this subsection, we will show that glances and gazes at another’s phone have interactional functions, which are performed and recognized by participants in situations of uninvited looks. In general, gaze has multiple regulatory and communicative functions in face-to-face interactions, such as looking for a potential recipient (Goodwin 1979), displaying engagement in a conversation (Goodwin 1981), demonstrating the relevance of a particular object for the ongoing interaction (Mortensen and Wagner 2019), or mobilizing a response (Stivers and Rossano 2010). However, considering the pervasiveness of smartphone use in mundane interactions, far too little attention has been paid to the interactional role of looking at another’s smartphone, the focus being mostly on ‘invited looks’ (Raclaw et al. 2016; Avgustis and Oloff 2023). On the basis of the analysis of naturally occurring interactions, we have delineated three natures of looking at another’s phone—monitoring, inquiring, and escaping—and three functions corresponding to each of these natures (see Figure 5). We will now shortly describe each of the natures and functions as well as their distribution in our collection of 82 cases.

- **Monitoring:** Monitoring nature concerns the issue of overcoming smartphones’ ‘opacity’ (Sahlström et al. 2019; see also ‘bystander ignorance’, Raudaskoski et al. 2017). As a smartphone user’s actions are often invisible to co-present others, so is the user’s level of availability. Participants can monitor the user’s onscreen activity before they start talking or while they are talking, which lets them understand the user’s current level of engagement in the co-present interaction (20 cases). After observing the user’s activity, participants can also try to ‘bring the smartphone user back into the conversation’ (6 cases), for example, by commenting on the onscreen activity and problematizing concurrent involvement (see ex. 3), or disengage from the co-present interaction (6 cases), for example, by initiating smartphone use themselves. We have distinguished these possible outcomes of checking the user’s availability as separate functions as they can also be the initial reason for looking at another’s phone.
- **Inquiring:** This nature relates to instances of looking at another’s phone for the purpose of seeking information. Participants might glance at the smartphone user’s screen to get practical information (8 cases), for example, to check the progression of a joint activity (see ex. 4). If the smartphone user talks while holding an unlocked phone in their hand, co-present participants often glance at the screen to probe whether the ongoing talk is related to the content on the screen (15 cases). The third function (surveillance) reflects the way looking at another’s phone is mostly addressed in the HCI research: spying or looking at the user’s screen to acquire their personal information. Our data show that this function, while being the most researched, does not arise as often as other functions we describe in this paper (5 cases). However, our data collection includes

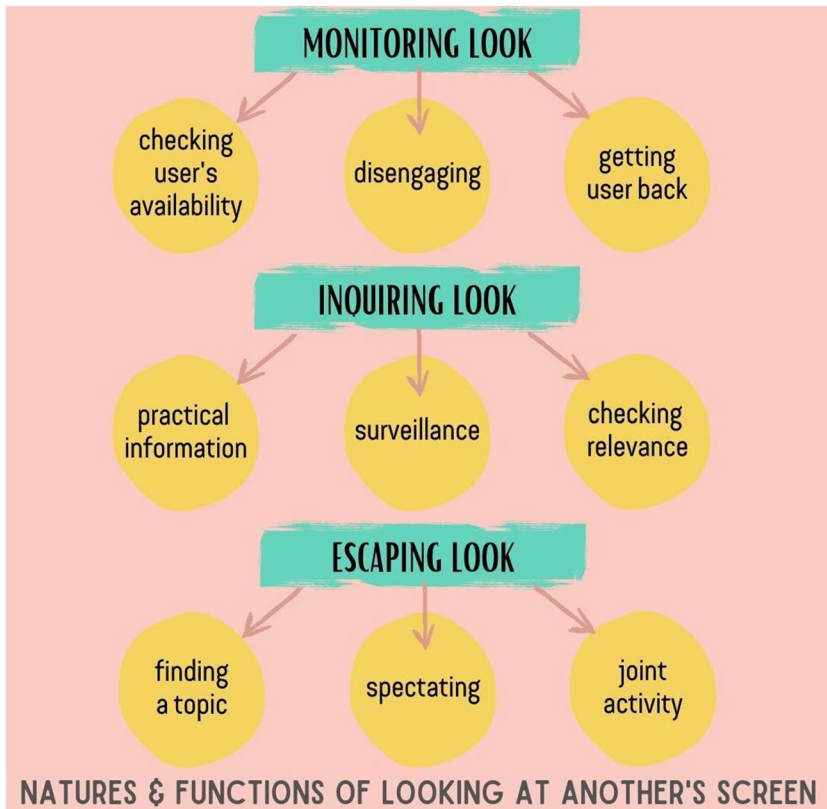


Figure 5. Natures and functions of looking at another's screen.

several instances where a person looks at their partner's phone while the latter is typing a message to a distant other. This way of looking usually comprises multiple short and clandestine glances. The observer alternates their gaze swiftly between the screen and other objects/people, and as a result, the fact of looking is rarely perceived by the smartphone user.

- **Escaping:** The dynamics of face-to-face interaction are continuously changing, and participants sometimes find themselves bored. If some participants are 'escaping' boring conversations by initiating smartphone use (Al-Saggaf et al. 2019), others can attempt to do the same by observing the user's onscreen activity. Participants can, for example, observe another's onscreen activity if they find themselves not being actively engaged in the conversation (5 cases). They can also use their observations as a resource for initiating a new conversational topic (7 cases; see ex. 5). We have also found several instances of initiating a smartphone-based joint activity as a way of escaping ongoing interaction (10 cases). For example, in multi-party settings, the current listener can join the smartphone user in the activity of picture taking instead of answering the current speaker.

Just as factors affecting the way of looking, natures and functions of looking at another's phone are often intertwined, and the type of looking (glance/series of glances/prolonged gaze) cannot be directly associated with a certain function or nature. For example, the observer can have several reasons for looking, or the initial reason for looking can be different from the outcome (e.g., looking to acquire practical information but finding a way to escape the ongoing conversation). We will further present a detailed analysis of several excerpts that demonstrate the different natures of looking at another's smartphone. Example 3 demonstrates that participants may look at another's phone to monitor their ongoing onscreen activity. In this excerpt, an instance of monitoring will also lead to an attempt at 'bringing the smartphone user back into the conversation'. Prior to the excerpt, three participants discuss their common friends, while two of them (Igor and Nikolai) use their smartphones in the meantime. The transcript starts with a lapse that emerges after the participants reach a potential conclusion of their discussion. During this lapse (1.01), the third participant (Daria) first looks at Igor's screen (2.9 s, Figure 6.a), who at this moment has a message window open on his phone. Daria does not comment on Igor's smartphone use nor does she try to re-initiate the conversation with him, and Igor continues using his phone throughout the excerpt. Daria's second instance of monitoring, however, leads to an attempt at re-engaging Nikolai in conversation.

**Example 3 - Is this very interesting? (Russian)**

01		(1.3) # (1.6) + (2.1) # (3.1)
	dar	>>gaze IGO's SP+gaze NIK's SP-->
	nik	>>gaze SP-->
	fig	#fig.6.a #fig6.b
02	DAR	+ [nu vot-] #°mhm°+
		[well- ] °mhm°
03	NIK	[mhm: ]
		[mhm: ]
	dar	+grabs NIK's SP--+
	fig	#fig.6.c
04		(0.7) * (0.2) + (0.2) +
	nik	-->*gaze DAR-->
	dar	-->+gaze NIK+gaze NIK's SP-->
05	DAR	vot# eto ochen' +intere:sno sejchas?
		<b>is this very intere:sting now?</b>
	fig	#fig.6.d
	dar	-->+gaze NIK-->>
06		*(1.0)
	nik	*gaze in front, puts SP on the table-->
07	DAR	my zhe xotim* poobscha::t'sja s toboj.#
		<b>we want to ta::lk to you.</b>
	nik	-->*gaze DAR-->>
08		(0.9)
09	NIK	.mpt
10		(0.3)
11	DAR	vidish' ja ves' vecher smotrju na tebjja.
		<b>you see I look at you the whole evening.</b>



Figure 6. Still images from the excerpt 'Is this very interesting?'. .

After looking at Igor's phone for several seconds, Daria turns her gaze in the direction of Nikolai's phone (Figure 6.b); he is scrolling through a recently opened Instagram account, which was on his recommendations list. After monitoring his onscreen activity (5.2 seconds, 1.01), Daria extends her arm, grabs Nikolai's smartphone, and attempts to take it from his hand (Figure 6.c). Nikolai does not ease his grip on the phone but draws his gaze away from it and looks at Daria (1.04, Figure 6.d). After perceiving Nikolai's gaze, Daria asks him if the content of his phone is interesting for him at this moment (1.05). Daria does not attempt to hide the fact that she has been looking at Nikolai's phone. Instead, she makes it clear that his phone activity was observed, and she uses this observation as a resource for problematizing his disengagement. As Daria finishes her question, Nikolai immediately locks his smartphone and puts it on the table in front of him. He then turns his gaze back to Daria, who continues her turn by giving an account for her previous question and embodied conduct ('we want to talk to you', 1.07). After that, Daria introduces a new conversational topic (1.11), which is then discussed by the participants. In this excerpt, both Igor's and Nikolai's smartphone-based actions are opaque, and therefore not accountable to Daria until she gets visual access to their screens. Daria then uses her observation of another's onscreen activity to change the dynamics of the co-present interaction, specifically to re-engage one of the smartphone users.

Excerpt 4 is an example of an inquiring look whose function is to obtain information from the smartphone user. It illustrates the interconnection between the temporality, nature, and function of the gaze, its modalities of accomplishment, and its relation to the understanding of the ongoing activity as (not) private. In this sequence, three friends are having coffee at the home of one of the participants (in Finland). The current topic of conversation is Northern Lights, and prior to the excerpt, Roman mentions that there will be a high chance of seeing them soon. This assessment is sourced from an app named Aurora that displays Northern Lights forecasts. Before the beginning of this sequence, Roman invites Valentin to open the app and take a look at the predictions for the coming days. Darshan, who does not have this app on his phone, inquires about it both verbally by asking Valentin 'which app you're using' and multimodally by leaning forward toward his screen and looking at the name and logo of the app there. The onscreen activity is not considered private here insofar as it is related to the topic of the conversation and is publicly commented on. Darshan then proceeds to download Aurora on his phone.

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### Example 4 - Aurora app (English as a Lingua Franca)

```

01 VAL #*+okay so I believe th- that this month (.)
02     we will see: some (.) good stuff=*+
    dar >>looks at the app-->
    val *looks at the app-----*
    rom +looks at the app-----+
    fig #fig.7.a
03 ROM =+*I mean if you've gone through all of thi[s:: then it's]+*
04 VAL                                     [(laugh) ]
    rom +shows his screen to val-----+
    val *looks at rom's screen-----*
05 ROM then I'm sorry but it's kind of your fault
06 VAL yeah
07 ROM (laugh)
08 VAL %[yeah that's true I a- I have to agree] %
09 ROM [(laugh) ]
    dar %gets a whatsapp notification and opens it%
    fig #fig.7.b
10 VAL %[(laugh) ]
11 ROM [(laugh) ]
    dar %is on whatsapp-->>
12 VAL [<(laughing) you know>] yeah okay
13 ROM [(laugh) ]
14 VAL #*you have it?(.) *oh no no hm *#
    val *looks at dar's screen*turns his gaze away*
    fig #fig.7.c #fig.7.d
15 (1.3)
16 VAL oKAY so (.) because I was like fuck I'm here since like [...]
```

This excerpt starts with Valentin confirming Roman's assertions ('this month we will see some good stuff', 1.01–02). At this point, all three participants have their smartphones in their hands with the Aurora app open (Figure 7.a). Valentin's optimism is the source of a joke concerning the fact that he has not seen the Northern Lights so far, while the upcoming chances of observing them are very high (1.03). While Valentin jovially aligns with Roman's statement (1.08), Darshan, who is on the Aurora app, receives a silent WhatsApp notification and taps on it (Figure 7.b). Through this gesture, Darshan opens a WhatsApp conversation, shifting his attention from the Aurora app and Northern Lights discussion to a parallel onscreen interaction. However, at that precise moment, Valentin initiates an inquiring look whose function is to obtain information. His gaze, accompanied by a direct question ('you have it?', 1.14), is aimed at checking whether Darshan has been able to find and download the Aurora app, but it is met with another onscreen activity and no reply from Darshan (Figure 7.c). The latter activity, chatting on WhatsApp, is thus considered a private activity insofar as Valentin turns his head away, mutters 'oh no no hm' (1.14), and resumes the interaction by addressing Roman (1.16, Figure 7.d).



Figure 7. Still images from the excerpt 'Aurora app'.



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This excerpt underscores the effects of temporality in negotiating privacy. The onscreen activities are considered public as they relate to the topic of conversation (Northern Lights), are subject to previous multimodal inquiries (Darshan looking at Valentin's screen, Roman showing his screen to Valentin, etc.), and are visibly accessible (the open way in which Darshan holds his phone and Valentin's spatial proximity to him). All these elements allow Valentin to gaze at Darshan's smartphone. However, online activities are often dynamic and multiple, and switching from one to another is quite common. Therefore, privacy assessments are dynamic as well and negotiated moment to moment in a social interaction. In this case, Valentin's inquiring look is withdrawn as he shifts his assessment of his right to look from acceptable to untimely, evaluating Darshan's onscreen activity henceforth as private.

Excerpt 5 is an example of escaping the ongoing conversation by finding a new conversational topic on another participant's smartphone screen. One minute and 20 seconds before the beginning of the excerpt, Dana starts talking about her new iPhone. At first, other participants (Mikhail and Tina) engage in this conversation, but then Mikhail picks up his smartphone and shifts his primary focus of attention to it. He first looks at the phone's home screen for several moments, then opens the Castbox podcast app and starts scrolling through its front page. The time Mikhail takes to open the app and the way he scrolls back and forth through the front page indicate that he is not looking for anything specific—that is, this instance of self-initiated smartphone use is a way of escaping the ongoing conversation. While Mikhail is visibly disengaged from the interaction (focusing his gaze on the phone's screen and not participating verbally), Tina gazes at his phone for several moments and then returns her gaze to the current speaker, Dana. During the first uninvited look, Tina only turns her head in the direction of Mikhail's phone (Figure 8.a). She does not comment on the observed activity, but her prolonged gaze already reveals her lack of engagement in the ongoing conversation. Dana, however, does not visibly orient to this newly emerged activity of smartphone use and continues telling the story.



Figure 8. Still images from the excerpt 'Podcasts'.

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### Example 5 - Podcasts (Russian)

01 DAN .hh a potom takoj nu ja mogu predlozhit' ↑desjatku,  
 .hh and then he's like well I can also offer iPhone X,  
 02 °esli ty xochesh',  
 °if you want to,  
 03 ja takaja° da:..  
 I'm like° ye::s.  
 04 (0.8)  
 05 TIN °eto kru:to°.  
 °it's coo:l°.  
 06 %(0.5)  
 %leans closer to MIK, gaze SP-->>  
 07 TIN ja ↑by ne otkazalas'.#  
 I wouldn't refuse.  
 fig #fig.8.b  
 08 (0.7)  
 09 TIN o [ty podkas]ty slushaesh'?=  
 oh [are you a podcas]t listener?=  
 10 MIK [obozhaj- ]  
 [I adore- ]  
 11 MIK =da: obozhajju ted tolki.  
 =ye::s I adore TED talks.  
 12 ted tolki vasche +prosto [pro fe[mi]ni:zm ],#  
 TED talks just [about fe[mi]nism ]  
 13 DAN [m:hm ]  
 [m:hm ]  
 14 TIN [ty kakie s- ]  
 [which did you l-]  
 dan +leans closer to MIK, gaze SP-->>  
 fig #fig.8.c  
 15 MIK pro:: [.hhh ]  
 abo::ut [.hhh ]  
 16 TIN [ty kakie ] slushal v poslednij raz?  
 [which did you] listen the last time?

The excerpt starts as Dana's multi-unit turn reaches its potential conclusion (1.01–03). Just after providing an assessment of the story in a lower and unenthusiastic voice ('it's cool', 1.05), Tina leans closer to Mikhail and starts looking at his phone again (Figure 8.b). While doing this, she produces another response to Dana's story ('I wouldn't refuse', 1.07), and then initiates a new topic based on the onscreen activity observed on Mikhail's phone ('are you a podcast listener?', 1.09). The posing of the question overlaps with Mikhail's utterance ('I adore', cut-off, 1.10), which emerges as a response to Tina's action of leaning in. As Mikhail answers Tina's question (1.11–12), Dana also leans in closer to his phone to gain visual access to the screen and thus the referent (Figure 8.c). All participants then start discussing podcasts they have recently listened to. This excerpt shows how smartphones can be oriented to as an additional semiotic resource (Raclaw et al. 2016), for instance, for introducing a new topic in the conversation. Similar to prior examples, this excerpt reveals that participants often require visual access to another person's onscreen activity in order to manage and/or enhance co-present interaction.

## 5 Discussion

### 5.1 Summary of the results

Smartphones are widely used in face-to-face interactions in various settings, and co-present participants often look at the user's screen without being directly invited to do so. The possibility of this action, which is provided by smartphone affordances, raises issues about the digital privacy of smartphone users in situations of co-presence with others. While these glances and gazes at others' devices are often treated as privacy risks by researchers and designers, our analysis shows that they are rarely treated as such in face-to-face interactions between friends and acquaintances. On the contrary, participants often 'spy' and allow others to 'spy' on their onscreen activities as a way of managing smartphone use and its effects on the co-present interaction. Our analysis shows that glances and gazes at another's screen have multiple interactional functions, which are performed by the observer and recognized by the smartphone user. In this paper, we have described three natures of uninvited looks—monitoring, enquiring, and escaping—and three functions corresponding to each of them.

### 5.2 Research implications

This study provides novel insights for HCI and CSCW research on the role of smartphones in interactions and on privacy. For the latter, we develop the notion of privacy as a situated practice, while for the former, we reveal the significance of looking at another's phone as an interactional resource. The HCI literature so far has mostly concentrated on protecting users' privacy, although the embeddedness of smartphone use in collaborative and sharing situations has also been acknowledged. Our study corroborates some of the findings of previous research: we highlight the dynamic and negotiated (Palen and Dourish 2003; Holone and Herstad 2010), context-sensitive (Ahmed et al. 2019; Alaqra and Wästlund 2019; Al-Ameen et al. 2021) and culturally bound (Alam et al. 2021; Al-Ameen et al. 2021) nature of privacy, as well as participants' relationship and type of data as factors that shape privacy needs (Hang et al. 2012; Matthews et al. 2016).

We contribute to prior research by showcasing privacy as a situated practice. Our study indicates that privacy should be viewed as an ongoing accomplishment that is constantly produced and reproduced by the participants in the interaction (see also Dourish et al. 2004; Dourish and Anderson 2006). Such an approach has been applied previously in the context of the Internet of Things in household settings (Tolmie et al. 2016; Crabtree et al. 2017; Goulden et al. 2018), where privacy has been viewed as a 'heterogeneous array of mundane activities, practices and concerns' (Crabtree et al. 2017, p. 484). This is a relatively new approach to privacy that uncovers some of the wrong presuppositions in the existing theories of privacy. For example, the field of 'interdependent privacy' (Humbert et al. 2020) has been criticized for not considering differently distributed

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privacy privileges (e.g., between children and adults), and the concept of privacy as 'contextual integrity' (Nissenbaum 2004) has been problematized due to the overlooked gap between the norms and values of the information flow and their enactment by individuals in their everyday interactions (Kilic et al. 2021).

Our study showcases how a micro-analysis of naturally occurring face-to-face interaction reveals novel aspects of digital privacy management. Such an analysis offers insights on 'privacy-in-interaction', the word being hyphenated (Flynn 1991) to underline a specific object of our research interest—the ongoing achievement of privacy. Our analysis allows for questioning some taken-for-granted assumptions in the literature. As our data show, privacy is not a static result of the designer's or user's work but an occasioned, situated, and negotiated practice. It is not an individual's practice, as this negotiation involves multiple actors (Kilic et al. 2021)—in our data, the smartphone owner and other co-present participants. We show that it entails complex bodily choreographies; the interplay of gaze, posture, and proximity; positioning the device in different ways vis-a-vis the participants; verbal interaction; and the material surroundings, among other factors. Delicate ways of negotiating privacy are identified, as are factors affecting the initiation of uninvited looks and such negotiation in the context of smartphone use: the spatial arrangement of all co-present participants, the sequential environment and temporality of looking, the ongoing participation framework and participants' roles, and the type of onscreen activity. So far, HCI research has lacked micro-level insights into how privacy is multimodally achieved in interaction, while we maintain that such insights should be sought further in HCI research on smartphones and privacy in interaction.

We also contribute to the HCI body of knowledge by showing that looking at another's phone serves as a valuable resource for participants in the co-present interaction. While some studies discuss smartphones in the context of their negative effects on the quality of interaction (Rotondi et al. 2017; Dwyer et al. 2018; Aagaard 2020), our data illuminate that participants find their own solutions to the problems caused by the ubiquitous presence of smartphones. We have demonstrated that looking at another's screen enables participants to not only understand the level of the smartphone user's engagement but also apply their observations to affect the dynamics of the co-present interaction. Therefore, in HCI research, the action of uninvited looking at another's smartphone display must not be viewed exclusively as a violation of privacy but needs to be qualitatively investigated, and its value from the participants' perspective should be appreciated. Future research on uninvited looks in the context of technology use thus ought to consider both what occasions the initiation of uninvited looking and how participants then collaboratively achieve a common understanding of one's device's screen as private or public. The provided classification of natures and interactional functions of glances and gazes at another's screen can be used to inform future HCI and CSCW studies on other screen-based technologies.

### 5.3 Design implications

Our findings uncover relevant implications for smartphone privacy design: we warn of the risks of privacy design in the sense of hindering interaction, we advocate for context-sensitivity, transparency, adaptation, and dynamism in privacy design and more generally we aim to broaden the understanding of ‘privacy design’ that has implications on privacy design education and practice. The existing HCI studies have addressed the protection of users’ privacy and security at the level of the device, operating system, and specific applications with special tools for smartphones developed to prevent ostensibly privacy-invasive activities, such as Huawei’s PrivateSpace, Samsung’s Private Mode, Xiaomi’s Second Space, the ‘gaze-dependent display encryption’ patented by Apple, or privacy screen protectors for smartphones. Our study shows that glances and other ways of looking at another’s screen can be very significant for participants and their interaction; hence, complete privacy (e.g., protective screens) is potentially harmful in the context of mundane interactions between friends. Designers should keep this in mind: they need to carefully reflect on and balance between protecting users’ privacy and enabling smartphone use to act as a valuable interactional resource.

Thus, our findings, in line with prior studies, indicate that all-or-nothing sharing approaches and device access control are no longer suitable (see Karlson et al. 2009; Hang et al. 2012; Hayashi et al. 2012). Instead, context-sensitivity, transparency, adaptation, and dynamism should be provided to users. Some of the existing solutions already allow users to specify what they want to share (Liu et al. 2010), create accounts with different degrees of access to data (Matthews et al. 2016; Ahmed et al. 2019), and control the observability of notifications (Hang et al. 2012). Our data indicate that these solutions may be useful and applied in the actual context of use; however, privacy as a situated practice approach indicates that their suitability and efficiency will depend on the participants, the relationship between them, the activity, the space, and the data involved. Support for users should be provided in a way that appreciates the situated and dynamic nature of interaction and their need for privacy. The use of technology, which impedes users’ ability to manage and negotiate their and others’ privacy, will inevitably be problematic (see also Kilic et al. 2021). Existing and emerging privacy-related solutions should, therefore, be assessed not only with respect to the level of user privacy but also in relation to their potential negative effects on the quality of co-present interactions; as indicated by our analysis, looking at another’s phone may prove to be a valuable interactional resource.

As for broadening the notion of privacy design, we draw attention to the complex and continuously changing configuration involved in the protection (or not) of privacy: participants’ complex bodily choreographies; their gaze, posture, and

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proximity; their positioning of the device; and the material surroundings, including the furniture, may all be involved. This is not something a designer can control or determine during the design process, but it is something that should be acknowledged as inevitably taking place in real contexts of technology use. The research community has long emphasized 'privacy by design', the General Data Protection Regulation (GDPR) making this approach ever more significant. Our findings indicate that users are heavily engaged in privacy design as well, and in numerous ways. People are protecting (or not) their (or others') privacy in this complex constellation, including designers' privacy protection solutions at the device, operating system, and application levels. Such measures may become relevant, relied on, or ignored in this entanglement. Privacy is not to be considered a fixed property or state to be achieved but as a situated practice involving interaction, negotiation, and design, which is affected by various factors external to the device. In privacy design education and practice it would be important to study, analyze, reflect on and design for such a dynamic configuration as well as to acknowledge and support users in privacy design they are engaged in during use, i.e., to design for 'privacy design in use' and for 'privacy design after design' (see e.g., Ehn 2008).

### 5.4 Limitations and paths for future work

Further work must be carried out to establish how negotiating one's privacy in situations of uninvited looks unfolds in different settings (e.g., the classroom, work environment, public transport). Despite the diverse backgrounds of participants in our data, we have not considered possible cultural differences in the analysis, as it was not our focus. We, therefore, emphasize the need for further research in this area. Future studies can also examine how situated negotiation of privacy differs among various age groups and types of relationships. While our data depict interactions between friends and acquaintances, observations can be strikingly different in interactions between family members, colleagues, and bystanders. Our study has also raised issues about other phenomena in need of further investigation: instances of visible 'not looking' at another's phone, interrupted accidental looks, and verbal negotiations of one's privacy in situations when the smartphone owner and the observer have conflicting interpretations. Various ways of looking at another's smartphone screen (glancing, gazing, commenting, etc.) can also be studied with respect to the accountability and morality of having access to another's device. Breaches of the moral order have been studied previously in the context of data sharing and monitoring (Goulden et al. 2018; Tolmie and Crabtree 2018) but not in the context of uninvited looks at a co-participant's smartphone screen.

## 6 Conclusion

Our initial goal was to reveal how participants negotiate a smartphone user's privacy in face-to-face interactions, particularly in the context of uninvited looks. By analyzing video-recorded naturally occurring interactions between friends and acquaintances, we were able to gain important insights into digital privacy management. We showed that smartphone users and their co-present others continuously demonstrate and orient to the level of privacy demonstrated by the other participant. The ongoing negotiation of privacy can be observed in the verbal and embodied conduct of all co-present participants, supporting the idea that an individual is never fully in control of personal data management (Kilic et al. 2021). Contrary to our expectations, our work led us to conclude that participants in this setting rarely orient to uninvited looks as privacy-invasive actions. We, therefore, focused our analysis on the interactional functions of this action that are performed and recognized by the participants themselves. The variety of identified functions makes it obvious that the complete privacy of a smartphone user can be detrimental to the quality of face-to-face interactions. We should be aware that observations of users' onscreen activities are often used as resources in interaction.

Understanding what smartphone users and their co-present participants categorize as public and private spaces is crucial for recognizing design needs. When designing and evaluating privacy solutions for mobile technologies, which are often used in co-presence with others, we should consider potential co-present participants equally with policymakers, technology developers, and users. Designers should acknowledge that with their privacy design, they are shaping, generating, and interfering with a complex constellation of factors in interaction. They should also acknowledge that users, with co-present participants, are engaged in multimodal privacy design as well—privacy design thus being an accomplishment among a multitude of participants dispersed in time and space. The results of this study support the idea that we should give users more flexibility regarding what should be seen, when, and by whom (Goulden et al. 2018). Overall, with this study, we align with the goal of Bylund et al. (2008) of challenging the existing privacy discourses in HCI. In line with them, we wish to stimulate discussions on privacy and widen its design space in HCI. As the analysis of privacy as a situated practice is a relatively new area of research, we particularly call for further investigation into looks and their absence in the context of collocated mobile technology use.



## Appendix A.1 Transcription conventions

Symbol	Meaning
(0.0)	The length of gaps and pauses measured in seconds and tenths of a second
=	Latched utterances
[]	Overlapping talk: brackets indicate the beginning and the end of simultaneous talk
-	Cut-off in the production of a word
:	Prolongation of a prior sound
.hh	Hearable in-breath
↓↑	Shifts in pitch: lower, higher
., ?	Intonation: falling, continuing, rising
° °	Lower volume of talk
<(laughing)>	Laughing particles in the production of the utterances delimited by chevrons
`	Non-standard elision (in French)
+ % *	Embodied actions: signs indicate the beginning and the end of the action (one sign per participant)
#	Position of the figure

**Author contributions** Iuliia Avgustis conceived the original idea. Iuliia Avgustis and Samira Ibelkaïd collected data, performed and wrote the analysis, and designed all figures presented in the manuscript. The first draft of the manuscript was written by Iuliia Avgustis. Netta Iivari and Samira Ibelkaïd commented on previous versions of the manuscript and contributed to its revision. All authors discussed the results and approved the final version of the manuscript.

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**Data availability** Video data is not publicly available for privacy reasons.

### Declarations

**Ethics approval** This research does not involve gathering information that requires Ethics Committee statement.

**Consent to participate** All participants gave their written consent to participate in the study.

**Consent for publication** All participants agreed to the publication of data (including unfiltered images) in scientific research articles. All names and other personal information are anonymized in transcripts.

**Competing interests** The authors declare no competing interests.

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