

February 2023

Exploring facilitators, barriers and concerns of police using social media when investigating missing children

Eleanor Howlings
University of Manchester

Reka Solymosi
University of Manchester, reka.solymosi@manchester.ac.uk

Follow this and additional works at: <https://scholarworks.sjsu.edu/ijmp>



Part of the [Criminology Commons](#), [Medicine and Health Sciences Commons](#), [Psychology Commons](#), [Public Affairs, Public Policy and Public Administration Commons](#), [Social Justice Commons](#), and the [Social Work Commons](#)

Recommended Citation

Howlings, E., & Solymosi, R. (2023). Exploring facilitators, barriers and concerns of police using social media when investigating missing children. *International Journal of Missing Persons*, 1(1), 104. <https://doi.org/10.55917/2769-7045.1003>

This Article is brought to you for free and open access by the Justice Studies at SJSU ScholarWorks. It has been accepted for inclusion in International Journal of Missing Persons by an authorized editor of SJSU ScholarWorks. For more information, please contact scholarworks@sjsu.edu.

Exploring facilitators, barriers and concerns of police using social media when investigating missing children

Acknowledgements

The authors would like to thank the two anonymous reviewers and the editors for their detailed and generous feedback.

Exploring facilitators, barriers and concerns of police using social media when investigating missing children

Authors: Eleanor Howlings¹, Reka Solymosi^{1,*}

¹Department of Criminology, The University of Manchester

*Corresponding author; e-mail: reka.solymosi@manchester.ac.uk; post: room 4.53

Williamson Building, School of Social Science, University of Manchester, Oxford Road, M13 9PL

Exploring facilitators, barriers and concerns of police using social media when investigating missing children

Authors: Eleanor Howlings, Reka Solymosi

Abstract: Missing person investigations involve the collection of information to ensure the person is located as fast as possible, minimising their exposure to harms. Social media is a valuable source of information in police investigations both to learn about the missing person, and to appeal for information to the public. To ensure social media is used safely and effectively, we must understand the concerns and experiences of investigating officers. In this pilot study, we analysed interviews from 8 experts who investigate missing children to identify the facilitators and barriers of using social media. We also identified concerns raised by officers around both immediate and long-term harm which can befall the missing person because of social media use in these cases. We detail these concerns hoping to motivate further research into their understanding and mitigation. We propose some possible avenues for future work around training and around technological solutions, such as exploring text-based machine learning to parse large volumes of text, flag hateful speech, and remove all instances of appeals to ensure individuals' right to be forgotten is respected.

Keywords: missing; police investigation; safeguarding; social media.

Introduction

The role of the police extends beyond crime enforcement and peacekeeping to include activities which help the community manage non-crime problems (Ratcliffe, 2021).

Responding to and investigating missing people is one such activity, that takes up a large proportion of police resources (Shalev Greene and Pakes, 2014). Working with data from an English police force, Shalev Greene and Pakes (2014) estimate the cost of one missing person investigation at £2,415.80. Counting on average 337,640 missing incidents a year in England and Wales (National Crime Agency, 2021) this adds up to an annual cost of £815,670,712. If these investigations can be made more efficient, these costs may be reduced.

Who is a “missing person”? From a policing perspective, someone is considered missing if their whereabouts cannot be established, until they are located, and their well-being (or otherwise) can be confirmed (College of Policing, 2016). From the perspective of the missing person, people go missing for a variety of reasons. Some people may go missing deliberately to escape stressful situations (Huey & Ferguson, 2022) or an abusive home environment (Biehal et al., 2003), others due to physical or mental ill health (Bantry White & Montgomery, 2015; Ferguson, 2021). In most cases, going missing may indicate that the person is in a vulnerable situation, and may be exposed to harm while missing (Hirschel & Lab, 1988).

A special case of missing person incident is when the missing person is a child under 18 years of age (College of Policing, 2014). The focus of this paper is on children for two reasons. Firstly, missing children make up a large proportion (around 60%) of missing incidents internationally (Sidebottom et al., 2020). Second, missing episodes are associated with underlying vulnerabilities such as sexual or criminal exploitation of children (Hayden

and Shalev Greene, 2018), and while they are missing, a child may be at risk of further harms such as sexual assault and physical injury (Biehal et al, 2003; Rees, 2011). Therefore, it is important that police investigations are optimized to locate missing children as soon as possible to protect them from exposure to such harms.

Any police investigation, including investigating missing children, is first and foremost an information gathering process, in which officers collect information and evidence relating to a reported incident and form logical conclusions about what happened (Innes, 2002; Edwards and Urquhart, 2016; Staniforth, 2016). As increasing amounts of information become freely available online through social media platforms (Kaplan and Haenlein, 2010; Leaver, 2013), police officers can use such information in their investigations (Trottier, 2015). Social media platforms may also be used by investigating officers to interact with the public to solicit information (O'Connor, 2017). In the case of missing persons investigations, police may appeal for information about the missing person on their and their associates' social media profiles (Fyfe et al. 2015a), or they may appeal to the public for useful information on these platforms (Ferguson & Soave, 2021; Solymosi et al., 2021).

To ensure effective and ethical use of social media in missing child investigations, some key issues and open problems need to be investigated. In relation to effective use of the wealth of information available online, the problem of "information overload" - the difficulties of parsing the vast amount of data available from social media with limited resources (Brands, 2017) - must be tackled. In relation to ethical use of social media for appeals, concerns about a 'digital footprint' containing sensitive personal information have emerged (Missing People, 2022a). As a result, respecting social media privacy and individuals' right to be forgotten (Myers, 2014; Tromble and Stockman, 2017), particularly in

the case of investigating the vulnerable population of missing children (The London School of Economics and Political Science, 2017) is an important concern. To date, it is not known the extent police are affected by and conscious of these issues with using social media in missing child investigations, and the impact on effective and ethical use of this tool.

To address this, our paper contributes an initial insight into officers' experiences using social media in missing child investigations. Asking law enforcement practitioners to reflect on the facilitators and barriers they face when using social media in this context, we identified quick access and training as key facilitators, and lack of confidence, bureaucracy, and lack of resource available to parse the massive volumes of incoming data as a barrier to effective use of social media. Additionally, officers raised concerns around ethical use of social media, identifying risks posed to the missing child, both of immediate harm from negative backlash from appeals, and of long-term harms from potentially violating young people's right to privacy and right to be forgotten.

Our exploratory findings lay the groundwork for future research to explore opportunities in promoting the facilitators and tackling the barriers to effective use of social media in missing child investigations. We establish the presence of key problems such as the "information overload" problem (too much data to parse with existing resources), and the problem of ethical use, for example considering the harms to the missing child from abusive online comments in response to appeals, and from the "digital footprint" an appeal leaves behind. We suggest future work to consider technological solutions, such as text-based machine learning for automated ways to extract and flag key information from high volumes of incoming 'excess data,' managing abusive comments on appeals, and tracking down all instances of shared and re-shared content once the missing child has been located and the appeal is no longer needed.

Background

Investigating missing persons

Missing person investigations are one of the biggest non-crime police demands (Babuta and Sidebottom, 2018). In 2016/2017, 63% of the total number of reported missing incidents in the UK were of under 16s (National Crime Agency, 2019:7). The number of reported missing children incidents continues to rise each year, increasing by 21% since 2016 (National Crime Agency, 2019). When a child goes missing, they are put at risk to various forms of exploitations, such as being groomed to traffic drugs across county lines (Williams & Finlay, 2019) or sexual abuse (Sharp-Jeffs, 2016). Besides causing risk and trauma to the child and their family, missing persons also demand a lot of police resource. Various cost estimates exist, but it is accepted that £2,415.80 is a realistic estimate of cost of one average investigation (Shalev Greene & Pakes, 2014), making missing person investigations a bigger cost to police resources than either theft or assault (Shalev Greene & Pakes, 2014). Therefore, it is beneficial to the missing child, the family, and the police forces themselves to make the best use of all resources available for these investigations, including social media.

While the investigative process is circular rather than linear, with many actions being taken simultaneously and each action informing subsequent decisions (Newiss, 1999; Salet, 2017), we can consider two stages, based on the work of Fyfe et al (2015b): the ‘initial response’ and ‘further investigation and searching’ stages. Most missing person investigations begin at the moment someone is reported missing, usually through a phone call to a police control room, sometimes in person at a police station (ACPO, 2005b). In the ‘initial response’, police will work to establish a ‘definition of the situation’ to understand whether there is something suspicious about the person going missing, and whether they may

be at risk (Fyfe et al., 2015b). At this stage, officers collect initial information which forms the basis of further investigative actions (Simons and Willie, 2000; ACPO, 2005b, 2010; College of Policing, 2016). Next, in the ‘further investigation and searching’ stage, police search for the missing person in areas of interest, moving beyond their home address and the place they were last seen. In this stage the police collect more detailed information about the missing person, gathering intelligence from CCTV cameras and mobile phone records (Fyfe et al., 2015a) as well as from social media. This searching phase of the process is deemed ‘particularly important’ in missing person investigations as it may lead to the safe recovery of the missing person or yield a clue as to their whereabouts (Newiss, 1999:11). It is at this stage that social media can be best utilised to collect information to achieve this outcome.

Social Media Intelligence

Social media is increasingly adopted in many areas of policing. It can be used for providing information to the public, for engaging and connecting with local communities, and to gather intelligence for investigation (The Police Foundation, 2014). Here we focus on this last use, the collection and analysis of information from social media platforms, known as Social Media Intelligence (Omand, 2012).

In policing, open-source investigation refers to using public information (including social media content not protected by privacy settings) for intelligence and investigations (Trottier, 2015). The NPCC (2015) provides guidance on five levels of open source intelligence capabilities, each requiring a higher level of training and experience than the previous. The levels range from research involving publicly accessible information to those requiring more skill, training, and access. Falling into the lower levels are information provided without the expectation of privacy, including online communities and user-

generated content such as social media sites, video and photo sharing sites and blogs (Staniforth, 2016). Such sources can provide an easy to access wealth of detailed data for an investigation, revealing personal information about users and depicting links with friends and associates (Staniforth, 2016).

Digital evidence includes the use social media to gather any information and evidence relating to ongoing investigations (Egawhary, 2019). However, it also encompasses cases where the police to take a proactive role. Police forces may use social media to conduct appeals for information from the public, to ‘generate information and public awareness to assist the inquiry and to control speculation’ (ACPO, 2010: 49). For example, in the 2011 London Riots, Twitter was used to share images of peoples suspected of taking part in the riots, these images were retweeted over 8,500 times and resulted in the police positively identifying those involved in the riots (Denef *et al.*, 2013). In this way appeals for information on social media can help investigations. In the context of missing children, an appeal for information about a missing person is made with the aims to reach a wider network of people who may be able to help locate that person and to the missing person directly’ (Holmes, 2016:p.20).

Concerns in the use of social media in investigations

Clearly, information available on, or solicited through social media proves important for investigations. However, there are key issues with social media data which can be identified by consulting the relevant literature.

Firstly, investigations in social media require a legal framework (Denef *et al.*, 2012). In the absence of specific guidance, police forces tend to transfer existing regulations that apply to police operations in physical spaces to the online context (Denef *et al.*, 2012). In

England and Wales, most guidance stems from the Association of Chief Police Officers' Good Practice Guides for Digital Evidence (ACPO, 2012; Horsman, 2020). However, this is not strict or specific enough to provide the level of "quality assurance that it once might have been considered to do" (Horsman, 2020:p.5). This is a problem as inadequate guidance on how to use social media results in confusion and misuse of social media by police officers (Spyt, 2017). To address such confusion, this gap in legislation needs to be addressed (Koops, 2013).

Another key concern in this area is around privacy. Since the advent of social media "we have witnessed a continuous erosion of an individual's control over their personal information" (Mayer-Schönberger, 2009:p.100). Information shared online is so readily available to others that it ceases to belong to the individual who posted it. Just because the data are publicly accessible does not mean they should be used without restriction, as people may have legitimate expectations of privacy, even though they (ought to) realise it is publicly available (Koops, 2013). Similarly in relation to publishing information in social media appeals, police must realise that 'information posted on the internet is never truly forgotten' (Walker, 2012:p.259).

While the growing quantities of data available on social media are generally cited as a benefit, the balance can tip the other way; the amount of information available from open source intelligence can easily overwhelm an investigation, providing the officers with a multitude of leads to follow, most of which result in dead ends (Staniforth, 2016). This excess data leads to an "information overload" (Beheshti et al., 2022). Information overload can have negative consequences. For example, police may disengage from certain sources of information entirely (van Steden & Mehlbaum, 2021), or may need to sample (possibly

ineffectively) from the incoming data stream (Trottier, 2015). In many cases, gathering social media intelligence is outsourced to specialist teams, however as there is a high volume of data, and high demand to process them, many forces must rely on local officers for more simple social media investigations, who have limited capacity (Denef et al., 2012).

Finally, while there are clearly many benefits to social media in investigations in principle, when it comes to practice, many investigators perceive major barriers to social media becoming a helpful tool to be used (Spyt, 2017). Investigators cite difficulties such as failure of social media providers to engage with police, lack of legislation granting police powers, challenges keeping up with new forms of social media, and a lack of training (Spyt, 2017). It is important for the effective use of social media in investigations that these issues be understood to that they can be addressed.

Social media in missing person investigations

There is not much research in the domain of social media in missing persons investigations, specifically in cases of missing children. In terms of evaluating the effectiveness of these appeals, there has been no effective evaluation that shows direct links between appeals and being found. Tsoi et al. (2018) explore characteristics of 54 people with dementia who went missing and compare features between those found (n=40) to those who were not. Solymosi et al. (2021) and Ferguson and Soave (2021) explore effectiveness of Tweets in terms of public engagement (likes and retweets), but not ultimate outcome. To date there is no exploration of effectiveness of social media in the case of missing children from a police investigation perspective.

As such, we believe that there is a need to better understand officers' experience in using social media in the investigation of missing children. We want to explore how those working on these cases perceive social media, and to unpack how ethical issues are understood in these processes, and how those may affect how social media does (or does not) get used in investigations of missing children.

The current study

This exploratory paper seeks to understand officers' perceptions and experiences using social media in investigating missing children, to map out the facilitators and barriers experienced by those involved, and to highlight any concerns. As noted above, to date, not much is known about how social media informs investigations of missing children, and we are unaware of key topics in this area for research and for practice. Our study, while small, presents a first look into the experiences of law enforcement personnel, filling this gap in knowledge, and laying the foundation for a better understanding of what is needed to facilitate effective, structured, and safe (and respectful) use of social media in the investigations of missing children.

Methods

To understand officers' perceptions, we conducted qualitative, semi-structured interviews with practitioners involved with missing children's investigations. Expert interviews offer insight into frontline experience to provide a current view of how social media is perceived to play a role (Bogner and Menz, 2009). This study is exploratory in nature and seeks to uncover practitioners' experience with missing children's investigations and their perceptions of the role that social media plays in them. Semi-structured interviews allow for the thoughts and opinions of the experts to be expressed more openly in comparison

to standardized interview models which may encourage more closed answers (Flick, 2014). As not much is known, allowing participants to express their opinions regarding the impact of social media on missing children investigations ensures that rich, detailed data may emerge.

To extract themes from the interviews, thematic analysis was used to identify, analyse and report patterns (themes) within the data (Braun and Clarke, 2006). Thematic analysis was conducted in six phases (Braun and Clarke, 2006). First, the process of transcription (1) offered an opportunity to become familiarised with the data before the generation of initial codes. In the initial coding phase (2) the second author organised the data into ‘meaningful groups’ by attaching one or more labels (codes) to each transcript extract. Following this, the identified codes were collated into broader themes (3). To begin with those themes were as simple as positive and negative views on social media, however, as the analysis moved into phase four, the themes became more refined. This ‘reviewing themes’ phase (4) was completed when the second author had identified clear and distinct themes that cohered together to create a full and detailed picture of the data (Braun and Clarke, 2006: 91) After the initial coding process was completed, the themes and data were reviewed by the first author resulting in discussion of additional codes identified and included in the paper. Those themes were then named appropriately (5), and the analysis culminated in a ‘write-up of the report’ (6) in the form of this paper (Braun and Clarke, 2006: 93).

Sample

In total we conducted 8 interviews. These ranged between twenty and forty-five minutes long. The participants were selected using purposive sampling (Tongco, 2007: 147). Acquiring participants for expert interviews can be challenging as issues such as confidentiality and reputational risk can come into play (Bogner and Menz, 2009; Flick, 2014). This was indeed the case with this study, as several police forces contacted refused to

participate, citing confidentiality concerns and an inability to free up their officer's time for non-police matters, as their reasoning. Through the identification of a few key gatekeepers, eight participants were eventually recruited for the study. Participants were from three different police forces from across England. One participant was retired, the others still serving, one Inspector and the others Detective Constables. Regarding gender, one participant was female, the others male. The interview process was concluded when all officers who had been recruited had been interviewed.¹

Results

In order to understand the impact that social media has on missing children's investigations, as perceived by the investigating officers, the data gathered from semi-structured interviews produced 9 themes across two main topics: 1 – facilitators and barriers to using social media data in investigations, and 2 – concerns around safeguarding.

Facilitators

Officers were most enthusiastic about social media's ability to provide rich and useful information to assist in the location of a missing child; they cited **social media as a source of key information**. Five of the eight officers interviewed described how they check a missing child's social media profiles in the 'further investigation and searching' stage of their investigation. For example, they use social media to obtain information about the missing child's friends, either as a way of opening further lines of inquiry or establishing the potential location of the missing child.

'If you go onto a missing person's profile and they do happen to have their friends shown, that can lead you onto another inquiry and you can find them that way'

(Officer A)

'If they've put pictures of themselves up with people that we know, we now know that they're with those other youths' (Officer E)

As the above statements suggest, social media opens further lines of inquiry to establish the potential location of the missing child. Six of the eight participants mentioned that **open-source training** is required for authorization to view such social media profiles. Open-source training allows officers to view the information available on a social media profile, such as status updates and friends. The training also makes it possible for officers to attempt to contact the missing child directly through the direct messaging feature.

'We can see how open their profile is, we may even friend request them, and we may then just continually keep looking back at their profile and we may directly message them if we can' (Officer G)

Interviewees also mentioned using social media as a **tool to make appeals** for help and information to the public. All interviewees mentioned using this tactic. The participant below discussed the different reasons for conducting a social media appeal.

'It depends [on] which angle you're coming from whether we're looking for information or trying to make contact with that person' (Officer H)

Appeals are used both to ask the public for help and information, and to attempt to contact the missing child themselves in order to encourage them to return home. The decision of whether to use social media appeals is often determined by the risk grading given to the missing child.

'If they are deemed as high risk, we will do our own press releases that will result in

us putting pictures on Facebook and Twitter, if they're medium risk we don't run our own press releases' (Officer E)

'When we very first started [making social media appeals] was considered we were probably diluting the information because we were just putting somebody different on every hour' (Officer D)

Officers felt that putting up too many social media appeals diminishes their effectiveness in capturing public attention. Interviewees also indicated being selective about what information should be included in appeals.

'We'll give a full name but that would be it because giving more information like they're suffering from a mental health crisis, we don't know if that's true, and that's probably online forever' (Officer G)

'The important thing with social media is that you put accurate information out for people, relevant, focused, targeted information so you're seeking the best help you can from members of the public' (Officer F)

The above responses suggest that officers find it important to include only as much information as is necessary to receive the required help from the public.

Four participants talked about using social media appeals to encourage the missing child to make contact with authorities.

'It is very good for forcing people to make contact because they don't like their picture out there, so we'll get phone calls to the office and that helps because we've now got a phone number that they've called from and we know they're alive' (Officer D)

This ability to make contact with the missing child offers an investigative action that may not be possible without social media.

Barriers

Our participants highlighted some barriers to making effective use of social media in their investigations. All our interviewees cited a general sense that the **police are “technologically behind,”** struggling to keep up with rapidly changing social media platforms.

‘There’s a definite huge variety in how literate they [uniformed officers] are with social media’ (Officer G)

‘You do feel like dinosaurs because the level of knowledge that’s required is huge, so every day’s a learning day I think for us’ (Officer B)

Generally, the officers we spoke to feel unable to use the social media platforms used by younger generations. Most officers mentioned using Facebook for both appeals and information gathering, however they noted that Facebook is mostly used by those who are older.

‘We’re well aware of hundreds of others [platforms] that exist but in terms of children at the moment it tends to be Snapchat and Instagram, it tends to be people who are older that use Facebook still’ (Officer E)

Two officers elaborated on the possibility that the police may not be using social media platforms appropriately to find missing children.

‘We don’t utilise it [social media] as well as we should in terms of trying to connect with the young people through that because it is their main form of communication’

(Officer C)

'I think we're missing a bit of a trick because if they're not on Twitter and none of their friends are on Twitter, well we're probably being a bit daft thinking posting them on Twitter is really going to be that fruitful' (Officer G)

These officers are evidently concerned about communicating effectively with the missing child themselves.

Interviewees also cited frustrations stemming from **their lack of access** to many social media platforms. Four officers mentioned that the information that can be accessed through open-source training is very limited.

'With privacy settings everyone just seems so aware of everything now, it's very rare that we'll get a profile we can actually view anything on' (Officer D)

'We're sort of limited to it being an open profile, ultimately we're looking at what you could see yourself' (Officer E)

The limited access to information is compounded by the perception that very few officers are given open-source training in the first place.

'Probably one or two out of the whole team have actually got the sort of training'
(Officer A)

Officers are therefore limited in terms of the information at their disposal, both by lack of training but also by the restricted amount of information on social media that is available to them once they are trained.

Relatedly, interviewees cited **issues with internal bureaucracy**, specifically a disconnect between the communications team conducting the social media appeals and the officers investigating the missing child. Three of the eight participants indicated that the process of setting up a social media appeal could be onerous, involving a lot of back and forth between the communications team and themselves.

'It [the appeal] can take a little while and, when it [the missing child] is high risk, you just want it on there straight away' (Officer A)

'It [the appeal] just gets sent out as a generic post, we certainly don't have a direct link to it' (Officer C)

This suggests a frustration due to the disconnect between the two teams.

Once a successful appeal is made, one of the biggest issues comes from **the excess of data** they may generate. All our participants commented that since social media appeals are aimed at reaching as many members of the public as possible, they result in an extraordinarily large amount of incoming information.

'You get a wealth of information coming in' (Officer F)

'The amount of data that's generated as a result of some of our enquiries is unmanageable' (Officer B)

'...some of them can be 400 -500 comments' (Officer D)

The problem is that the majority of these incoming data are not useful, however they all must be manually checked in order to identify anything that might prove a crucial piece of information leading to the safe return of the missing child.

'Some of that information is not relevant but you do have to check it in case it is, so it can be a hindrance' (Officer G)

'Amongst all that information is the one golden nugget that you want' (Officer F)

Interviewees raised the issue that since all this intel is coming in continuously, it is important to consider how it can be constantly monitored. Officers suggested that usually it would be the force's communications team who monitor the comments, however they may not be constantly available:

'There's an issue when it [the missing child case] isn't high risk or where it's out of hours and our comms teams aren't working so they're not constantly monitored'
(Officer G)

This lack of (or inconsistency in) monitoring drives officers to monitor the comments from their own social media profiles.

'What you end up doing is you're now using your own profile to look at the comments' (Officer D)

'If it's out of hours I tend to monitor it myself but a lot of times it's not picked up'
(Officer A)

The above statements demonstrate that often officers feel forced into using their own social media to monitor the comments without training or authorization, as they believe that some, possibly valuable information coming in from the appeals does not reach the investigating officers.

Concerns

Besides facilitators and barriers to the use of social media for investigation purposes,

our interviewees raised two key concerns around immediate and long-term harm to the missing child: right to privacy and risk to the missing child.

The violation of the **right to privacy** through the impact that a social media appeal can have on a missing child's life after they have returned was discussed by five of the eight officers. Officers highlighted in particular the concern surrounding the missing child's lack of anonymity and right to be forgotten. Officers expressed concerns that current approaches may not best preserve these rights.

"I find it a little intrusive (...) almost perversion of your privacy like an infringement on your right to just have a private life" (Officer B)

'We certainly don't think about the long-term impact on people's privacy' (Officer G)

"at the moment we'll give a full name [in an appeal]" (Officer H)

Further concern was raised that if the child reported a crime later in life, the media may be able to identify them from the social media appeal, despite their right to anonymity at court. It is for this reason that one officer suggests not including children's full names in appeals.

'If I know the missing person then I don't need to know his surname because they're going to release a picture of him anyway, if I don't know them then the surname is no use to me anyway as long as I know what they look like' (Officer G)

Additionally, participants mentioned that information left online can also affect children's futures.

'The future lives of these children could be affected by social media appeals,

prospective employers saying 'you had mental health issues four years ago so I don't want to employ you' (Officer H)

These discussions show that officers are concerned about the adverse effects that social media appeals can have on children, both immediately after their return and in the years that follow. As a solution, one officer suggested working with the missing child once they are located to manage the information which was put out there:

"We should talk to people afterwards and say 'look we've done this on social media you need to know' and I don't think we're doing that" (Officer G)

Existing guidance to mitigate these outcomes suggests that appeals must be removed once the person is located. However, this is not always the case – appeals may be shared and reshared, and it may be difficult to track down all instances of a post. Our interviews revealed officers to be aware of this issue.

"we've left- or other police forces have left previous media appeals live..." (Officer G)

Another concern mentioned by officers was that a social media appeal may put the missing child at **risk of immediate harm**. Interviewees identified two possible situations where an appeal may put the child at risk. First, in child criminal exploitation scenarios, it might draw unwanted attention to the missing child, exposing them to risk of retribution or other harm from their exploiters.

'With county lines kids we're potentially putting him at risk from the drug dealers, we're making him too hot to handle' (Officer D)

Second, the missing child may be subjected to online abuse.

“Very often there’s nasty things said about people” (Officer A)

“We know of these instances where negative comments have had a bad effect on someone and their decision making” (Officer B)

“We’ve seen examples of people making quite rude comments about people and commenting ‘this child has been missing three times in the last year so why are the police even bothering’” (Officer G)

These responses indicate that an appeal can present an immediate danger to missing children, either due to exacerbating child criminal exploitation situation (e.g. county lines), or by negative comments on the posts reaching the child, thereby generating a mental health concern.

Discussion

In this paper we interviewed experts involved in missing child investigations to better understand their experiences with how social media is used in these cases. We identified that social media offers a useful data source for locating missing children in two ways: either by looking at profile information, or by making appeals for information to the public (or to reach the missing person themselves). Open source training was something which our participants saw to be helpful in facilitating their access to and use of social media. On the other hand, our interviewees cited a lack of confidence in police to use the best tools and techniques to make the best use of social media, and a disconnect between the investigating officers and the communications teams, which often lead to officers using their own private social media accounts for example, to monitor the large volumes of data which may come in responses to

appeals.

Concerns around harms to the missing child present the flip side to the coin of the usefulness of social media appeals. Our interviewees cautioned about both immediate and long-term harms which may come to the missing child from these appeals. Specifically, for those missing children involved in criminal exploitation, such as county lines, their prominent public profile from the appeal may make them ‘too hot to handle’ and expose them to risk of harm and violence. Additionally, putting the missing person appeal on social media provides a platform for abusive comments from the public, which may affect the mental health of the missing child, who may already be in a vulnerable mental state.

Concerns around people’s right to privacy lead officers to discuss their worries about the long-term harms that may befall missing children from their personal information, which may contain sensitive details (e.g, mental health) being released into the public domain, and lingering on permanently. While official guidance suggests that social media appeals must be taken down once the missing person is located (Missing People, 2022), the experience of our interviewees showed this is not always done. Indeed, this was found by previous research (Solymosi et al., 2021).

Until now, not much was known about officers’ experiences in using social media in the investigation of missing children. Our sample of interviews, while small, has uncovered some key areas for research and practice to explore. First, we have identified that there is a positive perception of the capabilities of social media appeals for yielding useful information. However there is some lack of confidence in the police’s ability to make best use of this. To better understand where this is coming from, we suggest a review of the training provided to investigating officers, and the confidence it builds. We also wonder whether training covers

the concerns around right to privacy and protecting people from harm, and what can be done about that (for example our interviewees mention an approach to not use surnames, however appeals do contain surnames, so research, discussion, and guidance on what is minimum necessary information to include may be helpful here).

Second, we suggest that future work consider the feasibility of computational solutions to some of the issues raised here. First, an automation of monitoring incoming information in the form of responses to social media appeals can help address the issue of ‘excess data’ and unavailable resources for adequately processing it. Natural language processing algorithms provide automatic summarisation of texts, such as legal documents (Hachey and Grover, 2006), scientific papers (Cachola et al., 2020), and financial news articles (Constantino et al., 1995). The purpose of these algorithms is to facilitate the extraction of key information from large volumes of text. This could be explored to allow to monitor the ‘excess data’ in social media appeals in missing children investigations, and automatically extract those ‘golden nuggets’ which lead to successful location of the missing child. Natural language processing can also help to address the concern of negative comments being made in response to the appeals. For example, previous work has demonstrated the effectiveness of such algorithms in detecting hate speech on Twitter (Fox, 2020). Algorithms could be applied to automatically flag abusive comments made in response to appeals and remove them before it can cause harm for the missing person. Automated text and image recognition algorithms can further be used to monitor and possibly automate the removal of appeal posts once the missing person has been found. Issues around non-traditional sharing of social media posts may make this process a difficult problem to solve, but it is important for the many reasons raised in our interviews and detailed in our results section to preserve the missing person’s right to privacy.

Our study is not without limitations. We recognise that our sample is small, and therefore what we present is a pilot study, with the aim to motivate future research. We cannot say that our conclusions are representative of the experiences of investigating officers across the country. However, the key concerns highlighted by our sample do echo those raised by the extant literature and serve to build an evidence base to understand how social media can be used in missing persons investigations, what measures can be done to improve officers' efficiency and capacity and confidence in using this, and most importantly address the key concerns of maintaining privacy and safeguarding from harm this already vulnerable population. Bias is impossible to fully eradicate in research, however, an awareness of its impact on the data collected is crucial to conducting an effective research study (Gilbert and Stoneman, 2015). Asking police officers to share their opinions regarding police practice opens the possibility of bias from the participants as they may have felt duty bound to present the police in a positive light. Potential bias should be kept in mind when interpreting our results.

Conclusion

This study highlighted the experience of officers' use of social media when investigating missing children. We found that social media can be a source of intelligence both by looking at the missing child's profile information, and by making appeals for information to the public. Yet, there are concerns around lack of access, bureaucracy, and a lack of trust in police knowledge of social media, as well as a struggle to parse large volumes of incoming data which act as barriers to effective use of such intelligence. Officers expressed concerns around harms to the missing child both immediate harms from potential exploiters seeing the appeals and from hateful comments online, and long-term harms from

their personal information being in public domain.

We suggest a two-pronged approach to address these issues. First, a review and elaboration of existing training provided to investigating officers. Second, the feasibility of computational solutions should be explored. Specifically, future work should consider applying text-based machine learning approaches to extracting key information from large volumes of text, flagging and removing hateful speech, and tracking down all instances of shared and re-shared appeals to ensure deletion of personal information and an enforcement of individuals' right to be forgotten.

Overall, our pilot study highlights key facilitators, barriers, and concerns around the use of social media in investigating missing children. Our findings provide a starting point for better understanding how to support officers in using social media effectively and ethically, making use of the wealth of available data while maintaining privacy and safeguarding from harm this already vulnerable population.

References

ACPO (2005a) *Guidance on the management, recording and investigation of missing persons* [online]. Available:

www.gpdg.co.uk/pact_old/pdf/MissingPersonsInteractive.pdf [Accessed: 22 Sept 2022]

ACPO (2005b) *Practice Advice on Core Investigative Doctrine, National Centre for Policing Excellence*. Available: <https://library.college.police.uk/docs/acpo/Core-Investigative-Doctrine.pdf> [Accessed: 22 Sept 2022]

ACPO, 2010. *Guidance on the management, recording & investigation of missing persons* [online]. Wyboston: National Centre for Policing Excellence. Available:

www.npia.police.uk/en/17187.htm [Accessed 22 Sept 2022]

- Bantry White, E., & Montgomery, P.** (2015). Dementia, Walking Outdoors And Getting Lost: Incidence, Risk Factors And Consequences From Dementia-Related Police Missing-Person Reports. *Aging & Mental Health*, 19(3), 224-230.
- Biehal, N., Mitchell, F., & Wade, J.** (2003). *Lost From View: Missing Persons in the UK*. Policy Press.
- Beheshti, A., Ghodrathnama, S., Elahi, M., & Farhood, H.** (2022). *Social Data Analytics*. CRC Press.
- Bogner, A. & Menz, W.** (2009) 'The Theory-Generating Expert Interview: Epistemological Interest, Forms of Knowledge, Interaction', in Bogner, A. and Menz, W. (eds) *Interviewing Experts*. Hampshire: Palgrave Macmillan, pp. 43–80.
- Brands, A.** (2017) 'Towards a Social Media Quick Scan' Masters Thesis in Human-Machine Communication submitted to University of Groningen, the Netherlands. Available: <https://fse.studenttheses.ub.rug.nl/15794/1/AI-MHMC-2017-A.Brands.pdf> [Accessed: 22/07/2022]
- Braun, V. & Clarke, V.** (2006) 'Using thematic analysis in psychology', *Qualitative Research in Psychology*, 3(2), pp. 77–101.
- Cachola, I., Lo, K., Cohan, A., & Weld, D.** (2020). TLDR: Extreme summarization of scientific documents. In *Findings of the Association for Computational Linguistics: EMNLP 2020*, pp. 4766–4777.
- College of Policing** (2014). Key definitions. Available: <https://www.app.college.police.uk/app-content/major-investigation-and-public-protection/child-abuse/key-definitions/#child> [Accessed: 17 December 2021].
- College of Policing** (2016) *Missing Person Investigations, Authorised Professional Practice*.

Available: <https://www.app.college.police.uk/app-content/major-investigation-and-public-protection/missing-persons/missing-person-investigations/> [Accessed: 25 June 2019].

- Costantino, M.,** Collingham, R. J., & Morgan, R. G. (1995). *Natural Language Processing In Finance: Automatic Extraction Of Information From Financial News*. Laboratory for Natural Language Engineering, Department of Computer Science (University of Durham, UK, 1995)
- Crump, J.** (2011) 'What Are the Police Doing on Twitter? Social Media, the Police and the Public', *Policy & Internet*, 3(4), pp. 1–27.
- Denef, S.,** Kaptein, N., Bayerl, P.S, & Ramirez, L. (2012, January). Best practice in police social media adaptation. *COMPOSITE - Comparative Police Studies in the EU*. Available: <http://hdl.handle.net/1765/40562> [Accessed 22 September 2022]
- Denef, S.,** Bayerl, P. S. and Kaptein, N. (2013) 'Social Media and the Police— Tweeting Practices of British Police Forces during the August 2011 Riots', *CHI*, 1(1), pp. 1–10.
- Edwards, L. &** Urquhart, L. (2016) 'Privacy in public spaces: What expectations of privacy do we have in social media intelligence?', *International Journal of Law and Information Technology*, 24(3), pp. 279–310. doi: 10.1093/ijlit/eaw007.
- Egawhary, E. M.** (2019) 'The Surveillance Dimensions of the Use of Social Media by UK Police Forces', *Surveillance & Society*, 17(1/2), pp. 89–104.
- Ferguson, L.** (2021). Profiling persons reported missing from hospitals versus mental health facilities. *International Journal of Police Science & Management*, 23(4), 372-384.
- Ferguson, L., &** Soave, V. (2021). # Missing to# Found: Exploring police Twitter use for missing persons investigations. *Police Practice and Research*, 22(1), 869-885.
- Flick, U.** (2014) *An Introduction to Qualitative Research*. London: SAGE.
- Fox, N.** (2020) 'Detection of Hate Speech on Twitter with Text Machine Learning'

Dissertation submitted to Manchester Metropolitan University Faculty of Science and Engineering. Available on request from Nicola Fox.

- Fyfe, N., Parr, H., Stevenson, O., & Woolnough, P.** (2015a). 'To the end of the world': Space, place, and missing persons investigations. *Policing: A Journal of Policy and Practice*, 9(3), 275.
- Fyfe, N., Stevenson, O. and Woolnough, P.** (2015b) 'Missing persons: the processes and challenges of police investigation', *Policing and Society*. Taylor & Francis, 25(4), pp. 409–425.
- Gilbert, N. & Stoneman, P.** (2015) *Researching Social Life*. 4th edn. New York: SAGE Publications.
- Hachey, B., & Grover, C.** (2006). Extractive summarisation of legal texts. *Artificial Intelligence and Law*, 14(4), 305-345.
- Hayden, C., & Shalev-Greene, K.** (2018). The blue light social services? Responding to repeat reports to the police of people missing from institutional locations. *Policing and society*, 28(1), 45-61.
- Hirschel, J. D., & Lab, S. P.** (1988). Who is missing? The realities of the missing persons problem. *Journal of Criminal Justice*, 16(1), 35–45.
- Holmes, L.** (2016) 'Missing Person Appeals: A UK Perspective', in *Handbook of Missing Persons*, pp. 19–35.
- Huey, L., & Ferguson, L.** (2022). 'Going missing' as a maladaptive coping behavior for adults experiencing strain. *Deviant behavior*, 43(1), 17-29.
- Innes, M.** (2002) 'The "process structures" of police homicide investigations', *British Journal of Criminology*, 42(4), pp. 669–688.
- Kaplan, A. M. & Haenlein, M.** (2010) 'Users of the world, unite! The challenges and opportunities of Social Media', *Business Horizons*, 53(1), pp. 59–68.

Koops, B. J. (2013). Police investigations in Internet open sources: Procedural-law issues.

Computer Law & Security Review, 29(6), 654-665.

Mayer-Schonberger, V. (2009) 'Of Power and Time- Consequences of the Demise of

Forgetting', in *Delete: The Virtue of Forgetting in the Digital Age*. New Jersey:

Princeton University Press, pp. 92–127.

Missing People (2022a) 'Your missing situation being public – your ‘Digital footprint’

Available: [https://www.missingpeople.org.uk/get-help/help-](https://www.missingpeople.org.uk/get-help/help-services/publicity/removing-your-digital-footprint)

[services/publicity/removing-your-digital-footprint](https://www.missingpeople.org.uk/get-help/help-services/publicity/removing-your-digital-footprint). [Accessed: 21/07/2022]

Missing People (2022b) 'Removing Publicity' Available:

<https://www.missingpeople.org.uk/get-help/help-services/publicity/removing-publicity>

[Accessed: 02/02/2022]

Myers, C. (2014). Digital immortality vs. “The right to be forgotten”: A comparison of US

and EU laws concerning social media privacy. *Revista Română de Comunicare și*

Relații Publice, 16(3), 47-60.

National Crime Agency (2019) *Missing Persons Data Report 2016/2017*. Available:

[https://www.nationalcrimeagency.gov.uk/who-we-are/publications/304-2016-17-](https://www.nationalcrimeagency.gov.uk/who-we-are/publications/304-2016-17-ukmpu-data-report-v1/file)

[ukmpu-data-report-v1/file](https://www.nationalcrimeagency.gov.uk/who-we-are/publications/304-2016-17-ukmpu-data-report-v1/file) [Accessed 22 September 2022].

National Crime Agency (2021) *UK Missing Persons Unit Missing Persons Data Report*

2019/20 Available: [https://www.nationalcrimeagency.gov.uk/who-we-](https://www.nationalcrimeagency.gov.uk/who-we-are/publications/501-uk-missing-persons-unit-data-report-2019-2020/file)

[are/publications/501-uk-missing-persons-unit-data-report-2019-2020/file](https://www.nationalcrimeagency.gov.uk/who-we-are/publications/501-uk-missing-persons-unit-data-report-2019-2020/file) [Accessed: 23

September 2022]

Newiss, G. (1999) *Missing presumed...? The police response to missing persons*. Police

Research Series. Available:

https://popcenter.asu.edu/sites/default/files/problems/runaways/PDFs/Newiss_1999.pdf

[Accessed 22 September 2022].

- NPCC** (2015) *NPCC Guidance on Open Source Investigation/Research*. Available:
https://www.suffolk.police.uk/sites/suffolk/files/003525-16_npcc_guidance_redacted.pdf. [Accessed 22 September 2022]
- Omand, D.** (2012). #Intelligence. London, England: Demos. Available:
<https://demos.co.uk/project/intelligence/> [Accessed: 13/07/2022]
- Osterburg, J. W.** (1968) 'The Investigative Process', *The Journal of Criminal Law, Criminology, and Police Science*, 59(1), pp. 152–158.
- Ratcliffe, J. H.** (2021). Policing and public health calls for service in Philadelphia. *Crime science*, 10(1), 1-6.
- Rees, G.** (2011). Still running 3. *The Children's Society. Retrieved, 10*. Available:
https://static.aviva.io/content/dam/aviva-corporate/documents/newsroom/pdfs/newsreleases/2012/Still-Running-3_Full-Report_FINAL.pdf [Accessed: 22/07/2022]
- Renze S.** (2017) 'Framing in criminal investigation: How police officers (re)construct a crime', *Police Journal*, 90(2), pp. 1–13.
- The London School of Economics and Political Science** (2017) *A Guide to Social Media Platforms and Demographics*, Digital Communications. Available:
<https://info.lse.ac.uk/staff/divisions/communications-division/digital-communications-team/assets/documents/guides/A-Guide-To-Social-Media-Platforms-and-Demographics.pdf> [Accessed: 22/07/2022]
- Shalev Greene, K., & Pakes, F.** (2014). The cost of missing person investigations: Implications for current debates. *Policing: a journal of policy and practice*, 8(1), 27-34.
- Sharp-Jeffs, N.** (2016). Hidden links? Going missing as an indicator of child sexual exploitation. In *Missing persons* (pp. 38-47). Routledge.

- Simons, A. B., & Willie, J.** (2000). Runaway or Abduction: Assessment Tools for the First Responder. *FBI Law Enforcement Bulletin*, 69(11), 1-7.
- Solymosi, R., Petcu, O., & Wilkinson, J.** (2021). Exploring public engagement with missing person appeals on Twitter. *Policing and Society*, 31(7), 798-821.
- Spyt, W. S.** (2017) *Social Media and Police investigations: Understanding the strategies that officers pursue when they encounter social media in their investigations*. PhD Thesis submitted to the University of Portsmouth. Available:
https://pure.port.ac.uk/ws/portalfiles/portal/11141160/Thesis_Prof_Doc_Wojciech_Spyt_31_05_18.pdf [Accessed: 22/07/2022].
- Staniforth, A.** (2016) 'Chapter 3 Police Use of Open Source Intelligence: The Longer Arm of Law', in Akhgar, B., Bayerl, P. S., and Sampson, F. (eds) *Open Source Intelligence Investigation: From Strategy to Implementation*. Cham: Springer International Publishing, pp. 21–32. doi: 10.1007/978-3-319-47671-1_5.
- Tongco, M. D. C.** (2007) 'Purposive Sampling as a Tool for Informant Selection', *Ethnobotany Research and Applications*, 5(1), pp. 147–158. doi: 10.17348/era.5.0.147-158.
- Tromble, R., & Stockmann, D.** (2017). Lost umbrellas: Bias and the right to be forgotten in social media research. *Internet research ethics for the social age: New challenges, cases, and contexts*, 75-91.
- Trottier, D.** (2015). Open source intelligence, social media and law enforcement: Visions, constraints and critiques. *European Journal of Cultural Studies*, 18(4–5), 283–304.
- van Steden, R., & Mehlbaum, S.** (2022). Do-it-yourself surveillance: The practices and effects of WhatsApp Neighbourhood Crime Prevention groups. *Crime, Media, Culture*, 18(4), 543-560.
- Walker, R. K.** (2012) 'The Right to Be Forgotten', *Hastings Law Journal*, 64(1), pp. 257–

286.

ⁱ Ethical approval was granted for this study by the University of Manchester, with participation relying on informed consent and the opportunity to withdraw at any time (no participants exercised this). Review reference: 2019-6943-10833.