

‘Now you’re home’: awareness cues, rejection, and post-digital safety on Mobile Dating Apps

Abstract

Mobile dating apps (MDA) are popular for intimate encounters, but romantic rejection is common, and can drive surveillance using information from social media. Awareness cues convey digital information about others’ activities, but their link with rejection is underexplored. This study explores the uses of awareness cues in mobile dating applications (MDAs) in relation to rejection, social surveillance, and post-digital safety. Using a one-month diary study with eight participants of diverse gender and sexual identities, we identify a grammar of awareness cues that helps users interpret others’ intentions, manage relational uncertainty (e.g., ghosting), and navigate rejection. While awareness cues convey helpful information, they also expose users to social surveillance or even stalking. Since ‘incognito mode’ is a premium affordance on most MDAs, participants developed creative *invisibility strategies* to restrict access to social surveillance mechanisms.

Keywords and Phrases: awareness cues, mobile dating, romantic rejection, post-digital safety, online safety, cyberstalking, gender, sexuality, ghosting, social surveillance, geospatial dating

1 INTRODUCTION

Awareness cues are design features of digital platforms that inform on the state or availability of other users (Oulasvirta, 2008). These cues have become one of the ways in which people create a social awareness of others on social media (Levordashka & Utz, 2016). These have often been studied in the context of communication and availability management when interacting with friends, family, and colleagues (Cecchinato et al., 2017; Hancock et al., 2009), with some work suggesting they can be used for stalking and cyberstalking (Licoppe, 2008; Grimani et al., 2022), therefore raising concerns for users’ safety both online and offline.

Mobile dating applications (MDAs) are social media platforms for meeting new people and initiating intimate interactions (Parisi & Comunello, 2020). With dating, comes the risk and potential experience of romantic rejection, which can be painful and lower the rejected person’s

self-esteem (Stinson et al., 2016). In extreme cases, romantic rejection can motivate violence (MacDonald & Leary, 2005) and stalking against current or ex-partners (Welsh & Lavoie, 2012), often employing information that people share – knowingly and unknowingly - on social media. Mobile dating users are no stranger to experiences of stalking and cyberstalking (Fansher and Eckinger, 2020), along with other forms of online and offline harassment, particularly in the experience of women and gender- and sexual-non-conforming people (Owens et al., 2023; Amundsen, 2021; García-Gómez, 2020; Paasonen et al., 2019; Gillet, 2018). Therefore, mobile dating apps offer a unique case to study the role of awareness cues in relation to users' post-digital safety.

This paper presents a diary study with eight participants of diverse gender and sexual identities who took part in a month-long diary and follow-up interviews. Our aim was to explore the use of awareness cues on MDAs, particularly in experiences of rejection, and whether awareness cues pose safety concerns for people of diverse genders and sexuality in relation to mobile dating.

After presenting the post-digital safety framework, we review the literature on awareness cues and interpersonal surveillance in intimate relationships, then present the context of dating apps. In the methods section, we explain how we carried out the diary study. Findings are structured in three sections: 1) Is my match ignoring me?, where we discuss how awareness cues were used in relation to experiences of rejection, 2) Invisibility strategies, hiding one's *digital presence* and *activity*, about participants' management of their own awareness cues, and 3) From awareness to social surveillance, where we discuss uses of awareness cues in the context of mobile dating as visibility affordances that can be placed on a continuum from social awareness to interpersonal surveillance, posing concerns for mobile daters' post-digital safety.

2 RESEARCH FRAMEWORK AND LITERATURE REVIEW

Online safety is becoming an increasingly important topic, at the center of many governmental discussions. Recent regulatory frameworks have been giving more attention to the online risks of the Internet (Online White Paper, Digital Service Act), but more research is needed to comprehend the offline and online risks connected with online activities. Post-digital security identifies 'forms of sociotechnical security that address issues of trust, identity, privacy, and security in post-digital contexts and societies through identity management, human relations and trust as well as technological security mechanisms' (Coles-Kemp et al., 2020, p. 1).

Security practices shift, with this framework, from telling people what makes them secure towards centering their concerns for safety.

This understanding of security ‘from below’ encompasses social, cultural, economic, and political notions of protection. Where computer security prioritizes the protection of technology and data, and state security prioritizes the protection of the state and sovereignty, citizens focus on the threats to themselves and their relational networks, in a form of everyday safety that differs from the security concerns of the state or security specialists (Coles-Kemp et al., 2020). For Strohmayer and colleagues (2021), centering user safety involves designing technologies anticipating their ‘usability’, i.e. what kinds of uses are enabled by design, to prevent ‘abusability’, meaning the possibility that malicious actors might weaponize a system for harmful activities. Recognizing that we live in an *onlife* society (Floridi, 2015) where digital safety has tangible effects on embodied experiences, a post-digital safety approach addresses the interweaving of the digital into the fabrics of society (Coles-Kemp et al., 2020). In the context of geospatial apps, and since the attention of the paper is on digital cues that inform on the offline presence, location, and activities of users, a post-digital approach is especially important to address how participants experience safety concerns in relation to the *onlife* use of mobile dating apps.

Awareness cues are indicators of presence, activity, and location embedded in the design of social media. People may find awareness cues useful to communicate and coordinate meetings, feel the social presence of known others even at distance, and self-expression (Oulasvirta et al., 2007). In Oulasvirta and colleagues’ (2007) study, adolescents used awareness cues to make inferences about others, connect, and form habits, but knowing they could be used for monitoring, they highlighted the importance of control over cues. Studies on the role of awareness cues in creating expectations of availability showed that people strategically conceal them to manage impressions in their everyday relations (Birnholtz et al., 2014; Reynolds et al., 2013; Hancock et al., 2009). Managing impressions in a world where mobile devices create an expectation of constant availability helps differentiating different life domains and avoiding feelings of overload and distress (Cecchinato et al., 2017; Cecchinato et al., 2015).

In Guha and Birnholtz’s (2013) study on location sharing on Foursquare, participants did not always want to disclose their personal information and reported feeling ‘stalked’ and purposefully hiding their true location. In Licoppe’s study (2008) on the location-based videogame Mogi, a player (she/her) reports two episodes that made her feel threatened: ‘when I saw on the screen that the radar indicated zero distance, I was in my room and incapable on moving’. Concerns about location visibility may be greater in contexts where users are

pseudonym strangers (Licoppe, 2016), as it may lead to forms of ‘territorial offence’ (Goffman, 1971), where the entanglement of a public digital space and a private physical place carries concerns not only for one’s privacy but also for their physical safety (Licoppe, 2008).

While a certain social surveillance on social media may be expected and even welcomed as a form of social awareness (Lampe et al., 2006), the persistent monitoring of a person’s online and offline activity through the use of ICTs constitutes interpersonal electronic surveillance (Tokunaga, 2011) and it can turn into stalking and/or cyberstalking if the behavior is repeated and unwanted (Wilson et al., 2022). Romantic partners are the most common targets of social surveillance practices (Frampton et al., 2021; Spitzberg e Hoobler, 2002) and most cases of stalking and cyberstalking involve the monitoring and insistent contacting of romantic partners or ex-partners, especially as a consequence of the breakup (Spitzberg e Hoobler, 2002, p. 73). Interpersonal electronic surveillance partially overlaps with the concept of information seeking, defined as “the gathering of information from all manner of sources through all manners of intentional acts” (Hogan & Brashers, 2009, p. 50), and both have been discussed in relation to intimate relationships, and how people wondering about the state of their relationship may directly or indirectly seek information to reduce this uncertainty (Frampton et al., 2021). Cyberstalking, stalking and monitoring behaviors are so common in the context of intimate partner relationships that they are often framed as “digital dating abuse” which, like Intimate Partner Violence (IPV), seems to disproportionately affect women and girls (Backe et al., 2018). The literature on technology-facilitated gender-based violence includes cyberstalking and stalking as prominent examples of the continuum between online and offline gender-related violence (Dunn et al., 2023). Thus, understanding if awareness cues pose post-digital safety concerns in the context of romantic, intimate and sexual relationships is central.

Mobile dating applications (MDAs) are platforms for romantic, sexual, and social interactions (Parisi & Comunello, 2020). In this sense, the media ecology of dating apps constitutes a particular environment where practices and norms around sexuality and intimacy are continuously remediated through the “sexual infrastructure” of the platforms (Race, 2015). The visibility afforded by geolocative social media like MDAs offers opportunities for social connection, particularly for LGBTQAI+ users, though some users worry about identifiability (Cui et al., 2022; Pinch et al., 2022; Birnholtz et al., 2020). Albury and Byron (2016) showed that teenagers navigate apps to create ‘queer cartographies’ (Batiste, 2013) but the geo-locative capacity of mobile apps brings the possibility of ‘context collapse’ (Marwick & boyd, 2011) and information leakage. Users develop strategies to protect themselves from the risks of this permeability (e.g., unwanted outing or fake profiles) (Albury and Byron, 2016; Blackwell et al.,

2018). MDAs' freemium business model makes some features available to users with a free account, while other features are available with a monthly subscription to a 'premium' account or in-app coins.

Rejection on MDAs is common (De Wiele & Campbell, 2019) and it often involves ghosting (Timmermans et al., 2021; De Wiele & Campbell, 2019; Manning et al., 2019), defined as 'unilaterally ceasing communication to prompt relationship dissolution' (LeFebvre et al., 2019a). By communicating rejection through silence, ghosting resembles ostracism (Campaioli et al., 2022; Zamperini, 2010), especially in the experience of those who are *ghosted* (Pancani et al., 2021). The negative feelings associated with being rejected may be increased by the uncertainty connected with the lack of explanation (LeFebvre et al., 2019b). Ghosting has been framed as an avoidant breakup strategy, but it may be employed to safely reject insisting and/or harassing people (Campaioli et al., 2022; Timmermans et al., 2021; Manning et al., 2019). While one study found that the *ghostee* unfollowed the *ghoster* in 22% of reported instances, other studies found that being ghosted motivated social surveillance of the *ghoster* (Campaioli et al., 2022; Thomas & Dubar, 2021). If collecting information on the *ghoster* could help reducing the uncertainty of ghosting, in some cases surveillance behaviors appeared insistent even after the *ghoster* explicitly communicated the desire to interrupt contact (Campaioli et al., 2022).

We argue that awareness cues play a role in the post-digital safety of MDA users and that their use may be particularly salient in situations of romantic rejection.

3 METHOD

3.1 Diary study

We relied on a qualitative approach to answer the research questions: how do MDAs users engage with awareness cues? How do experiences of rejection influence the use of awareness cues, and vice versa? What post-digital safety concerns do awareness cues pose for MDA users? We designed a diary study to collect and study naturally occurring experiences of rejection and capture how awareness cues are used in those situations. Diary studies have been used in social psychology to understand everyday experiences of rejection, enriching the experimental literature on social exclusion with real-life accounts that show the importance of the relationship and the reason why people feel they have been ostracized in the aftermath of the experience (Nezlek et al., 2012). Diary studies are also widely used in HCI for understanding how people behave in the here-and-now of a situation, like when they experience rejection; taking notes can

foster reflection on the experiences and activities participants are asked to annotate over the course of several days (Brown et al., 2000).

We followed Carter and Mankoff's (2005) approach for elicitation diary studies, thus preparing an initial online interview to onboard participants, followed by a one-month diary study asking participants to make a note any time they experienced rejection or made use of awareness cues, and follow-up semi-structured interview. To assess our data collection instruments, we recruited two dating app users to use a shorter version of the diary (2 weeks); their feedback informed a reformulation of diary tasks and ensured that participation did not trigger unnecessary distress. Initial and follow-up interviews were carried out with video-calls, while the diary was completed on a messaging app.

3.2 Participants and Recruitment

Our aim was to recruit people of diverse gender and sexual identities to explore rejection in different dating environments. Interested participants had to be 18+, Italian or English speakers, MDA users, and willing to use at least one of their usual MDAs for one month. We recruited via snowball sampling (Naderifar et al., 2017), through word of mouth and by sharing a flyer on social media and dating apps (Appendix A).

Participants were directed to the screening survey (N=30 Italian version, N=4 English version. Appendix A). Six were not interested in participating further, six were not currently using dating apps; one completed the survey twice. The remaining 21 respondents were invited to the initial interview. Of these, 10 agreed to take part in the diary study, however, two dropped out before the end of the diary. Thus, our final sample consisted of 8 Italian participants. All but two were living in Italy; two participants grew up in Italy but were living in northern Europe at the time of the study.

The final sample (Table 1) involved two participants identifying as heterosexual women, two bisexual man, one heterosexual man, one hetero-flexible man, one homoflexible man, one homosexual man, and one homosexual/demisexual queer. All participants had used more than one dating app, including Tinder, in the past and at the time of the research; the four participants who identified as GBTQAI+ men had been using Grindr. Most participants (n=7, 87,5%) reported a cyclical use of dating apps. One participant had a Premium account in the past and one at the time of the interview, and all reported being rejected and having been rejected on MDAs.

[insert Table 1]

3.3 Procedure

All interviews were carried out through video-calls. After an initial online interview of 20 min on average (MIN: 10 min, MAX: 60 min) to describe the study and explain the concept of awareness cues through examples, participants were invited to start their diary from the following day for a month. The diary took place on WhatsApp, in a private chat with the principal researcher, who used a research-specific smartphone and sim card. On day 1, we sent reminder instructions, including examples of what we meant with awareness cues and incognito mode (Figure 1). We sent reminders twice a week; then, we contacted participants to schedule the follow-up interview two weeks after. The diary study took place between October 2021 and January 2022.

[insert Figure 1.]

3.4 Data analysis

We followed Braun and Clarke's (2006) steps of thematic analysis with a qualitative and circular approach; qualitative meaning oriented to understanding experiences, meanings, and social practices through the researchers' understanding of participants testimonies (Braun and Clarke, 2006). Circularity refers to the recurring cycle of data collection and analysis (Wetherell et al., 2001), where data collection and analysis are shaped by the analysis of previously collected data. To develop themes, we referred to an abductive approach (Timmermans & Tavory, 2012), simultaneously adopting a 'top-down' categorization in relation to awareness cues and rejection, and a 'bottom-up' approach to account for unexpected relevant patterns in relation to the post-digital safety concerns reported by participants.

For each participant, we summarized the answers to the recruitment questionnaire and asked the participant to expand on their experience with mobile dating apps during the initial interview. Diary entries were copied from the chat and organized in a single file containing all text, images, and transcriptions of voice notes. Then, the principal investigator analyzed each diary and discussed the codebook with the other researchers to prepare a semi-structured follow-up interview for each participant, asking to expand and clarify diary entries. Follow-up interviews were recorded, transcribed verbatim, and saved in a single text file; then we created participant-specific files (.docx) collating diary, interview and answers to the recruitment

questionnaire. We used Atlas.ti for the thematic analysis and structuring codes into themes (Appendix B).

5 FINDINGS & DISCUSSION

5.1 Is my match ignoring me?

An intrinsic purpose of dating apps is to find users who are interested in you. As such, participants were motivated to understand whether the people they interacted with showed any interest towards them and whether this changed over time, within and outside dating apps. Camilla, after moving the conversation with her match on Instagram, leveraged the availability of awareness cues by creating Instagram stories to see if he would view them, and carefully chose the content of the story to instigate a reaction from him: ‘Friday I went dancing, I uploaded a story about a club I knew he liked and of course he commented it’ (Camilla, interview). This indirect strategy allowed her to gather signs of interest without exposing herself too much with a direct interaction.

All participants generally valued response time as an important indicator of interest, so a lack of response over time was treated as a sign of rejection: ‘I sent a few messages to some girls but I never received a reply, I see that as a rejection’ (Nicola, diary). Silence is a communicative act with perlocutionary power (Austin, 1962). Waiting for an answer when you know the person has read the message can be frustrating, more so when there are expectations (or hopes) of reciprocal communication (Marentes et al., 2016). However, participants showed to have a subjective understanding of how much time should pass before considering it ghosting. This is when they turned to awareness cues to interpret the silence: ‘A couple of people I wrote to never replied to me. In these instances, I use awareness cues to understand if they never opened my profile, or if they looked through it but then moved on’ (Mirko, diary).

Different apps have different levels of awareness cues, some of which are part of a premium subscription; yet, participants navigated awareness cues as *clues* that, combined, could reveal desired information. In this sense awareness cues become elements of a grammar that is simultaneously influenced by platform vernacular (Gibbs et al. 2014), insofar as each app has specific affordances, and by the polymedia environment (Madianou & Miller, 2013) of the awareness cues made available across dating apps and other social media platforms. This is especially useful to gauge whether the other person has viewed one’s profile and never replied (interpreted as lack of interest), or whether they did not view the profile (interpreted as they maybe have not seen the message, so they might need to wait a bit longer for an answer): ‘If I

write and I don't get a reply, I don't have a way on Grindr to check whether the message has actually been [read], so if I see that my profile has been viewed, it means it has been checked and maybe it wasn't liked, the person moved on' (Mirko, interview).

Read receipts on an unanswered message tend to be interpreted as a clear sign of ghosting, especially on dating apps (Campaioli et al., 2022), but they are a premium feature on most dating apps. Participants also kept track of indicators of online activity on other platforms once the connection had gone beyond the first interaction. With social media being so widespread, there is a general assumption that people use them regularly – if not daily. Participants used the awareness cues available on other social media, like WhatsApp (e.g. online status), as signs that the other person was actively using their phone in a social manner and infer that their lack of response was intentional. Not only awareness cues, but also signs of *digital activity*, like posting a story on Instagram, were useful for this purpose. As Dimitri explained:

'Clearly, if someone doesn't reply and I realize they haven't used Instagram, I don't attribute the silence to something regarding me specifically, but if I notice they used their phone normally, it might have something to do with me' (Dimitri, interview).

Like in previous studies that investigated interpersonal electronic surveillance (IES) in couples (Tokunaga, 2011), participants accessed and collected information available on MDAs and social media to reduce the uncertainty of their interactions with potential partners. This use of awareness cues can be seen as an uncertainty-reduction strategy (LeFebvre & Fan, 2020) that participants employed to make inferences when rejection is (meta)communicated through indirect practices like ghosting (LeFebvre et al., 2019b). Experiences of rejection on dating apps take place through a variety of practices, some mediated by the affordances of dating apps (e.g. removing the match), others through verbal formulas, but the most common was the lack of answer, or ghosting (Timmermans et al., 2021; De Wiele & Campbell, 2019).

Rather than drawing the immediate conclusion of being ignored, participants imagined alternative explanations for a lack of answer. People generally take notice of other people's habitual digital activities; a history of shared interactions helps determine whether someone's behaviour is typical or unusual for them. Dimitri relied on past conversation rhythms to justify a lack of response and rationalize that a reply might be due shortly: 'I know for sure she had read my request because of the read receipts on Instagram. However, in the past there were times when one of us didn't reply for a few days, so I was expecting a reply soon' (Dimitri, diary). Participants developed an idea of the *digital activity style* of others that helped them interpret the lack of answer, more so with people they were close to or interested in (e.g. friends, match). In the tension between the discomfort of uncertainty and the disappointment of being

explicitly rejected, indirect strategies that leverage information affordances of digital media allow to reduce the unsettling awaiting (Marentes et al., 2016), while ‘saving face’ from the shame of being openly disliked.

According to Goffman’s (1955) theorizing of face-work, people try to protect their face in social interactions from the threat of shame. Being socially rejected is a painful experience (Zamperini, 2010; Williams, 2007; McDonald & Leary, 2005). In Western culture, where romantic relationships occupy the top of a relational hierarchy (Brake, 2011) and not having a ‘successful’ relational life is seen as an individual failure of the neoliberal ‘self-entrepreneurship’ project (Barker et al., 2018), romantic rejection can be especially threatening to one’s self-esteem. Most participants reported a cyclical use of dating apps, and their engagement gradually diminished during the month of diary. Repeated small rejections lowered their self-esteem, their hopes of finding a person to date, and their trust in dating apps. They then returned cyclically when ‘feeling lonely again’, as if these apps had the monopoly of intimate interactions.

5.2 Invisibility strategies

Participants sometimes concealed their digital presence and activities in subtle ways, so to avoid informing the other person that they were hiding or restricting their access to social surveillance mechanisms: we called these *invisibility strategies*. Since most participants did not have premium ‘incognito mode’ features, they developed creative strategies to conceal their digital activity from others: disabling awareness cues, using message preview, not opening the app, disabling data roaming, or selecting audiences when sharing something on social media were some of the strategies used to avoid giving the impression of intentionally ignoring someone and, more generally, manage expectations of availability.

Existing scholarship on awareness cues suggests that people may delay opening a message to avoid giving out read receipts because of the expectations of availability connected to this sign of co-presence (Birnholtz et al., 2014). Just like they interpreted on other people’s digital presence and activities, participants imagined that others may be watching and interpreting on their cues. Some participants paid attention to what *clues* they were giving away when rejecting someone. Dimitri provides an example of this:

‘Yesterday the boy of that couple texted me [...] I was about to go to bed [...] I noticed that he replied straight away but I preferred not opening the app to avoid giving him the impression that I was ignoring him on purpose’ (Dimitri, diary).

Participants also engaged in face-work when they tried to make rejection less obvious; as Goffman put it, people in social interactions are continuously engaged in face-work that involves saving their own and their interlocutors' face (1955), a dynamic that seems to transfer from face-to-face interaction to mediated interactions, thanks to awareness cues.

Knowing that others can (and often do) 'see you' being *present* (e.g. online) and *active* (e.g. commenting, posting) on social media, and that they will expect you to be available for them, can generate a certain pressure. Others, and particularly partners, may use these cues to understand if you are ignoring them intentionally, and make inferences about why you are not available, like Bruno recounts:

'I started talking to a person on Grindr, then on Instagram, and we met like five times. It was going well until I got a visit from my mother, so I used my phone a lot less. Let's say I kind of disappeared from this person though he obviously knew the whole situation. The moment I was freed of the commitment, of course the first thing I did was text him and say "look now if you want we can see each other" and he was offended and we ended (.) because he said it wasn't possible that I didn't even have a minute of time to answer a message, to make an audio, whatever (.) also telling me "if you share stories on Instagram with your mother you could write hey I'm fine how are you doing" (Bruno, interview).

For Bruno, the expectation of availability was a deal breaker, because being active online didn't necessarily mean he was available for others, especially if the relationship wasn't particularly intimate. Bruno said that he would sometimes deactivate the wifi or data roaming on his phone after receiving a message, to open it without activating the read receipt ticks.

As visibility affordances, awareness cues are used for social surveillance, but also for self-surveillance, to conceal one's own cues from the imagined surveillance of others (Duffy & Chan, 2019), using creative *invisibility strategies* to make up for the lack of incognito mode in the free version of the app. Different from anonymity, invisibility regards hiding indicators of one's presence and activities online and offline, rather than hiding one's identity. We inscribe invisibility strategies within the larger realm of privacy-protecting strategies, which often involve workarounds and creative solutions, especially when privacy settings are considered difficult to understand (Coles-Kemp et al., 2020; Marwick, 2012). Concealing awareness cues can also be a form of protection from users who violate boundaries and become harassing.

5.3 From awareness to social surveillance

Participants navigated dating apps as places for meeting new people and maybe dates, but quickly switched to other social media to signal interest or intimacy. Switching to another channels also constitutes a safety practice, especially for Grindr users who often interact with pseudo-anonymous profiles:

‘on Instagram you can do it because it's a way of... revealing identity, coming out of anonymity and in my opinion it's necessary before meeting because it makes you a bit safer and you can understand more or less who you're meeting’ (Mirko, interview).

Participants noticed people’s digital activities, whether these took place on dating apps or elsewhere online, to filter out inactive or far away users, to gauge someone’s interest (or not), and to determine whether one is being rejected or life has momentarily got in the way. Most dating apps’ users are looking for people who are geographically close and participants looked for dormant profiles to avoid them. Participants looked at online statuses, ‘last access,’ and ‘recently active’, to detect active profiles, and at distance to detect nearby users. Many wanted to know which users were ‘available’ without wasting time behind inactive or geographically distant users.

Two participants valued the reciprocal transparency of online status as an indicator of co-presence that should, for fairness, be symmetrical, questioning the asymmetry allowed by Premium subscription: ‘I wouldn’t find it ‘right’. Just as I want to see if a person I’m speaking to is active, I would like the other person to see me as active’ (Bruno, interview). Design elements like the online status have become central indicators of *digital presence*, and digital co-presence is considered important for interacting in the media ecology of mobile dating (Strate, 2004).

Monitoring someone using awareness cues generated considerable discomfort among participants in two kinds of situation. Two GBTQAI+ participants reported episodes where awareness cues of distance on Grindr were ‘abused’ (Strohmayr et al., 2021) to monitor their position, through intrusive communication and/or physical approximation, generating a sense of disrespect and insecurity. Tony reported being repeatedly surveilled and pressured by a user who was monitoring his location:

‘he started looking at my km/writing me ‘where are you now?’ ‘you are at 30 km’ ‘in what area’ then ‘now you are at 2km’ ‘you are home’/ So awareness cues can be real protections like in this case’ (Tony, diary).

As further explained in the final interview, Tony considered the possibility of deactivating location cues as a protection in these situations. Bruno, another Grindr user, recounted an experience where a person used his Grindr distance to appear at his doorstep, though Bruno had cancelled plans and made sure his communication was received using read receipts. Tony and Bruno blocked these users who made them feel disrespected and unsafe, and discussed these episodes as a violation of consent, an ethical principle that involves respecting boundaries. However, these participants were either unable to locate settings, or conflicted between wanting to feel safe and seeing/being seen by nearby users. Both navigated Grindr as the central app for GBTQAI+ men, despite repeated instances of harassment and homophobia from other men on the platform. While the literature on online gender-based violence mostly focuses on cyber harassment against women, these testimonies highlight the need to address the gender-related character of the cyber harassment and post-digital safety concerns experienced by GBTQAI+ men (Graaff, 2021), addressing the gaps between feminist and masculinity studies on this topic.

Not only being surveilled, but also surveilling others can cause discomfort. Three participants reported using MDAs' awareness cues to monitor a partner/ex to see if they were still dating others; however, two were stressed by surveilling and quit the app completely for some time. For Mirko, being able to see someone they liked on dating apps had led to compulsively use these platforms to know about that person, despite the negative feelings:

'I was really absorbed by these apps, and I was using them too much. It became a way to know stuff about people, or a person I liked specifically... when I realized it was getting out of hand, I shut everything down' (Mirko, interview).

Social media have contributed to a 'popularization' of surveillance (Marwick, 2012), but the increased amount of information that social media make available can be 'more than one wants,' fostering jealousy and surveillance (Hernández-Santaolalla & Hermida, 2020; Spyer, 2017; Muise et al., 2009). One participant mentioned monitoring his partner on dating apps to know if they were still dating, despite acknowledging that it shows a lack of trust: 'I know it's a bit wrong, because I don't trust him, but I use incognito strategies the moment I decide I want to date someone. I create a new profile just to, in quotes, stalk this person' (Bruno, interview). Creating a new profile allowed Bruno to 'watch without being seen' and use awareness cues to monitor the online/offline dating practices of their partner.

Participants' testimonies reported behaviors that, according to Spitzberg and Hoobler's (2002) criteria, represent instances of cyberstalking: insistently monitoring one's location, sending excessively 'needy' messages, pornographic pictures or sexually harassing messages, intruding in your life. None of these episodes involved repeated harassing behaviors, as most

cyberstalking definitions require (Wilson et al. 2022), though this was also prevented by promptly activating self-protection strategies such as blocking the user on all social media.

We claim that awareness cues may be useful social cues, but they pose concerns for post-digital safety, especially on location-based platforms. Cues of location, digital presence and activities constitute digital traces that can be exploited for social surveillance (Marwick, 2012). This ‘horizontal surveillance’ between users is not the same as the surveillance from ‘the Big and the Little Brother’ (D’Urso, 2006) to which internet users are subjected for the profit of surveillance capitalism (Zuboff, 2019) and for the sake of surveillance-security (Hermida and Hernández-Santaolalla, 2020). Social surveillance and surveillance from governments and corporations share the means through which information is collected, but the latter involves a structural power hierarchy between the surveilled and surveilling (i.e. the potential for regulatory oversight) (Tokunaga, 2011).

While some participants expressed concerns which deserve further attention about dating apps’ data collection practices and privacy, this study addressed interpersonal surveillance between users, which is supposedly horizontal. However, greater digital competences and greater economic power contribute to shaping power hierarchies between users of the same app: digitally proficient users are likely better at collecting digital traces and leaving less traces about themselves (Park et al., 2015). Moreover, premium users dispose of more awareness cues of others and built-in invisibility strategies, advertised as ‘incognito mode’. Participants questioned the fairness of these visibility asymmetries between premium and free users.

Awareness cues are useful for social awareness and reducing relational uncertainty, and users may not want to hide them altogether, missing out on interesting connections. Granular control and easily accessible settings would help users feel more comfortable with the awareness cues they give to others (Guha & Birnholtz, 2013). In the context of mobile dating, as social media envisioned for romantic and sexual connections, where sensitive information is shared with pseudonym strangers (Licoppe, 2016), awareness cues and location cues pose risks for post-digital safety. We suggest that the possibility of activating and deactivating should always be easily accessible and available in the free version of the app.

CONCLUSIONS

With this qualitative study we aimed to explore how mobile daters use awareness cues on MDAs, in relation to rejection, social surveillance and post-digital safety. Awareness cues of

MDAs were used in combination to cues of digital presence and activity on other platforms, revealing a grammar of awareness cues that helped to get a social awareness of distant others, manage expectations through invisibility strategies, and reduce the uncertainty of ambiguous rejection, like ghosting. However, awareness cues also carry sensitive information that can generate post-digital safety concerns, especially among LGBTQAI+ users. Despite the limited sample (n=8) does not allow to generalize findings, this is the first study to investigate uses of awareness cues in relation to post-digital safety with a one-month diary study with mobile daters. Future research should investigate the visibility asymmetries between Premium and free users of mobile dating apps, and the safety concerns of LBTQAI+ women.

REFERENCES

- Albury, K., & Byron, P. (2016). Safe on My Phone? Same-Sex Attracted Young People's Negotiations of Intimacy, Visibility, and Risk on Digital Hook-Up Apps. *Social Media + Society*, 2(4), 205630511667288. <https://doi.org/10.1177/2056305116672887>
- Amundsen, R. (2021). 'A male dominance kind of vibe': Approaching unsolicited dick pics as sexism. *New Media & Society*, 23(6), 1465–1480. <https://doi.org/10.1177/1461444820907025>
- Austin, J. L. (1962). *Speech acts*.
- Barker, M. J., Gill, R., & Harvey, L. (2018). Mediated intimacy: Sex advice in media culture. *Sexualities*, 21(8), 1337-1345.
- Batiste, D. P. (2013). '0 Feet Away': The Queer Cartography of French Gay Men's Geo-social Media Use. *Anthropological Journal of European Cultures*, 22(2), 111-132.
- Birnholtz, J., Fitzpatrick, C., Handel, M., & Brubaker, J. R. (2014). Identity, identification and identifiability: The language of self-presentation on a location-based mobile dating app. *Proceedings of the 16th International Conference on Human-Computer Interaction with Mobile Devices & Services - MobileHCI '14*, 3–12. <https://doi.org/10.1145/2628363.2628406>
- Birnholtz, J., Rawat, S., Vashista, R., Baruah, D., Dange, A., & Boyer, A.-M. (2020). Layers of Marginality: An Exploration of Visibility, Impressions, and Cultural Context on Geospatial Apps for Men Who Have Sex With Men in Mumbai, India. *Social Media*, 11.

- Blackwell, L., Chen, T., Schoenebeck, S., & Lampe, C. (2018). When online harassment is perceived as justified. In *Proceedings of the International AAAI Conference on Web and Social Media* (Vol. 12, No. 1).
- Brake, E. (2011). *Minimizing marriage: Marriage, morality, and the law*. Oxford University Press.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Brown, B. A., Sellen, A. J., & O'hara, K. P. (2000). A diary study of information capture in working life. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 438-445).
- Campaioli, G., Testoni, I., & Zamperini, A. (2022). Double blue ticks: Reframing ghosting as ostracism through an abductive study on affordances. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 16(5). <https://doi.org/10.5817/CTONY022-5-10>
- Carter, S., & Mankoff, J. (2005). *When Participants Do the Capturing: The Role of Media in Diary Studies*. 10.
- Cecchinato, M. E., Cox, A. L., & Bird, J. (2017, May). Always on (line)? User experience of smartwatches and their role within multi-device ecologies. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (pp. 3557-3568).
- Cecchinato, M. E., Cox, A. L., & Bird, J. (2015, April). Working 9-5? Professional differences in email and boundary management practices. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems* (pp. 3989-3998).
- Coles-Kemp, L., Jensen, R. B., & Heath, C. P. (2020, April). Too much information: Questioning security in a post-digital society. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (pp. 1-14).
- Cui, Y., Yamashita, N., Liu, M., & Lee, Y.-C. (2022). 'So close, yet so far': Exploring sexual-minority women's relationship-building via online dating in China. *CHI Conference on Human Factors in Computing Systems*, 1–15. <https://doi.org/10.1145/3491102.3517624>
- de Wiele, C. V., & Campbell, J. F. (2019). 11: From swiping to ghosting: conceptualizing rejection in mobile dating. *It Happened on Tinder*, 13, 158.
- D'Urso, S. C. (2006). Who's watching us at work? Toward a structural-perceptual model of electronic monitoring and surveillance in organizations. *Communication Theory*, 16(3), 281-303.

- Fansher, A. K., & Eckinger, S. (2020). Tinder Tales: An Exploratory Study of Online Dating Users and Their Most Interesting Stories. *Deviant Behavior*, 42(9), 1194–1208. <https://doi.org/10.1080/01639625.2020.1734170>
- Frampton, J. R., The Ohio State University, USA, Fox, J., & The Ohio State University, USA. (2021). Monitoring, Creeping, or Surveillance? A Synthesis of Online Social Information Seeking Concepts. *Review of Communication Research*, 9, 1–42. <https://doi.org/10.12840/ISSN.2255-4165.025>
- García-Gómez, A. (2020). Discursive representation of masculinity and femininity in Tinder and Grindr: Hegemonic masculinity, feminine devaluation and femmephobia. *Discourse & Society*, 31(4), 390–410. <https://doi.org/10.1177/0957926520903523>
- Gibbs, M., Meese, J., Arnold, M., Nansen, B., & Carter, M. (2014). #Funeral and Instagram: death, social media, and platform vernacular. *Information, Communication & Society*, 18(3), 255–268. <https://doi.org/10.1080/1369118X.2014.987152>
- Goffman, E. (1971). *The presentation of self in everyday life*. A Pelican book.
- Goffman, E. (1955). On Face-Work: An Analysis of Ritual Elements in Social Interaction. *Psychiatry*, 18(3), 213–231. <https://doi.org/10.1080/00332747.1955.11023008>
- Grimani, A., Gavine, A., & Moncur, W. (2022). An evidence synthesis of covert online strategies regarding intimate partner violence. *Trauma, Violence, & Abuse*, 23(2), 581–593.
- Guha, S., & Birnholtz, J. (2013). Can you see me now?: Location, visibility and the management of impressions on foursquare. *Proceedings of the 15th International Conference on Human-Computer Interaction with Mobile Devices and Services - MobileHCI '13*, 183. <https://doi.org/10.1145/2493190.2493209>
- Hancock, J.t., Birnholtz, J., Bazarova, N., Guillory, J., Perlin, J., and Amos, b. (2009). Butler lies: Awareness, deception and design. *Proc. ACM CHI. 2009*, 517-526.
- Hermida, A., & Hernández-Santaolalla, V. (2020). Horizontal surveillance, mobile communication and social networking sites. The lack of privacy in young people's daily lives. *Communication & Society*, 33(1), 139–152. <https://doi.org/10.15581/003.33.1.139-152>
- Hernández-Santaolalla, V., & Hermida, A. (2020). Malicious Social Surveillance and Negative Implications in Romantic Relationships among Undergraduates. *Surveillance & Society*, 18(3), 387–399. <https://doi.org/10.24908/ss.v18i3.13149>
- Hogan, T. P., & Brashers, D. E. (2009). The theory of communication and uncertainty management: Implications from the wider realm of information behavior. In T. D. Afifi

- & W. A. Afifi (Eds.), *Uncertainty, information management, and disclosure decisions: Theories and applications* (pp. 45-66). New York: Routledge.
- Lampe, C., Ellison, N. B., & Steinfield, C. (2006). A Face(book) in the crowd: Social searching vs. social browsing. In *Proceedings of CSCW-2006* (pp. 167–170).
- LeFebvre, L. E., & Fan, X. (2020). Ghosted?: Navigating strategies for reducing uncertainty and implications surrounding ambiguous loss. *Personal Relationships*, 27(2), 433-459.
- LeFebvre, L.E., Rasner, R. D., & Allen, M. (2019b): ‘I Guess I’ll Never Know...’: Non-Initiators Account-Making After Being Ghosted, *Journal of Loss and Trauma*, DOI: 10.1080/15325024.2019.1694299
- LeFebvre, L. E., Allen, M., Rasner, R. D., Garstad, S., Wilms, A., & Parrish, C. (2019a). Ghosting in emerging adults’ romantic relationships: The digital dissolution disappearance strategy. *Imagination, Cognition and Personality*, 39, 125–150. <https://doi.org/10.1177/0276236618820519>
- Levordashka, A., & Utz, S. (2016). Ambient awareness: From random noise to digital closeness in online social networks. *Computers in human behavior*, 60, 147-154.
- Licoppe, C. (2016). Mobilities and urban encounters in public places in the age of locative media. Seams, folds, and encounters with ‘pseudonymous strangers’. *Mobilities*, 11(1), 99–116.
- Licoppe, C. (2008). Geolocalized Technologies, Location Aware Communities and Personal Territories: The Mogi Case, *Journal of Urban technology* 15(3), pp. 5-24.
- MacDonald, G., & Leary, M.R. (2005). Why Does Social Exclusion Hurt? The Relationship Between Social and Physical Pain. *Psychological Bulletin*, 131(2), 202-223. DOI: 10.1037/0033-2909.131.2.202
- Madianou, M., & Miller, D. (2013). Polymedia: Towards a new theory of digital media in interpersonal communication. *International journal of cultural studies*, 16(2), 169-187.
- Malhotra, N. A., Hussen, T. S., & Fossatti, M. (2022). How to Build a Feminist Internet and Why It Matters. *APRIA Journal*, 4(4), 3-22.
- Manning, J., Denker, K. J., & Johnson, R. (2019). Justifications for ‘ghosting out’ of developing or ongoing romantic relationships: anxieties regarding digitally-mediated romantic interaction. *It happened*, 114.
- Marentes, M., Palumbo, M., Boy, M. (2016). ‘Me clavó el visto’: Young people and waiting scenes in love regarding new technologies. *Astrolabio*, (17), 307-330.
- Marwick, A. E., & boyd, d. (2011). I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience. *New media & society*, 13(1), 114-133.

- Marwick, A. (2012). The public domain: Surveillance in everyday life. *Surveillance & Society*, 9(4), 378-393.
- Muise, A., Christofides, E., & Desmarais, S. (2009). More information than you ever wanted: Does Facebook bring out the green-eyed monster of jealousy?. *CyberPsychology & behavior*, 12(4), 441-444.
- Naderifar, M., Goli, H., & Ghaljaie, F. (2017). Snowball Sampling: A Purposeful Method of Sampling in Qualitative Research. *Strides in Development of Medical Education*, 14(3). <https://doi.org/10.5812/sdme.67670>
- Nezlek, J. B., Wesselmann, E. D., Wheeler, L., & Williams, K. D. (2012). Ostracism in everyday life. *Group Dynamics: Theory, Research, and Practice*, 16(2), 91.
- Oulasvirta, A. (2008). Designing mobile awareness cues. In *Proceedings of the 10th international conference on Human computer interaction with mobile devices and services* (pp. 43-52).
- Oulasvirta, A., Petit, R., Raento, M., & Tiitta, S. (2007). Interpreting and acting on mobile awareness cues. *Human-Computer Interaction*, 22(1-2), 97-135.
- Owens, C., Shrodes, A., Kraus, A., Birnholtz, J., Moskowitz, D. A., & Macapagal, K. (2023). Motivations to start and stop using sexual networking applications among adolescent sexual minority men. *Sexuality Research and Social Policy*, 1-11.
- Paasonen, S., Light, B., & Jarrett, K. (2019). The Dick Pic: Harassment, Curation, and Desire. *Social Media+Society*, 1-10.
- Pancani, L., Mazzoni, D., Aureli, N., & Riva, P. (2021). Ghosting and orbiting: An analysis of victims' experiences. *Journal of Social and Personal Relationships*, 38(7), 1987-2007.
- Park, M., Shin, J., & Ju, Y. (2015). A Taxonomy of Social Networking Site Users: Social Surveillance and Self-surveillance Perspective. *Psychology & Marketing*, 32(6), 601-610. <https://doi.org/10.1002/mar.20803>
- Parisi, L., & Comunello, F. (2020). Dating in the time of 'relational filter bubbles': Exploring imaginaries, perceptions and tactics of Italian dating app users. *The Communication Review*, 23(1), 66-89. <https://doi.org/10.1080/10714421.2019.1704111>
- Pinch, A., Birnholtz, J., Rawat, S., Bhattar, A., Baruah, D., & Dange, A. (2022). 'Someone Else Is Behind The Screen': Visibility, Privacy, and Trust on Geosocial Networking Apps in India. *Social Media*, 15.
- Race, K. (2015). "Party and play": Online hook-up devices and the emergence of PNP practices among gay men. *Sexualities*, 18(3), 253-275 Retrieved from

https://www.academia.edu/6766050/_Party_n_Play_Online_hook-up_devices_and_the_emergence_of_PNP_practices_among_gay_men.

- Reynolds, L., Smith, M. E., Birnholtz, J. P., & Hancock, J. T. (2013). Butler lies from both sides: Actions and perceptions of unavailability management in texting. *Proceedings of the 2013 Conference on Computer Supported Cooperative Work - CSCW '13*, 769. <https://doi.org/10.1145/2441776.2441862>
- Spitzberg, B. H., & Hoobler, G. (2002). Cyberstalking and the technologies of interpersonal terrorism. *New Media & Society*, 4(1), 71–92. <https://doi.org/10.1177/14614440222226271>
- Spyer, J. (2017). *Social Media in Emergent Brazil*. London, UCL Press. <https://doi.org/10.14324/111.9781787351653>
- Stinson, D. A., Holmes, J. G., & He, T. H. (2016). Rejection in romantic relationships. In *Ostracism, exclusion, and rejection* (pp. 172-186). Routledge
- Strate, L. (2004). A Media Ecology Review. *Communication Research Trends*, 23(2), 2-48.
- Strohmayr, A., Slupska, J., Bellini, R., Coventry, L., Hairston, T., & Dodge, A. (2021). Trust and abusability toolkit: Centering safety in human-data interactions.
- Thomas, J. O., & Dubar, R. T. (2021). Disappearing in the age of hypervisibility: Definition, context, and perceived psychological consequences of social media ghosting. *Psychology of Popular Media*, 10(3), 291.
- Timmermans, E., Hermans, A.-M., & Oprea, S. J. (2021). Gone with the wind: Exploring mobile daters' ghosting experiences. *Journal of Social and Personal Relationships*, 38(2), 783–801. <https://doi.org/10.1177/0265407520970287>
- Timmermans, S., & Tavory, I. (2012). Theory construction in qualitative research: From grounded theory to abductive analysis. *Sociological theory*, 30(3), 167-186.
- Tokunaga, R. S. (2011). Social networking site or social surveillance site? Understanding the use of interpersonal electronic surveillance in romantic relationships. *Computers in human behavior*, 27(2), 705-713.
- Wetherell, M., Taylor, S., & Yates, S. J. (Eds.). (2001). *Discourse theory and practice: A reader*. Sage.
- Williams, K. D. (2007). Ostracism. *Annual Review of Psychology*, 58(1), 425–452. <https://doi.org/10.1146/annurev.psych.58.110405.085641>
- Wilson, C., Sheridan, L., & Garratt-Reed, D. (2022). What is Cyberstalking? A Review of Measurements. *Journal of Interpersonal Violence*, 37(11–12), NP9763–NP9783. <https://doi.org/10.1177/0886260520985489>

- Zamperini, A. (2010). *L'ostracismo. Essere esclusi, respinti e ignorati* (Vol. 513, No. PBE-Psicologia, pp. 1-250). Einaudi.
- Zuboff, S. (2019). *The age of surveillance capitalism. The fight for a human future at the new frontier of power*. London: Penguin.

Appendix A: Recruitment

[insert Figure 2]

Figure 2. Recruitment flyer.

“Do you use dating apps? Have you ever rejected someone or being rejected by someone? Help us understanding the limits and possibilities of dating apps. Learn more about this research and how to participate by following this link: bit.ly/DatingRejection. For more information contact (institutional email of researcher).”

The flyer was shared on social media (boards on Reddit and Quora Answers, Facebook and Whatsapp groups, Instagram stories from the researcher’s personal account, and on dating apps (Badoo, Once, happn, Twoo, LOVOO, Blendr, Zoe, Her, Romeo, Grindr, Tinder, Bumble, OkCupid, Feeld, Taimi). Moreover, the invitation to participate was shared by participants with their social networks, as it is typically approached in traditional snowball sampling (Naderifar et al., 2017).

Appendix B

[insert Table 3]

Table 3. Thematic analysis