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Video-ethnography of social media apps' connection cues in public settings

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Abstract

This paper aims to analyze the uses of *mobile social network services* (mSNS) during daily commutes on the basis of a video ethnography conducted with 35 users of the Facebook app. This method is based on the combination of context-oriented recordings made with user-worn camera glasses and mobile screen video capture. These data reveal the way smartphone usage patterns tend to be organized according to notification functions (mSNS, SMS), a specific set of technical cues that mediatize social demand and promote social connectedness. Users manage these cues through a recurrent trend composed of a three-step sequence: they often start by using applications displaying notifications; they favor those that display social demands; and, among them, they prioritize these relational solicitations in accordance with social status or types of relationships.

By examining the distribution of users' attention between urban environments and smartphone applications, this video-ethnography also highlights how these "checking habits" are organized according to a set of spatial cues and some daily commute characteristics, such as visual coordination with passengers in public transport. These technical cues mediatize a growing number of social demands that encourage users to keep their eyes focused on their smartphone's screen in public spaces. We argue that these technical cues create a temporary bubble effect and social isolation at a proximal scale, which mostly operate at the beginning of smartphone usage patterns.

Keywords

connection cue, mobile phone, mobility, social media, usage pattern

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Introduction

In France (Croutte, Lautié, & Hoibian, 2016) or the United States (Smith & Page, 2015), users under 50 years old tend to prefer using social network services on their smartphone instead of their computer. These mobile devices have become the keystone of contemporary network societies (Castells, 2010; Rainie & Wellman, 2012). This social phenomenon invites us to analyze how mobile social media and social messaging applications lead users to manage their mediated sociability in a specific way.

It can be difficult to identify, on mobile devices, what can be considered as a social media application and what cannot, as several smartphone applications integrate social media functions without being real social network services (Humphreys, 2013). Therefore, research on the uses of mobile social network services distinguishes two types of *mobile social network services* (mSNS; Boyd & Ellison, 2008). The first type includes the applications developed by major social media companies (Facebook, LinkedIn, etc.), microblogging sites (Twitter, Tumblr, etc.), and online dating services (e-darling, OkCupid, etc.). These applications are mobile versions of services originally designed to be used with a Web browser. In addition to these applications, "native mSNS" were specifically designed to manage digital sociability using smartphones' specific technological resources. For instance, these applications make use of the camera and GPS to share location-based snapshots (Instagram, Snapchat, etc.) or meet close-by potential partners (Tinder, Grindr, etc.). These mobile applications are not really usable from a computer, unlike the first ones that were designed as an extension of previously static position usage.

Even though these two different types of mSNS led to a significant number of studies in computer science and human–computer interaction, social sciences did not give the same importance to both of them (Wang & Ma, 2015). As a matter of fact, social sciences have mainly studied native mSNS, showing, for instance, how geolocalization technology promotes social encounters (Griswold et al., 2004; Humphreys, 2007). This is due to the fact that those mobile technology functions are truly integrated in these applications and generate new types of social networking practices (Humphreys, 2013). Over the past years, research analyzing the specificity of SNS uses on smartphones has mostly highlighted the way these applications can increase psychological addiction to mobile phones (Bian & Leung, 2015; Salehan & Negahban, 2013). Nowadays, exploring these uses of mobile social network platforms (MSNP) seems to be a real challenge. These platforms tend to complicate mobile phone previous practices and require, to be fully understood, developing new methods adding devices' mobility-related concerns (Schrock, 2015) to ego-centered networks approaches.

Kuru, Bayer, Pasek, and Campbell (2017) tried to measure the differences in Facebook uses between users of the app and those only using the desktop version of the service. It appeared that usage motivations (information, entertainment, and social connection) did not differ from one another. However, they showed how mobile uses of Facebook are positively correlated with a more automatic and immersive type of usage. As a matter of fact, Bayer, Campbell, and Ling (2015) explained that mobile media uses are based on more automatic cognitive triggers than other media as a result of the wider range of contexts involved.

This contribution positions itself in that stream of findings by describing the appropriation and the usage patterns of mSNS in different contexts during daily commutes. It aims to highlight how these smartphone usage patterns are linked to day-to-day urban experiences and the way mobile media uses, with their automatisms, affect the organization of mediatized sociability. To achieve this goal, we developed a research protocol to show how the design of mSNS notifications has to be taken into account in order to understand how these technologies have significant effects on mediatized communications and interpersonal relationships. By focusing on these specific functions, our research questioned the possible increase—in number and frequency—of relational demands due to mobile devices' capabilities (i.e., incoming messages displayed on smartphone screens by notification functions) and the way they promote digital sociability and social connectedness.

Theoretical framework

SNS apps extend mobile phone communicational resources and amplify what Christian Licoppe calls the "connected mode" in the management of distant relationships (Licoppe, 2004). The concept of connected presence refers to how mobile technology leads users to interact more often with close others than they did when social encounters were based on face-to-face interactions. In this mode of communication, composed of short and frequent contacts between two persons, what is being said is less important than the fact of keeping in touch. Ling and Yttri (2002) identified the instrumental dimension of these modes of permanent connection by showing how this "microcoordination" tends to reinforce social cohesion with a small circle of peers. This trend seems to have effects on social networks' structure, as users tend to strengthen their links with a circle of close friends instead of extending their personal network to new relationships (Habuchi, 2005; Ling, 2008).

Smartphones and social messaging apps, such as WhatsApp or Facebook Messenger, create new configurations of permanent connection by allowing multisided interactions that facilitate task-based chat groups. They lead users to develop collective forms of "microcoordination 2.0" with a large circle of relations (Ling & Lai, 2016). The authors suggest that, with instant messaging apps, microcoordination that developed through SMS or mobile phone calls is no longer a specific trend of close relations as it used to be. Microcoordination 2.0 broadens to develop within a variety of groups. Therefore, these apps create new forms of microcoordination by increasing social connectedness, especially because users check incoming messages frequently to avoid being frustrated by missing a piece of information in these multisided interactions.

These "checking habits" and the way they can be amplified by social media apps is an important issue to highlight the configuration of smartphone usage patterns because they "can act as a 'gateway' to other applications, leading to other actions being taken with the device" (Oulasvirta, Rattenbury, Ma, & Raita, 2012, p. 9). This research proposes to better understand the configuration of these "checking habits." Böhmer, Hecht, Schöning, Krüger, and Bauer (2011) showed that these habits are central because the average duration of smartphone usage did not exceed 5 seconds in 50% of the sessions in their study. In that research, what participants checked most often were notifications of incoming

messages displayed by communicational functions (SMS, calls, social messaging apps, etc.). These uses have been shown to be the most important in smartphone usage patterns (Böhmer et al., 2011). We develop a videorecording protocol (Licoppe & Figeac, 2017) in order to analyze in detail the spatio-temporal organization of smartphone usage patterns. We focused on how users manage their smartphones during daily commutes in public transport to go to work, home, or move around in urban environments. This method allowed us to record the small amount of extended sessions (6.6%; cf. Böhmer et al., 2011, p. 5) during which at least three applications were opened. Therefore, the objective here is not to quantify the frequency of "checking habits." We will analyze usage patterns by showing how this permanent attention to the notifications of incoming messages operates at the beginning of most sessions, even during the longest ones, and how this habit acts as a gateway by projecting specific "next actions" that are, themselves, rather polarized around the management of social demands.

These habits are obviously completely linked to technologies themselves, and especially the way users mobilize their various functions to manage their availability. As shown by Rainie and Zickuhr (2015), users always turn on their phones to maintain a constant connectivity during daily commutes (walking down the street and on public transportation). As it is important to users to have access to notifications in these contexts, they adjust the ringer mode of their smartphone so they are able to "noticing important notifications" while "avoiding disrupting the environment" (Chang & Tang, 2015, p. 13). In other words, they keep their availability constant by checking the visual notifications displayed on the screen. We know how the design and "metrics," pushed for example by Facebook, preconfigure sociality and encourage users to "desire for more" likes, comments, or friends (Grosser, 2014). Therefore, the appropriation of mSNS and social messaging apps needs to be analyzed as the product of both users' specific ways of managing their relationships and mSNS design that shapes mediatized sociabilities.

The notion of "connection cues" (Bayer et al., 2015) gives important insights into the effects of mobile phone design and, more generally, the role of social connectedness in daily life. To illuminate nonconscious triggers to check mobile devices, this notion identifies and separates three types of media triggers:

> Technical cues refer to the explicit notifications and signals that come directly from a mobile device (e.g., rings, vibrations, and reminders). Spatial cues refer to triggers that occur in the surrounding environment of the individual (e.g., places, situations, and people). Mental cues refer to triggers that arise from the individual's internal cognition (e.g., emotions, motivations, and thoughts). (Bayer et al., 2015, p. 134)

This approach helps to understand how appropriation of mSNS design—such as notification push—and the way smartphones' interfaces display social demands are managed by users according to societal expectations (the need to respond, the incentive to respond quickly, etc.), users' automatic behaviors, and technology itself. These behaviors are deeply connected with "spatial cues," that is, concrete situations in which people are engaged and the way these situations frame their mobile phone uses.

This notion of *connection cues* is based on a representational view of contexts that takes "content" and "organization" of smartphone uses as a whole to describe the configuration of

contexts and the way they lead people to perform their activities (Dourish, 2004). Therefore, we contribute to analyze a specific set of connection cues by focusing on mSNS uses during daily commutes. Based on a video-ethnography of smartphone uses in situations of mobility, this contribution will describe how users tend to manage a specific set of technical cues: smartphones' notification functions and their display of social demands. This will lead to highlight how these technical cues can frame and amplify social connectedness.

Method and dataset

While many sociological investigations have studied social network sites' uses, they have rarely investigated how mobile social media and social messaging applications lead users to manage their mediated sociability in specific ways. In contrast, mobility is what we focus on. As we wanted to study the whole spectrum of social media uses, all mSNS have been taken into account (Facebook, Twitter, Snapchat, etc.) as far as they were used by the study participants. We also aimed to understand how mSNS complement uses of other mobile phone functions (phone calls, SMS, etc.) by positioning those uses within a more general analysis of smartphone usage pattern. This was done by conducting interviews during which participants detailed their uses, the way they manage online sociability, and how smartphones renew their communication practices.

However, even though this declarative approach is valuable to probe users' reflexivity, it does not give access to the usage patterns themselves, nor does it help in understanding the way mSNS design concretely shapes digital sociability. These patterns may be partly identified by means of sensors installed on participants' phones (Bian & Leung, 2015; Böhmer et al., 2011; Falaki et al., 2010; Xu et al., 2011). This type of data describes the temporal organization of distinct mobile phone functions (phone calls, SMS, Internet, etc.). For instance, it has been shown that people often start by using Internet before they start sending SMS, etcetera (Do & Gatica-Perez, 2010). Yet, besides these investigations' general focus on usage patterns, we consider it relevant to complement their findings by collecting fine-grained data in order to highlight the way mSNS uses are concretely performed according to urban settings.

We achieved this goal by collecting data via first-person video recordings instead of using sensors. This video-ethnography "on the move" was produced by asking users to wear camera glasses (Mark, Christensen, & Shafae, 2001; Oulasvirta, Tamminen, Roto, & Kuorelahti, 2005) and record their uses for a week, especially during their daily commutes. While such portable set-up may provide rich and detailed data about the "natural" uses of smartphones, as in the case of mobile map-enhanced walks in urban public places (Laurier, Brown, & McGregor, 2015) or in museums (Brown, McGregor, & Laurier, 2013), it also gives access to all the information displayed on the screens. To be able to fully analyze smartphone usage patterns, we had to synchronize contextual recordings made with camera glasses with video recordings of screen activities collected with a specific screen-recording application (Licoppe & Figeac, 2017). Thus, video-ethnographic data presented in what follows is based on the combination of context-oriented recordings and smartphone screen captures (Figure 1).

Hence, what these double recordings reveal is both on-screen content as well as gaze switches, that is, when users look towards or away from their smartphones. Such gaze

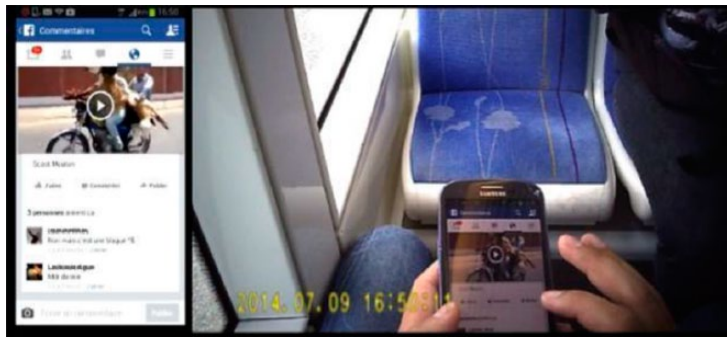

Figure 1. Synchronization of camera glasses video recordings with app-produced screen recordings.

switches are interpretable as switches between attention to the smartphone (which we may have more precisely documented with the screenshot) and attention to other meaningful aspects of the surrounding environment. Such data, therefore, provide a rich source of information on the way smartphone users manage multiple engagements in public settings. By using this empirical data on the occurrence and direction of gaze switches, the video recordings allow us to account for the temporal organization of smartphone usage patterns in situations of mobility (Licoppe & Figeac, 2017) and how these patterns are organized according to spatial cues (Bayer et al., 2015) related to urban settings. Our research protocol, therefore, is an effective practical way to collect contextual data on the uses of smartphones and mSNS apps in order to analyze the organization of connection cues and, more precisely, the articulation between technical cues (notifications, rings, reminders, etc.) and spatial cues.

Through this video-ethnography we collected 110 video recordings, representing 42 hours of smartphone usage in public settings. We asked participants to wear camera glasses and record their mobile phone activities during their daily commute for a period ranging from a week up to 10 days. Each participant was asked to record 10 sessions. The quality of an important part of the sample was not good enough to exploit and analyze, thus resulting in a total of 110 video recordings. The average duration per recording is 20 to 30 minutes, which represents the average time spent on public transport in Paris or Toulouse. To respect the users' privacy, they could decide when to record their uses and they could also stop or delete them as they wished. These options, however, constitute a strong limitation since they prevented us from having complete control over the constitution of the sample.

After retrieving the recordings, we conducted interviews during which users were asked to comment on significant sequences, sharing their interpretations about their uses and especially mSNS. The method, therefore, is a double mixture: a mixture of speech and pictures, with pictures being themselves a combination of a contextual and general view on the one hand, and an in-depth and precise view, on the other hand. This video protocol was used with 20 users, 10 women and 10 men between 18 and 35 years old,

living in Paris or Toulouse, who frequently use mSNS—Facebook in particular—in mobility settings. The 15 other participants of our total sample ($N = 35$) only agreed to answer to the interview part of the protocol; thus, they could not be included in our video sample because they refused to wear camera glasses in public spaces. However, these interviews allowed us to better understand the uses and "checking habits" related to mSNS.

From these interviews and the overarching analysis of the video recordings, this first section of our findings will highlight the organization of smartphone usage patterns and how mSNS are used during daily commutes. We will report several social media apps' triggers before focusing on a specific technical cue: notification functions and the way users tend to manage the social demands they relay. This moment-by-moment video recording analysis will allow us to show how usage patterns are often organized—especially during session openings—according to social demands displayed by mSNS and the way this trend can amplify social connectedness.

The second section of the findings shows how these patterns are also organized according to users' social interaction management within public transportation settings. Participants coordinated their gaze switches and distributed their attention between the screen of their mobile phone and the surrounding environment. This video recording analysis reveals how temporal organization of smartphone uses in urban environments is articulated with the "temporal parameters of interpersonal observation" (Sudnow, 1972). The section "Spatial Cues: How Usage Patterns Are Formed According to Public Settings?" will extend the section "How Social Demands Shape Smartphone Usage Patterns" by focusing on spatial cues related to urban settings in order to highlight how technical cues—such as notifications or loading times—change the way users manage visual forms of social coordination in public settings (Sacks, 1992; Sudnow, 1972).

Findings

How social demands shape smartphone usage patterns

This video-ethnography aimed at collecting an audiovisual sample to analyze social media app uses during daily commutes. As outlined in the previous section, fine-grained data from this study will complement previous work based on large-scale smartphone usage analysis using sensors (Böhmer et al., 2011). It seems relevant to start by comparing that quantitative data with the qualitative data produced here based on a smaller sample.

mSNS notification functions in smartphone usage patterns. In order to build the aforementioned comparison, audiovisual sequences were represented in histogram charts. Each bar stands for a session; each distinct color symbolizes a type of application or activity. Total session duration is indicated at the bottom of the bar. For instance, Figure 2 displays Emilie's eight recorded sequences. This 30-year-old woman lives in the suburbs of Toulouse and works in a notarial office located downtown. She takes a 40-minute bus ride to get to her workplace and uses various smartphone applications as pastime during her commuting. Since she uses outdoor public transportation, mobile networks are

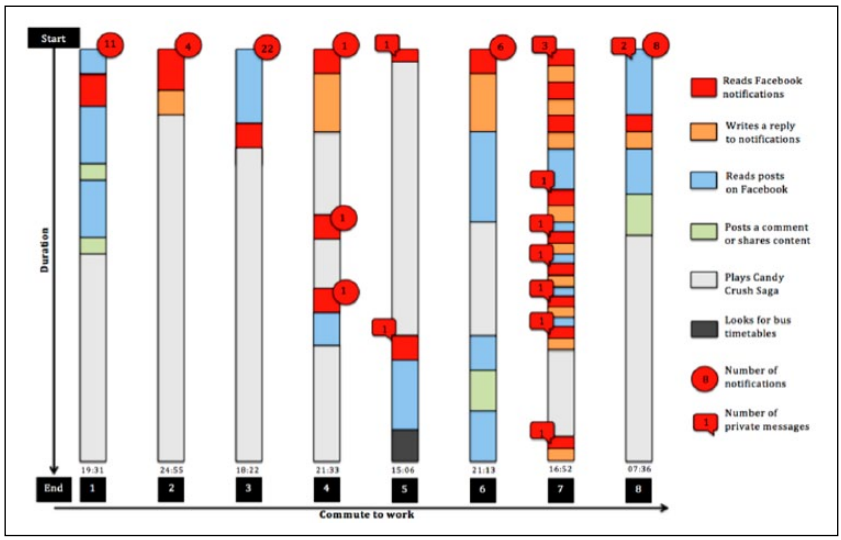

Figure 2. Chart of Emilie's smartphone usage sessions.

perfectly available unlike in underground transportation where users must configure their smartphone usage patterns to bypass connectivity issues (Figeac, 2012). This example is interesting because Emilie can freely organize her phone uses.

First, it is interesting to point out that the average session duration in this context is 18.14 minutes. If we compare this result with that of Böhmer et al. (2011), in which the average duration did not exceed 5 seconds in 50% of the sessions, the sessions in our sample were clearly longer. Compared to the overall duration of smartphone use during a day analyzed by Böhmer et al. (59.23 min; cf. Böhmer et al., 2011, p. 4), our sample focus on the small amount of extended sessions (6.6%) during which at least three applications were opened. This was accomplished by requiring participants to start recording before engaging in this specific type of session. Therefore, this research will specifically document these longest chains of app usage.

However, it is relevant to hypothesize that these longer chains only prolong the usual opening patterns observed more broadly during shorter chains. It actually appears that most participants reproduce the same usage pattern during the first phase of their sessions, whether they are brief or long. Our results extend studies showing how users generally start by one of the smartphone's communicational functionalities (49.60%; cf. Böhmer et al., 2011, p. 6). This trend is exemplified in Figure 2, which shows that Emilie starts all her sessions by opening the Facebook app (Sequences 1, 3, and 8) and by reading the notifications it displays (Sequences 2, 4, 5, 6, 7).

These notifications are usually checked at the beginning of sessions, as users start by checking them in 53.4% of the sequences. They are mainly notifications displayed by the Facebook app (in 87.1% of the sessions) and Snapchat (10.2%). Notifications of other SNS (e.g., Instagram, LinkedIn) or microblogging (e.g., Twitter and Tumblr) apps are secondary in this sample (2.7%).

The way users deal with notifications and the role they play in the organization of relational practices clearly appeared during interviews, as seen in the following dialogue with Sarah, a 29-year-old executive assistant:

> Researcher: When you use the Facebook app, what section do you visit?
> Sarah: Thus . . . notifications and, afterwards, posts. After that, I quickly read news published by my friends or the group pages I subscribed to. Sometimes, if I'm interested, I can comment on my friends' posts but it's often brief, less than a minute.

It is interesting to note that she starts using Facebook by checking notifications and immediately explains how this is usually very brief. Mark, a 24-year-old student, does the same and checks Facebook notifications constantly, opening short sessions in various contexts to follow new posts published by his friends: "When I go on Facebook [using his smartphone], it's very short. I check, I leave. I check, I write something, I leave. So in an hour, I can go 4–5 times but it's never longer than 3 minutes."

Users appropriate notification functions to continuously monitor relational events published on social network sites. These "checking habits" reveal an intensification of "connected presence" (Licoppe, 2004) first configurations, characteristic of basic call features of older mobile phones (phone calls, SMS).

The three-step opening sequence of smartphone usage patterns. To understand this phenomenon, let's take the example of Caroline. This 21-year-old student takes the tram several times a week to go to the university. During the interview, she described a video recording and explained how she started using her smartphone by opening the Facebook app, among the variety of available applications, because three notifications were

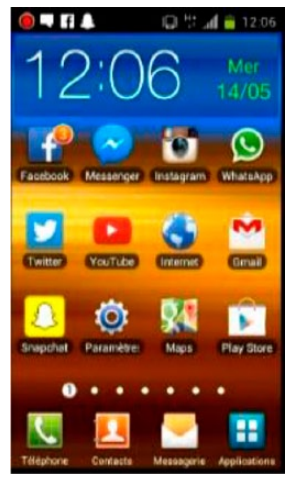

Figure 3. Checking notifications.

Figure 4. Dealing with social stress.

displayed on the Facebook logo as well as an incoming message displayed on the Android top bar, on the upper part of the screen (see Figure 3). She pointed out: "I went on Facebook because there were these two things there: there were notifications on the 'F' of Facebook and, here, I got a message. I wanted to see what it was."

The app starts displaying comments of a previous post (see Figure 4). Various notifications are displayed at the top of the screen: there are three new posts in the news feed, three incoming messages, and three recent notifications. Among these types of notifications, Caroline starts by checking the messages and opens one of them (see Figure 5).

Figure 6 shows a message containing a request sent to Caroline by a friend. They are working on a presentation together and Caroline is on her way to the library where they are going to work together. Her friend asks: "Can you find a way to shorten your intro a bit? I think it is too long." Caroline answers: "Are you sure about the 4 to 5 pages length? It isn't much but, yes, I'll have a look." She responds quickly to her friend even if they are about to meet. Her answer highlights her availability and commitment to their common activity. Thus, the description of this sequence shows how Caroline starts using her smartphone by reading private messages. In other words, she favors notifications that display the strongest and most important social demand and call for a short-term response.

Our data generally describe the way smartphone usage tends to be organized according to a specific technical cue: notifications. This usage pattern is composed of three sequential steps: (a) users prioritize applications that display notifications; (b) they especially favor those involving social demands; (c) they choose certain notifications over others according to the social status and type of relationship (family, acquaintance, close friend) and their representation regarding a legitimate response time (e.g., short-term response projected by an imminent meeting) that may be inferred according to specific relational contexts.

The first section of these findings highlights how notifications and social demands made visible by mSNS app design renew mediatized interactions by promoting social connectedness. The next part of this article will continue to explore this social phenomenon by describing how the pervasiveness of notification functions also changes spatial

Figure 5. Prioritizing a specific relation.

Figure 6. Reading a private message.

cues, and more precisely, visual forms of social coordination in public space (Sacks, 1992; Sudnow, 1972).

Spatial cues: How usage patterns are formed according to public settings?

By providing evidence of the way smartphone usage patterns are strongly dependent on notifications, we extended previous research showing how planned or passive alerts change usage sequences (Bentley & Tollmar, 2013) and encourage users to open apps, especially those that convey social demands (Pielot, Church, & de

Oliveira, 2014). These previous studies also analyzed smartphone usage patterns and the way users manage notifications but by analyzing data collected using sensors. These data do not provide accurate contextual information about the way participants adjust their smartphone uses to contextual settings (Licoppe, 2010). Neither do they allow understanding how different contexts—such as home or workplace, urban mobility or waiting time—can influence the way people deal with notifications. However, our video recording protocol and the interviews we conducted give us the opportunity to discuss former findings by describing practices in more detail.

The section "Main Connection Cues for Social Media Apps During Daily Commutes" will therefore analyze the main connection cues for social media apps in a mobility context. We emphasize the importance of a specific spatial cue in the organization of usage patterns—boredom during waiting times. The section "Visual Forms of Social Coordination Performance According to Technical Cues" will describe moment-by-moment how smartphone usage patterns are organized according to contextual issues specific to urban mobility settings. This aims at reporting spatial cues related to these uses and mediatized forms of social connectedness. This analysis allows us to highlight how mSNS and social demands displayed by notifications renew social interactions in the context of public transportation.

Main connection cues for social media apps during daily commutes. Our video recording protocol allows us to understand smartphones and social media triggers in public settings, as Alexandra, a 23-year-old student explains:

> Researcher: In which situations do you use the Facebook app?
> Alexandra: In which situations . . . in the subway most of the time or in the street when I have nothing to do. When I walk, it's less easy but, yes, when I'm in a waiting room, when I'm waiting for something, when I don't know what to do. When I'm just waiting without anything special to do on the Internet and I don't necessarily want to send messages or don't have anything to say to my friends, I like to go on Facebook, have a look at my account, it allows me to make use of the time. I like to check the latest publications.

The Facebook app evidently gives this user the opportunity to make the most of waiting times and moments when she does not know what to do, as it is often the case when she is on the subway. If boredom seems to be the main reason why she checks her smartphone, this does not explain how she concretely appropriates and uses it. She chooses to consult Facebook when she does not know what else to do on the Internet or does not want to send messages. As she says, she would do differently if she wanted to communicate via SMS or browse the Internet to look up for something specific. Her usage is defined according to this temporary desire. This finding shows how problematic identifying a dominant usage pattern can be when user's main motivation is to stop boredom. Most large-scale analyses of smartphone uses, however, make the mistake of forgetting

that users' first motivation is relieving boredom. Thus, we will focus on identifying regularities in usage patterns while recognizing their randomness.

The example of Emilie (see Figure 2) is useful to highlight this issue. She usually prioritizes notifications when she uses the Facebook app (Sequences 2, 3, 5, 6, 7). She sometimes extends her use to reading the news feed (6, 7) or closes the Facebook app to open another one (2, 4, 5). She can also start by reading news posts before checking notifications (see Sequences 1, 3, 8), especially because the app opens directly into the news feed, so she sometimes takes a quick look at it before reading notifications.

Even though variations appear within Facebook usage patterns, it is still possible to identify regularities as seen above and confirmed with Jennifer's—a 26-year-old saleswoman—practices:

> I do not often use all Facebook functionalities, but I check it, yes. I check the news feed almost every day. But I prefer to read other people's posts than posting things myself. I like to read people's profiles, look at their photos, well, that is something I enjoy, especially with people I like.

This tendency to appropriate Facebook on a consultation mode is particularly linked to mobile applications' usage constraints, as exemplified by Betembi, a 36-year-old nurse:

> Well, it's true that, on my phone, my uses [of Facebook] are very, well . . . very brief. I don't know how to say, browsing is not very smooth and it gives me less freedom than on the computer. With the computer, I really have a global vision, so it's faster, I can easily read one thing or the other whereas, on my phone, I just read the latest comments, profile updates, possibly profile pictures that have been changed.

This is a recurrent trend among users. They appropriate their smartphone to check the latest SNS news and prefer to participate when they are at home, using their computer. They participate via mSNS when they have a request or are sent a comment or message, to coordinate in real time, or during particular events. As Francis, a 40-year-old associate professor puts it: "[On the Facebook app] I just have a look at what has happened, what people have posted and I react in the evening. There really needs to be a special event for me to respond quickly."

This example suggests a distinction between answers to direct forms of interaction—via private messages or comments—and more public participation initiated by users when posting something or sharing content. It also exemplifies the time dedicated to consultation or participation in mSNS, as shown in Figure 2. Emilie published four comments over a week: she wished a happy birthday to a friend, then published three comments related to pictures: a friend's selfie, a friend's trip, and a consumer product. Even though publishing that kind of content is part of her usage, it still is much less frequent than the time she spends reading news or writing replies. This is why users report being less active when they use SNS on smartphones.

However, users put this trend in perspective by emphasizing their appropriation of one-click participation options, such as the "Like" or "Share" buttons: "I really enjoy reading posts but I prefer commenting by saying 'I like'" [by clicking the "Like" button],

I like this thing. In the end, we implicitly take part without necessarily saying something or writing a sentence, I find it easy, natural." These functions appear to be a form of participatory trigger that is suitable for the way smartphones can be mobilized to maintain mediatized relationships, especially during transportation times in public settings.

We have detailed several connection cues for social media apps in a context of mobility such as boredom or one-click participation options. In what follows, we extend this analysis by showing how mSNS design frames the way users distribute their attention between their smartphone's interface and public environments.

Visual forms of social coordination performance according to technical cues. Smartphone usage patterns are organized according to contextual factors such as urban mobility settings. Parisian users, for instance, have an opportunistic consumption of mobile TV and other Internet services in public transportation, taking advantage of public Internet connection when it's available, even though its quality is not always good (Figeac, 2012). Beyond these technical constraints, social constraints such as overcrowded public transportation also play an important part in usage organization. As this 22-year-old student puts it:

> Researcher: Your trip [to go to university] is about 1 hour long?
> Mickaël: Yes. I only use the subway so I've got connections to make. The fact is when one is standing, well, it depends if you can sit or not, but when one is standing, when it's packed, it is more difficult to use the telephone. However, if I can sit down, I use it and it [the mobile phone network] generally works fine.

Smartphone uses are indeed closely related to micromobility: the walk between two subway lines, other passengers' movements, the possibility to sit down, etcetera. From this point of view, our video-ethnographic protocol provides important insights to complement studies analyzing mobile phone uses in situations of mobility (Brown et al., 2013), especially in public transportation (Murtagh, 2001). One of the things it reveals is the way users organize their visual engagements—their gaze switches between their smartphone screen and the urban environment (Licoppe & Figeac, 2017). It appears that this specific form of multiactivity—the joint commitment to mobility and screen-based activities—is organized according to the flow imposed by the devices.

For instance, Clement, a 27-year-old student, opens the Facebook app when he takes the tram to go home. He starts by browsing through the news feed for 2 minutes. When he reaches the posts he has already seen in the morning—published "6 hours ago" (see Figure 7)—he quickly scrolls the screen up and, once at the top, he operates a top-down index motion, swiping his finger through the screen to "refresh" the application (see Figure 8). A progress icon appears at the top of the feed (see Figure 9) indicating that the application is loading new content. We can note that Clement seizes this loading time as an opportunity to stop watching the screen and look up around him to scan the environment from right to left (see Figure 9).

Due to its important recurrence in our sample, this simple gaze switch highlights the way users manage urban settings during loading times and inactive phases of smartphone

Figure 7. Reading the news feed.

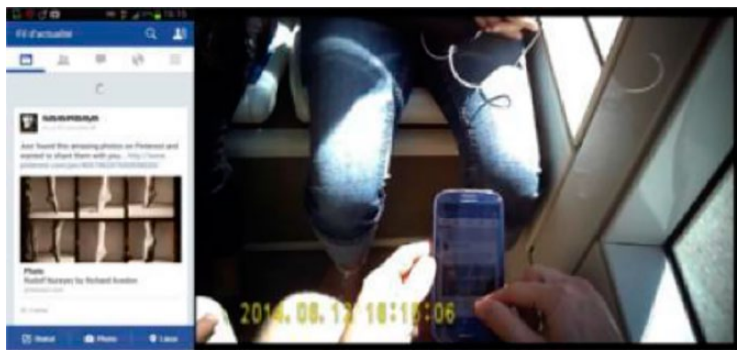

Figure 8. Updating news feed.

Figure 9. Looking up during Facebook app loading time.

apps. It is not possible to tell what users are effectively looking at when they look up around them; they can make these gaze switches in response to a variety of causes

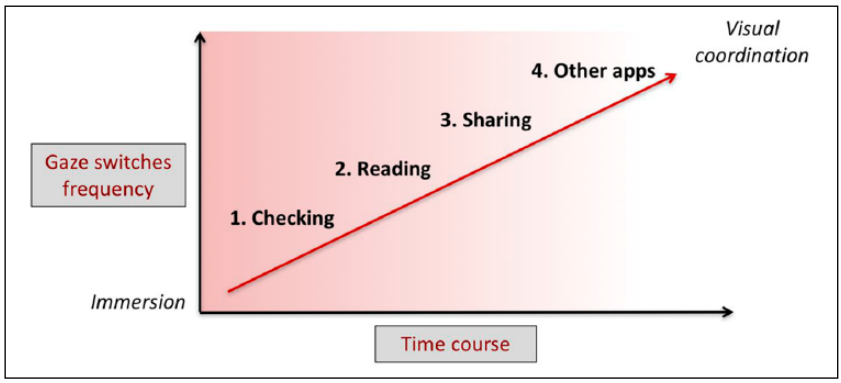

Figure 10. The frequency of gaze switches increases over time.

(passengers' movements, a stop at a station, the presence of an attractive man/woman, disturbance due to a person begging for money, etc.). However, transition phases in smartphone usage patterns are essential to understanding usage complex cognitive mechanisms. The gaze switches example helps to demonstrate how visual forms of social coordination (Sack, 1992; Sudnow, 1972) are reorganized nowadays according to mobile ICTs and their specific flow. This finding renews the relevance of the analysis of the "civil inattention" phenomenon described by Goffman (1963, p. 83) to account for the organization of ordinary interactions consisting of glances exchanged between strangers. This visual form of coordination cannot be reduced to a simple internalized social norm consisting of a set of visual exchanges between two interactants who use and negotiate visual courtesies. The visual grammar of social interactions is now modified by smartphone screen issues and the way they frame the way we operate gaze switches in public settings.

From this perspective, another usage pattern emerges from video recordings; users maintain their visual commitment towards the screen at the beginning of their use sessions. Then, over time, they look around them more often, visually monitoring the environment. Figure 10 illustrates this phenomenon.

As shown in the section "How Social Demands Shape Smartphone Usage Patterns," users prioritize notifications when they activate their smartphone. They try to fulfill relational demands and obligations to respond quickly to incoming messages or comments. When they write answers, they tend to stay focused on this activity, which is quite absorbing on a cognitive level. Then, they stop for a while to look around. Once they have responded to incoming messages, they may put down their phone to commit to another activity or simply to look around them waiting to arrive to their destination. If they go on using mSNS, they enter what we called a "reading mode," during which they pay less attention to the screen. This becomes more obvious over time, as usage goes on. Their attention is highly focused when they start to read news and decreases as they reach older or previously read posts. This gradual loss of interest in mSNS use is coupled with an increased frequency of gaze switches and attention to the surrounding context.

This phenomenon also appears during the longest app chain sessions, when users switch to other applications such as video games, most of which are simple and quick

games that can be rapidly paused, resumed, or stopped and that do not require important or constant attention. For instance, it is possible to observe, when users play the widespread game "Candy Crush," how their gaze switches occur mostly during the transition phases of the game, during loading times between levels, or when candy clusters explode.

In other words, when users appropriate their smartphone to manage their microcoordination (Ling & Yttri, 2002) of incoming messages—as during the opening of mSNS—they tend to disengage from physical contexts to focus on their device. Social demands mediatized by these media come first at that time and lead users to defer gaze switches and their participation in visual forms of coordination. This trend shows how relational norms at stake in mSNS use regulation can impact the economy of visual forms of coordination and social interactions between strangers.

Conclusion and discussion

Our study has provided an overview of connection cues (Bayer et al., 2015) for mobile social network sites (mSNS) and social messaging applications as a way of explaining contemporary forms of social connectedness. We aimed at illuminating nonconscious triggers in "checking habits" (Oulasvirta et al., 2012) by focusing on a specific technical cue (notifications displayed on smartphones by mSNS) and spatial cues characteristic of daily commutes. We described how this specific set of cues frames mobile devices' opening patterns and usage in interaction with public transportation environments. We argued that the description of these connection cues helps to understand the way social media apps promote permanent connection and "ambient-mediated sociation" (Ling & Lai, 2016) through notification of social demands. To achieve this goal, we developed a video recording protocol in order to collect fine-grained data.

This method has strong limitations, however. First, this protocol only allows to record and document the longest chains of app usage, when smartphones are used for more than 10 minutes. This is an issue as 68% of use sessions only involve a single application and the average length of 50% of them does not exceed 5 seconds (Böhmer et al., 2011). Then, we tried to describe the temporal organization of smartphone usage patterns; identifying a usage pattern is a difficult task for several reasons. There are too many applications available today to identify a dominant pattern and their uses vary from one country to another (Falaki et al., 2010). To identify patterns of use, we focused on mSNS—given that they are the most popular applications (Xu et al., 2011)—in order to correlate them with sociodemographic variables (Bian & Leung, 2015) and the contexts of use (e.g., "static mobility"; Trestian, Ranjan, Kuzmanovic, & Nucci, 2009).

We also focused on the beginning of apps usage chains by describing how notifications and applications that display social demands—such as incoming messages—tend to be used first. This video-ethnography, therefore, extend previous studies by providing a detailed analysis of opening sequences of usage patterns. It shows how they tend to be structured according to three phases: (a) users often start by using applications displaying notifications; (b) they favor those that display social demands; (c) they hierarchize and prioritize these relational solicitations in accordance with social status or types of relationships (close friend, acquaintance, family), specific circumstances, and representations about legitimate or adequate response times. According to the way this technical

cue (notifications) mediatize social demands, this opening sequence can be considered as a vector of microcoordination and social connectedness enhancement.

The design of smartphones effectively encourages users to be reactive and respond quickly to mediatized social solicitations, even during daily commutes; as we have noted, they do, thus showing how mSNS notifications strongly shape smartphone usage patterns as they promote ubiquitous forms of participation in social network services. This video-ethnography also shows how technical cues change visual forms of social coordination in public settings. When they start using mSNS, participants first manage notifications and answer solicitations, and they tend to stay focused on this absorbing screen-based activity. During this microcoordination phase, they managed their mobility by looking around them during loading times and technically designed activity breaks. Over time, when they went on to read news feeds, their gaze switches were more frequent. This phenomenon reveals how visual forms of social coordination are not only organized according to internalized social norms, in a Goffmanian perspective (Goffman, 1963), but also depend on flows imposed by the device and ways in which mediatized forms of social demands are pervasively displayed on smartphones screens.

Finally, this video-ethnography shows how mSNS design and their notification functions promote permanent connectedness. The boring and routine nature of urban mobility encourages users to look for new sources of entertainment, especially by experiencing new digital sociability, multiplying and diversifying their mediatized exchanges with close friends. This pervasive screen-based activity brings as a result an anonymous form of copresence that could translate into an uncommitted form of participation in public space, everyone being "alone together" (Turkle, 2011). However, it is too radical to consider that this contemporary form of "media immersion" is becoming the dominant form of visual coordination in public settings. On the contrary, our investigation shows how this state of "being alone together" is rather a temporary and dynamic form of immersion in media uses, characteristic of a specific phase of usage patterns, the microcoordination phase. After that, once they have checked social solicitations mediatized by their smartphone, users pay more attention to the surrounding environment. It is also problematic to interpret this media immersion as an antisocial behavior, as we can see that when they are focused on their screens, users are most of the time engaged in social activity with their mediatized relationships.

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