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From Public Participation in Neighbourhood Policing to testing the limits

of Social Media as a tool to increase the flow of Community Intelligence

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CHAPTER ONE: INTRODUCTION

In his first major speech as Her Majesty's Chief Inspector of Constabulary, Policing in the New Dynamic Environment (2013), Sir Thomas Winsor set out how he expected the police to operate in a new policing landscape. With echoes of previous Inspectors of Constabulary, for whom intelligence was the 'life blood of the modern police service' (HMIC, 1997, p. 1), for Sir Thomas intelligence was the 'oxygen of policing' (Winsor, 2013). Situating intelligence as a product for consumption by *policing* rather than the *police* service might have signalled a significant change in the perspective of the inspectorate about intelligence, the police after all do not operate in a vacuum and do not have the sole responsibility for social control (Morgan, 2011). His subsequent comments, though, concerning the value of information as the 'lifeblood of police accountability', suggest this was not what he intended to convey (Winsor, 2013).

The framing of intelligence as a product that is produced by the police, owned by the police, for consumption by the police is a perspective that has a considerable history (ACPO, 1975, 2005; HMIC, 1997; Pearce, 1978; Ratcliffe, 1986b). This view of intelligence is evident in an early police definition of the intelligence process where the concepts of analysis, evaluation and ownership were formally introduced; in order to produce intelligence from information it must be 'analysed, evaluated and subsequently disseminated for necessary action by operational officers' (ACPO, 1975, p. 6). Intelligence then is a 'mode of information' (Innes, Fielding, & Cope, 2005, p. 42), that exists within 'a boundary between it and the environment' (Gill, 1998, p. 304). Navigation between modes necessitates the linear application of 'defined evaluation and risk assessment' (ACPO, 2005, p. 11); through standards set by the police for use by police. The consequence of the police intelligence system is an information hierarchy, 'where information flows upwards in data pyramids' (Sheptycki, 2004, p. 312), away from the public for use by the police.

To this end, community intelligence has been defined as 'information that when analysed provides insight into the risks posed by and to a particular group of people sharing some facet of common identity' (Innes & Roberts, 2008, p. 250), that can be used to inform the police about the views, needs and expectations of a community and the risks and threats posed to it or by it (Innes, Roberts, & Maltby, 2005). This police-centric view of intelligence is still evident in contemporary attempts to secure a definition of community intelligence (Thomas, 2016).

This research, though, is not simply concerned with the production of intelligence for consumption by the police alone. The review by Her Majesty's Inspectorate of Constabulary (2011) into the 2011 riots highlighted that the traditional view of intelligence, one where information is processed by the police, and analysed by the police, before it is used by the police, is now redundant. The police, in contrast to the public, do not make information available to decision makers until it has been processed into intelligence. During the riots the public as well as the police were using social media to produce and consume information. This significantly increased the volume of information available for analysis. As a result the police system for converting information to intelligence for use by decision makers could not be scaled up to deal with the additional volume of information, and was simply overwhelmed (HMIC, 2011). This raises questions about the mechanisms used to translate information into timely action.

Social media challenges the prevailing industrial practice, one which demands that information must necessarily be analysed before it can be utilised, and one where the police enjoy a monopoly on the use of such intelligence. An information age perspective of community intelligence, and the one that will be used in this research, is closer to the view of information framed by Boisot (1998), where information is simply 'data that modifies the expectations or conditional readiness of an observer' (Boisot, 1998, p. 20). This research is

concerned with the production and consumption of community information for policing as well as the police and as such centres on the production and consumption of information by the public as well as the police. The perspective of community intelligence provided by (Innes, Fielding, et al., 2005) is therefore retained, but the perspective is broadened through the removal of the implicit link to police-defined analysis. Community intelligence in this research is defined as a mode of information that reasonably modifies the expectations or conditional readiness of those taking action to secure community safety.

Setting aside authenticity (Lentz & Chaires, 2007), the Peelian quotation that 'the police are the public and the public are the police' emphasises that the concept of citizen participation in policing has a long history. Citizen participation can of course take many forms; from obedience, to compliance, to co-operation, to co-production (Morgan, 2011; Ostrom, 1978; Simmonds, 2015; Tyler, 1990; Tyler & Huo, 2002). As an advocate for 'the active role of citizens as "coproducers" [sic] of police services' (Ostrom, 1978, p. 102) Ostrom (1978) cautions policy makers against 'a lack of focus on what citizens as coproducers [sic] can accomplish' (Ostrom, 1978, p. 107) for the police. Social capital theorists, though, extend the notion of co-production beyond participation in the provision of services provided by the police. They argue that citizens are part of social networks and the norms of reciprocity and trustworthiness that arise from the social ties that form the social networks have value; and it is citizen participation in policing that translates into 'nice, safe neighbourhoods' (Putnam, 2000, p. 307). In support of this argument Putnam (2000) draws on the criminological theory of collective efficacy (Sampson & Raudenbush, 1999; Sampson, Raudenbush, & Earls, 1997). In this theory 'collective efficacy is a task-specific construct that draws attention to shared expectations and mutual engagement by residents in local social control' (Sampson, 2004, p. 108). This theory places emphasis on shared values and citizen participation, and it supports a

mechanism of policing that builds legitimacy through participatory activity that reflects social values (Sunshine & Tyler, 2003).

The degree to which social ties are valued, and the mechanism through which value is realised by the police though is debated (Herbert, 2006; Ostrom, 1978). Mechanisms to enable co-production have three components; firstly the development of opportunities for co-producing safety, secondly the actual use of those opportunities by citizens, and thirdly the use by police of the information generated from citizens to enhance safety (Meijer, 2014). That the police service values citizen participation is not evident from the mechanisms developed by the police to deliver policing services. These mechanisms have varied from police-centric models such as the crime control or intelligence-led model (Audit Commission, 1993, 1996; Bratton, 1998; HMIC, 1997; Kelling & Coles, 1996) and community-centric models such as Problem-Oriented Policing (Goldstein, 1979, 1990). The paradigm that has remained though is one where, similar to the production of intelligence, the police are at the heart of the production of social control, and community-centric models struggle to sustain a foothold, and even when the police attempt to work with the community they do not successfully achieve reach or scale beyond the usual suspects (Squires & Measor, 2001).

The New Labour government from 2005 sought to reinvigorate and renew community policing delivered under the banner of 'neighbourhood policing' (Innes, 2007). Neighbourhood policing was a territorially organised mode for delivering community policing through which citizens could participate in policing by setting policing objectives and responding with the police to those objectives. The underlying principle of neighbourhood policing was to extract information from the public to use to interpret the policing environment (Tilley, 2008). Although the neighbourhood policing model for the most part remained an 'organisational strategy' (ACPO, 2006, p. 8), it did not describe the way in which

community participation in activities such as information extraction or exchange might be achieved.

The evidence to suggest that information exchange between citizens and the police can be improved, other than through the utilisation of proactive police-centric initiatives is weak (Sherman, 1997). Innes (2006a) uses economic sociologist Mark Granovetter's (1983) work to illustrate that fundamental weakness. Granovetter (1973, 1983) asserts that because weak ties (acquaintances) are less likely to be socially involved with one another than strong ties (close friends) more novel information flows to individuals through weak ties rather than strong ties. However, Innes (2006a) explains that in order to generate information the police seek to instigate strong ties to key individuals located within particular communities rather than in building an extensive social network of weak ties. Whilst it is argued that the use of strong ties is still an important mechanism to activate weak ties (Jack, 2005), the sole focus on strong ties is problematic because 'the more local bridges … in a community and the greater their degree, the more cohesive the community and the more capable of acting in concert' (Granovetter, 1973, p. 1376). The volume and heterophily of weak ties therefore become not just a crucial bridge within and between communities for the diffusion of novel information, but a pre-condition for new information transactions between police and citizens.

Centola (2015) builds on the concept of information diffusion and argues that for new ideas and new behaviours to spread 'moderate levels of [population] consolidation and homophily' (Centola, 2015, p. 1332) are necessary to create broad bridges of overlapping patterns of social relations throughout society. Such patterns facilitate both the initial emergence of a critical mass and the subsequent spread of social reinforcement of new behaviours. Centola (2015) asserts social institutions have a role to support the formation of broad bridges. This necessitates choices being made by the police about whether, or to what extent, to pursue an information diffusion strategy that seeks to maximise the volume and

heterophily of its weak ties to produce more information for the police, or whether to pursue a social diffusion strategy that seeks to change the behaviour of police and citizens through the formation of broad bridges between weak ties to facilitate the exchange and use of information by police and citizens. The police then must determine to what extent they wish to enable greater citizen participation in community policing through the curation rather than the custody of community intelligence.

The rapid increase in weak, or digital ties, as a consequence of the introduction and growth of the internet and social networking sites (SNSs) (D. Boyd & Ellison, 2008), and in particular the advent of the mobile internet through smart phones, provides new opportunities to use technology to increase the volume and diversity of digital bridges between the police and the public. Social media reduces the cost of communication, provides new ways of sharing and interacting with information and, additionally, enables information to be shared directly with the public in real time so that citizens can be directly involved in time critical policing (Meijer, 2014).

However, social media platforms are far from homogeneous (Innes, Roberts, Preece, & Rogers, 2017). Each possesses a particular set of features that defines the nature of content and behaviour of its users. Innes et al. (2017) use the seven social media functional building blocks proposed by Kietzmann, Hermkens, McCarthy, and Silvestre (2011) to illustrate how these features differ for five social media platforms. The Twitter platform emphasises content sharing and discussion through features that enable content propagation across the platform's network and features that indicate the social importance of users and content (Innes et al., 2017). The Twitter platform is therefore likely to have utility for the exchange and collection of community intelligence, and of the available social media platforms, Twitter is also of interest to academic social researchers because of the volume and ease of real-time public data that is available for collection from the platform (Innes et al., 2017). Notwithstanding the

inherent weaknesses of social media data such as its 'low fidelity' (Edwards, Housley, Williams, Sloan, & Williams, 2013) and unrepresentativeness (Miller, Ginnis, Stobart, Krasodomski-Jones, & Clemence, 2015) researchers have used Twitter data to study crisis communication (Yin, Lampert, Cameron, Robinson, & Power, 2012), estimate crime patterns (M. L. Williams, Burnap, & Sloan, 2016), predict crime hotspots (Yang, Heaney, Tonon, Wang, & Cudré-Mauroux, 2017) and build algorithms to monitor community tension (M. L. Williams et al., 2013).

Whether the police can use the research to realise the inherent potential of social media to transform the way information flows between the police and citizens remains to be seen. The police can be enthusiastic and rapid adopters of technology (Manning, 1992). However, as Byrne and Marx (2011) point out, whilst there is a long history of technological innovation in policing (e.g. the telephone, the two-way radio and the automobile), technology is used as a means to an end: to deliver 'coercive social control' (Byrne & Marx, 2011, p. 30). Technological innovation in and of itself 'is insufficient to alter the basic routines and practices of any police department' (Manning, 2008, p. 164). Whilst information technology might have a given capacity to follow a more problem-oriented style of policing, this capacity is not fully utilised and is mainly used for traditional law enforcement (Chan, 2001). This holds true for both hard technology (hardware or materials) and soft technology (computer software and information systems) concerning the strategic use of information to prevent crime (Byrne & Marx, 2011). Lum, Koper, and Willis (2016) found that the failure to exploit the potential of technological innovation in community policing was a consequence of an organisational view of technology framed by traditional and reactive policing approaches. A perspective shared by Chan (2001), who identified how cultural and political factors in addition to technological factors limit the impact of technology in policing. This highlights the importance of examining the potential application of new technology in real-world

environments to evaluate not just the effectiveness of the technology but the willingness of the police to utilise it.

Of course, whilst it is argued that the police have a duty to use information in a way that produces public value (Mayo & Steinberg, 2007; Moore, 1995), they do not do so in a vacuum, and the surveillance studies literature provides a more critical view of how the police might use social media data (Lyon, 2010). Surveillance is an ambiguous term that includes 'the use of technical means to extract or create personal data' (Marx, 2002, p. 12). Byrne and Marx (2011) point out that the use of technology is likely to have 'both intended and unintended consequences for crime and social control' (Byrne & Marx, 2011, p. 29), and that whilst surveillance can entail watching to enhance the care and safety of the watched it can also involve an effort to control those who are watched and permit discriminatory practices such as 'social sorting' (Lyon, 2003, p. 11). Social media analytical tools increase the opportunity for such practices because they enable fine-grained analysis of interactions either in real time or for subsequent analysis (Housley, Webb, Edwards, Procter, & Jirotka, 2017). Social media, then, facilitates both pro-constructive and re-constructive surveillance activity (R. Williams & Johnson, 2004), of individuals and groups which were previously exempt from routine surveillance (Haggerty & Ericson, 2000).

The surveillance literature suggests that whilst the use of social media has the potential to improve the efficiency and effectiveness of community policing it also has the potential to divert resources away from more traditional community policing strategies that may make the public safer without the negative side effects (e.g. disappearance of privacy (Haggerty & Ericson, 2000), increased public distrust (Byrne & Marx, 2011) and the emphasis on crime control (Chan, 2001; Lum et al., 2016; Manning, 1992, 2008)). For Lyon (2010) this raises questions of how to increase the accountability of those who have responsibility for processing such personal data. Of course, the widespread availability of social networking

sites and ubiquitous media have also created new modes of visibility that stretch both the sites of surveillance and its potential objects causing Haggerty, Wilson, and Smith (2011, p. 234) to note that 'policing, traditionally a low visibility activity, has never been more transparent'. Such notions of accountability and transparency add weight to the argument for academic research in this area.

The criminological literature provides a description of the community intelligence process (Lowe & Innes, 2012) but there is dearth of experimental studies that seek to examine how the police might best make use of SNSs to build broad bridges to improve the flow of information between citizen and the police (Madison, Miller, & Worden, 2010). This research explored one of the core challenges in neighbourhood policing, that of facilitating citizen participation through the production and consumption of information, but it did so from a digital perspective. The purpose of this research was to ascertain if the use of social media provides an opportunity to increase citizen participation in neighbourhood policing, to move beyond a police-centric model of intelligence, to increase the exchange of information between citizens and the police. Importantly, the research took place at a unique point in the history of neighbourhood policing and social media: when neighbourhood policing was at its height and the use of social media was still in its infancy. The primary research question was: Does the use of social media increase the volume of information exchanged between the public and the police? In order to answer this question the research first explored two preliminary questions. Firstly, how do the public want to consume information about crime? And secondly, how do the police use social media to provide information?

There are number of considerations though that influenced the approach to this research and the reporting of it here which are helpful to understand. Firstly, the research was conducted in the real-world environment, within which the researcher was a senior police officer working full time and undertaking the research on a part-time basis. This constrained

the research design. Secondly, the research took place in 2010 and 2011 when police forces were at the start of their journey into the use of social media. This meant many of the tools that might be more suited to the research subject were not yet available (see Lub, 2017). Lastly, the researcher for both operational and personal reasons was granted a period of intermission which has resulted in a delay between the completion of the research and thesis submission. Interestingly though, even five years after the research was completed, many of the issues identified in the research remain to be resolved by the police service. It is remarkable how little progress has been made in the police use of social media.

The research is presented in two parts. The first part utilises research developed to meet the needs of both the researcher and the organisation being researched. This organisation accommodated the research in order to develop its approach to the policing of serious and organised crime. For the researcher the research describes and benchmarks the policing landscape within which the subsequent social media research is conducted. The second part of the research, developed purely for the PhD, presents the social media research. Part one consists of one study, and part two of two studies. The studies in part two are made up of five related sub-studies.

The literature review is therefore also presented in two parts. In chapter two the first part of the literature review considers the territory of traditional engagement to understand how neighbourhood policing anticipates that information will be produced and consumed by the actors concerned with its delivery.

Chapter three provides an alternative perspective to the literature review in chapter two, examining the consumption of information by the public within neighbourhood policing. In order to meet the needs of the researched organisation a thematic approach was taken and the perspectives of citizens about the movement of information about serious and organised

crime (SOC) were considered. The SOC study (St1) took a qualitative approach and in total the views of 77 local residents were gathered in the research during four focus groups conducted in 2010.

The second part of the literature review is then be presented in chapter four. It consists of five sections. Section (a) introduces the framework of an information market to situate the existing police information theory and highlight the territory that is complementary to it and the organisation being researched. The framework is used to summarise the findings of the part one literature review (in particular Bullock & Leeney, 2013) and the SOC study (St1). This research was undertaken whilst the police were at the start of their journey into the use of social media, so section (b) describes the ways in which the police at that time used the internet for engagement (which were largely based around the publication of crime maps). Section (c) provides a short history and description of SNSs as a guide for those new to the field. In section (d) a summary of the studies that have been conducted into the use of SNS by the police is provided. The final section sets out an overview of social network theory to crystallise that the key challenge for this research is not so much increasing the volume of weak ties, but creating (and getting noticed) the crucial bridge between weak and strong ties that it is argued is the precondition for citizen participation.

Chapter five examines the first major test of the police use of social media to examine the supply and demand for information during the 2011 riots in preparation for the social media experiment reported in the next chapter. The riots study (St2) in this chapter consisted of a survey of the police forces in England and Wales following the 2011 riots to understand their social media capability at the time of the riots. The results from 23 of the 43 police forces that responded (60%) are reported. The riots study (St2) also examined Twitter data for 19 of the 43 police forces, to provide a description of how information was produced by the police and consumed by the public during, and subsequent to, the 2011 riots.

Chapter six uses a mixed methods approach to report on an experiment using Twitter to examine the production of information by the police and by citizens. The Twitter study (St3) used a randomised controlled trial (RCT) to test whether social media could be used to generate more information than other traditional information-gathering techniques. In effect the treatments in this experiment represented the areas of the information market examined by the literature (in particular Bullock & Leeney, 2013) and the SOC study (St1). The results from experimenting with 2,168 criminal damage crimes reported to one police force in 2012 are reported. The Twitter study (St3) used an analysis of Twitter data to examine whether the use of social media by the force involved in the experiment had changed after the experiment. The analysis compared 87 tweets made by the police force in the four weeks before the RCT with 335 tweets made in the four weeks after the RCT. The results of the criminal damage RCT and the Twitter analysis were then used in a focus group with eight police officers and police staff involved in running the RCT to both help explain the results but also to identify learning about the use of social media that might inform future research or practice and the research conclusions.

The overall discussion and conclusion are conducted in chapter seven and set out how this research contributes to the knowledge about how the police had started to use social media at a unique point in time; the advent of new disruptive technology and the height of neighbourhood policing. This chapter also sets out some of the difficulties of working in the policing environment encountered during the research which is of relevance and importance to the evidenced policing movement. Finally, this chapter considers the original and substantive empirical data from the research and the implications for the police and policing. This research sought to find out whether the use of social media increases the volume of information exchanged between the public and the police. In addition to providing new insight about the production and consumption of information by the police and the public in

neighbourhood policing, this research signposts how the information exhaust, left behind from the use of social media by citizens and police, and refined through this research, is now being used by the police inspectorate (Leeney, 2016) on behalf of citizens to confront the prevailing police-centric paradigm of information.

CHAPTER TWO: LITERATURE REVIEW I – CHARTING THE TERRITORY OF TRADITIONAL ENGAGEMENT

The development of neighbourhood policing

Over the last fifteen years community policing has been reinvigorated, renewed and delivered in the UK under the banner of 'neighbourhood policing'. The core aim of neighbourhood policing can be described as facilitating resident participation in policing (Bullock & Leeney, 2013). Such participation is framed as providing information to the police to process it into community intelligence in order to interpret the policing environment, prioritise problems and direct police resources (ACPO, 2006). To this end communities have been described by Tilley (2008, p. 96) as 'repositories of information'; a source of, and supply of, information for consumption by the police.

Between 2003 and 2005 neighbourhood policing was piloted as part of a National Reassurance Policing Programme (NRPP). Reassurance policing was 'the experimental forerunner' of neighbourhood policing (Innes, 2006b, p. 97) and its framework is evident in neighbourhood policing discourse. A number of commentators have described the drivers of reassurance policing, and later, neighbourhood policing (see Herrington & Millie, 2006; Innes, 2006b; Tuffin, Morris, & Poole, 2006). For Innes (2005) the development of the neighbourhood policing approach was influenced by experiments with reassurance policing by the police service and government concern that the public sector should deliver the services that the public demand; the growth of the plural police service and especially the police community support officer; and the increasing importance of antisocial behaviour as a government and public priority. Neighbourhood policing can therefore also be defined as a 'wholly political construct' (Innes, 2005, p. 158); an overarching term which seeks to bring order and classification to a range of policing reforms. A view echoed by Hughes and Rowe

(2007), for whom neighbourhood policing was an important component of the Labour government reform agenda and 'the latest incarnation of a trend towards reintegrating police and local communities' (Hughes & Rowe, 2007, p. 328).

Neighbourhood and reassurance policing, though, remain concerned with two fundamental challenges; firstly that policing remains rooted in place and the collective efficacy of those who occupy them because, as Weisburd (2008) argues, 50% of crime is concentrated in 5% of places (replicates Sherman, Gartin & Buerger (1989), and the concentration of reported crime incidents at micro places is stable over time (Weisburd, Bushway, Lum, & Yang, 2004). Secondly the foundations of the approach can also be found in the so-called 'reassurance gap' – the observation that whilst official statistics have documented falls in victimisation rates since the mid-1990s people continue to express heightened concerns about crime (Duffy, Wake, Burrows, & Bremner, 2008).

The NRPP then was, in effect, an attempt to bring structure to the work developing around the notion of reassurance following the publication of the influential police inspectorate report Open All Hours (Herrington & Millie, 2006). The report (HMIC, 2001) highlighted how low-level disorder may be more important in shaping people's perceptions of safety than actual crime victimisation. The report stressed the importance of police visibility, accessibility, and participation in tackling this reassurance gap, though it said less about how these three themes might be achieved in practice (Herrington & Millie, 2006; Innes, 2006b).

Instead the NRPP drew on literature reviews of evidence regarding the effectiveness of aspects of community engagement and community policing and was especially informed by the experiences of developing and delivering a form of community policing in Chicago (the Chicago Alternative Policing Strategy) at the centre of which is community-oriented problem solving. In this model, members of the public, together with police and partners, get together

to identify and tackle problems which concern residents (Innes, 2006b; Tuffin et al., 2006). Early Anglo-American community policing efforts were premised in attempts to improve police/minority-ethnic community relations whilst contemporary manifestations of community policing have extended this remit to police/community relations more broadly (Fielding, 2005). Community policing stands as a mechanism to legitimise the relationship between police officers and the citizens that they purport to serve (Bullock & Leeney, 2013). Fielding (2005, p. 460) describes community policing as a 'chameleon concept' which can stand for a range of police approaches and tactics including the long-term assignment of officers to specific geographical beats; the establishment of processes through which the responsibility for crime control is diffused throughout communities; or, the development of mechanisms through which to communicate and consult with the community (Fielding, 2005). For Manning (1991, p. 27) this representation 'sets the police in context, defining them as an essential part of a well-integrated communal whole'. In this sense, community policing, neighbourhood policing and reassurance policing all draw on a representation of the police service as part of a patchwork of strong and stable communities.

The NRPP consisted of three primary elements, comprising: the presence of visible, accessible and locally known authority figures (generally police and police community support officers) in neighbourhoods; resident involvement in the process of identifying problems; and targeted policing activity and problem-solving to tackle the crimes and other problems which mattered most to residents (Tuffin et al., 2006). As the approach was rolled out nation-wide a change of emphasis from reassurance policing to neighbourhood policing becomes evident. However, whilst there may have been differences between reassurance policing and neighbourhood policing – especially that the former was designed to reassure the public whilst the latter is more concerned with reducing crime – ultimately both stress a visible, accessible and responsive police and in this sense are similar (Innes, 2006b).

Information generated by neighbourhood policing

Neighbourhood policing is framed by the police service as an organisational strategy that allows the police to provide familiar and visible policing, and the public to participate in policing (ACPO, 2006, p. 10). The processes through which neighbourhood policing is presumed to generate information are broadly threefold; through the observations and actions of neighbourhood officers embedded in neighbourhoods; through the observations of residents relayed to officers in conditions of greater understanding and trust; and through more formal mechanisms such as public meetings organised by neighbourhood officers (Bullock & Leeney, 2013). In principle, neighbourhood policing should comprise of dedicated neighbourhood policing teams who should work with communities 'to establish and maintain control' (Quinton & Morris, 2008, p. 2). In 2008 the police inspectorate reported that some 3,600 teams were dedicated to neighbourhood policing (HMIC, 2008). These teams were organised around highly localised geographical areas. The neighbourhood policing teams have been expected to spend significant periods of time on the beat or otherwise engaging with communities. As seen, plural policing is also a feature of neighbourhood policing, and police community support officers (PCSOs) have been used especially to provide a uniformed presence in neighbourhoods (Johnston, 2005). The community should have access to police and other neighbourhood officers though a named point of contact. Accordingly, neighbourhood policing teams have been required to make available their contact details and publicise events at which members of the public can meet neighbourhood officers (Bullock, 2010).

The provision of information to the community is also an important component of neighbourhood policing; 'feedback and the simple art of keeping people informed are exceptionally powerful drivers to build trust and confidence' (HMIC, 2008, p. 39). Guidance has had less to say on how this might be achieved in practice, save that it should be 'delivered

by methods to suit that community and within agreed timescales' (HMIC, 2008, p. 39). In practice, the emphasis appears to be less on keeping communities informed, but on reporting back to individual complainants, be it in a meeting or individual setting, and the approach is deemed as successful or not by the police by whether complaints continue to be received or not (Bullock & Leeney, 2013).

Whilst neighbourhood policing is the dominant form of community policing in England and Wales over the last fifteen years, in common with its experimental forerunner reassurance policing, its practice is fraught with difficulties (Tilley, 2008), and neighbourhood policing continues to evolve (Quinton & Morris, 2008). Drawing on Girling, Loader, and Sparks (2000), Innes (2005) argues that one of the reasons why neighbourhood policing may be so difficult to deliver is because the drivers of insecurity are found in broader structural dynamics of social change. Insecurity is shaped by a range of (perceived) threats which may include terrorism, job insecurity and declining social capital. As a result, when citizens are asked to express their views on policing they articulate 'a series of fears about, and hopes for, the political community in which they live and to the insecurities that flow from their sense of place within it' (Loader, 2006, p. 207). Citizen demands for order then are therefore, as noted by Loader (2006, p. 206), unlikely to be 'based upon cool, sober calculations of risk', giving rise to the call for a multitude of interventions to be implemented by the police in the name of neighbourhood policing.

In the absence of agreement, though, between the public and the police about the most pressing problems affecting a neighbourhood, such calls for policing interventions are not likely to arise without generating tension between the public and the police. The nature of this variance is captured through the distinction between problems which are criminal (e.g. burglary and vehicle crime) and problems which affect people's quality of life, such as littering, low level anti-social behaviours and certain traffic-related issues. As Bullock and

Leeney (2013) found, residents prioritise 'quality of life' issues which, despite an acknowledgement of the wide range of problem types that configure citizen feelings of security and that in maintaining social order the police service has a remit to consider these issues (Kelling, 1999), are not necessarily priorities for the police service as an organisation.

How officers reconcile differing perceptions of risk varies. One problem, noted by a number of commentators, has been that 'the image of total objectivity-of impartiality-and of enforcement without fear nor favour' has rendered officers reluctant to determine what should be the greatest concern to the community (Goldstein, 1963, p. 144). Commentators equally argue that there is a risk that police priorities will continue to dominate (Foster & Jones, 2010; Quinton & Morris, 2008), because the police will be reluctant to 'relinquish some of their power to define those issues that they will or will not work on' (Innes, 2005, p. 166), particularly given the concept of 'policing' is indeterminate and it has therefore not always been clear what tactics the police should be concerned with developing and delivering (Tilley, 2008). Morgan (1987) argues that police service defence of operational independence makes it difficult for officers to communicate with citizens about the most serious problems that they face.

Nevertheless, neighbourhood policing expects officers to resolve problems utilising the technologies of 'problem-solving' (Goldstein, 1990) which emphasise the systematic analysis of crime problems, the wide-ranging search for solutions (which should go beyond the enforcement of the criminal law) and evaluation of responses. Drawing on the Chicago model, described previously, neighbourhood officers are expected, through police/community consultation exercises, to identify crime (and other) problems which were priorities for local people. In effect this process amounts to constructing 'a knowledge base about the driver of insecurities in the neighbourhoods' (Innes, 2006b, p. 235). Neighbourhood policing seeks to diffuse responsibility for solving problems to residents and other partners. For New Labour

'effective partnership working was absolutely key to delivering success' (HMIC, 2008, p. 35) and for the Conservative-led coalition the 'Solutions to local problems are often best found within communities, and drawing back the state will allow neighbourhood activists and groups to come forward and play their full role' (Home Office, 2010, p. 36). In practice however, officers demonstrate mixed awareness and understanding of this approach (Bullock & Leeney, 2013), something well-documented in the literature (Bullock, Erol, & Tilley, 2006). Instead, the process through which residents become involved in neighbourhood policing is conceived is simply to report incidents, act as witnesses and give statements in order to facilitate the control of others (Bullock & Leeney, 2013); through the provision of information to the police.

The contemporary understanding of how information is generated in neighbourhood policing is not extensively represented in the literature (although Lowe and Innes (2012) provide a description of a case study concerning the use of technology to support the process of gathering community intelligence). The remainder of this review draws heavily on the work of Bullock and Leeney (2013) which concerned a 2010 study of how neighbourhood policing was operationalised in a police force at the forefront of the development of neighbourhood policing. This has the additional benefit of presenting from the perspective of neighbourhood officers how the practice of neighbourhood policing was delivered in the same police force, and at the same time, that the research in this thesis was conducted, and as such is a useful and important counter-point to interpret the research.

Community policing, upon which neighbourhood policing is based, was born from a reaction against conventional reactive policing (Fielding, 1995). However, research (Bullock & Leeney, 2013) finds that neighbourhood policing serves to generate information firmly rooted in notions of reactive crime control. Reflecting Cope (2004), neighbourhood officers value information they believe will be useful for facilitating the enforcement of the criminal

law; 'real time' information about crime and criminals that can be acted on immediately. As Fielding (1995, p. 162) notes, 'the insistently practical focus of police interest in information prioritises short-term content with a direct pay off. ' Historical information, which may be useful for building up pictures of crime problems over time, is not viewed to be as valuable as information which allows officers to act immediately; decisions 'are in the here and now' and 'immediate' (Manning & Hawkins, 1989, p. 150).

The neighbourhood policing discourse makes much of generating information from residents with which to interpret the policing environment and to help frame police priorities in terms of what is important to and relevant for them. In contrast the assessments that officers make about information render information generated from residents themselves as less valuable than that generated from other sources (Bullock & Leeney, 2013). This perspective seems to be founded in officers' perceptions that most residents, and especially those who will engage with police officers through the neighbourhood policing apparatus, do not have access to the information that they perceive to be most valuable. As Innes, Fielding, et al. (2005, p. 43) note, 'the most trustworthy individuals are the least likely to be in possession of reliable information about ongoing criminality'. The bulk, then, of the information generated through neighbourhood policing is the result of neighbourhood officers' own observations of and actions within communities, and that a minority is generated from direct police interaction with residents. Commentators therefore call for greater community oversight to form a mechanism for structuring the discretionary activities of police officers (Goldstein, 1963; Kelling, 1999).

Information which does originate from police and community interaction is usually derived from the formal police-community engagement mechanisms – the public meetings – rather than, for example, informal encounters during routine patrol and attendance at community events. Public meetings form a primary mechanism in neighbourhood policing to

generate information from residents. To operate neighbourhood policing effectively, the police service must therefore attract the participation of residents. Neighbourhood policing discourse has stressed the need for police-community consultation to go beyond the 'image of the same few people sitting around in a local hall', to ensure that neighbourhood-level engagement is inclusive, and takes an innovative approach to maximising attendance (Home Office, 2010). Guidance has consistently stressed the need to advertise events widely and to show flexibility about the timing and venue of the meetings in order to maximise attendance (ACPO, 2006; HMIC, 2008; Home Office, 2010; Tuffin et al., 2006). However, a well-documented feature of community policing has been the failure to attract such participation. Attendance at panel meetings is generally low, non-representative and characterised by the persistent presence of a small core of residents, professional meeting-goers, who routinely attended consultation meetings (Bullock & Leeney, 2013).

Residents resist the call to work in concert with the police for a range of normative and practical reasons (Casey, 2008). Some residents may feel intimidated, they may only see the enforcement focus of the police service, or there may be historical or cultural factors which shape perceptions of the service. Where residents might be prepared to get involved, they may lack the time or initiative to do so. Research indicates that whilst neighbourhood officers state that low attendance is of concern to them and that they routinely adapt consultation practice in an attempt to increase attendance at meetings, it is not clear that residents are in fact offered innovative opportunities to get involved (Bullock & Leeney, 2013). Rather than think broadly about how residents might be mobilised, officers tend to look to engage established community groups to help address specific sets of circumstances. Resident involvement that results from the mobilisation of pre-existing formal community structures has implications for the nature of participation because these structures proliferate more readily in wealthier, low crime rate areas (Hope, 1995). This raises the question of how to sustain community

involvement where formal structures do not exist or do not thrive, and whether digital tools can provide new opportunities to close the participation gap.

Conclusion

Community policing, whether in the guise of neighbourhood policing or otherwise, has been an omnipresent feature of police reform and its themes, which have crossed time and jurisdictions, are likely to endure. The popularity of the community policing approach remains undented. However, this review of the literature indicates one has to be sceptical about the claims made by advocates of community policing. The reality of community policing, even in a police force that helped construct its contemporary UK form; neighbourhood policing, is a familiar one of conflict between resident and police priorities coupled with low and patchy public participation in the mechanisms of neighbourhood policing.

Participation by the public in neighbourhood policing rarely takes a form other than that of providing information to the police, and that information does not appear to be widely valued by the police. The police value information they believe will be useful for facilitating the enforcement of the criminal law; 'real time' information about crime and criminals. Whilst formal police-community engagement mechanisms, such as public meetings, generate information, these meetings remain poorly attended, and limited to the same demographic. The current attempts to generate more interest, or increase representation from harder to reach groups do not necessarily meet with greater participation. This leaves neighbourhood officers with the belief that the bulk of the valuable information generated through neighbourhood policing is, and will remain, the result of their own observations of and actions within communities.

Ultimately residents have to participate and police decisions and actions have to be transparent, if neighbourhood policing is to act, as it purports, to provide a framework through which residents legitimise their relationship with the police. This literature review indicates that there is a disjoint between the theoretical mechanisms of neighbourhood policing and the way they are actually operationalised by the police. An area for improvement remains the way in which the public participate in policing through the provision of information they have that is valuable and is valued by the police, and the way in which the police provide information that is of value and valued by the public.

There have been very few empirical examinations of the operation of neighbourhood policing that go beyond either mechanisms to systemise the collection of community intelligence (Lowe & Innes, 2012) or the evaluations of the outputs and outcomes of the programme (see Bullock & Leeney, 2013; Mason, 2009; Quinton & Morris, 2008; Tuffin et al., 2006) to consider the information needs of citizens. Understanding the ebb and flow of community intelligence in context is important if academics are to implement proposals to improve neighbourhood policing (Innes, Fielding, et al., 2005). To better understand how the traditional approach to information exchange may be improved it is first necessary to empirically identify how neighbourhood policing is currently practiced and what information, from the perspective of the citizen, might be needed to precipitate an increase their participation in policing.

This research is concerned with whether new media provides a mechanism to relinquish power from the state to the citizen through greater transparency of not just the decisions arising from the discretionary activity of officers, but transparency about the information upon which the decision was based. At the time of the research in 2010 the literature had not considered how social media or other Web 2.0 technologies might be used to develop neighbourhood policing, so did not offer an obvious area of policing from which to

start that journey. The next chapter will continue to examine public participation in policing, using the theme of the exchange of information, but reflecting the reality that neighbourhood officers place most value on information about crime and criminals. The next chapter will also narrow the focus of research from neighbourhood policing in general to that of a specific aspect of neighbourhood policing that has rarely been examined in the literature: the public appetite for information about serious and organised crime.

CHAPTER THREE: STUDY 1 – THE PUBLIC APPETITE FOR SPECIFIC NEIGHBOURHOOD INFORMATION: SERIOUS AND ORGANISED CRIME

Introduction

The literature review described a service locked into the disruption of offending through the arrest of offenders and enforcement of the criminal law, rather than one habitually and systematically focused on working with the public and partner agencies to co-produce neighbourhood security. It revealed that, even in a police force that was at the forefront of the development of neighbourhood policing (Tuffin et al., 2006), officers perceived that there was a significant difference between the rhetoric and reality of neighbourhood policing and that the information generated by police officers and police staff from neighbourhood policing remained firmly rooted in reactive crime control. Officers recognised that this was in contrast to activity they perceived residents valued. They perceived the public prioritised ' quality of life' over 'crime' problems; those problems that were local and visible to them. The literature suggests there remains minimal public participation in neighbourhood policing and little transparency of the information collected and stored by neighbourhood policing; policing appears to be occurring in relative obscurity. The voice of the citizen was less clear in the literature, and the contemporary views of what the public thought about how they should participate in policing and the information they might need in order to do so was not established.

Previous research has indicated that the public have an appetite to consume information about what the police are doing to tackle crime and anti-social behaviour. Interest has been expressed in receiving additional information about neighbourhood policing, police performance, and crime prevention advice (Quinton, 2011). Debate continues about the extent and format of this information. Establishing what information might be useful, usable and used by the public though, whether to facilitate their participation in policing or otherwise, is

not straightforward. Real-world research does not occur in a vacuum and in order to address these research questions and to design a methodology to do so it is first necessary to secure a research environment. To do so the interests of both the researcher and researched organisation need to align to obtain access to the research site and research participants (Robson, 2002). This may necessitate some compromise by the researcher on the specific choice of research subject to utilise opportunities that occur that are of interest to the researched organisation. The development of the 2011 cross-government Organised Crime Strategy (Home Office, 2011) provided the possibility to explore the views of the public about the provision of information about crime. The strategy placed an emphasis on the provision of information to help citizens recognise when they may be vulnerable to serious organised crime and in turn to take steps to prevent victimisation. The proposed strategy also stressed the need for the state response to serious organised crime to be supported by local communities. The strategy used a conceptual framework which was first developed for counter-terrorism; CONTEST (Home Office, 2013, p. 25). The framework set by Innes and Roberts (2011), describes four key intervention modes for police and citizens depending on whether it is the police or the community that define or deliver the response. The strategy sought to increase opportunities for community-delivered solutions to serious and organised crime. The lens of serious and organised crime then provided the opportunity to examine how public participation might be increased through the provision of information.

Defining what is, and what is not, a serious organised crime is far from straightforward (see for example Hagan, 2006). Government discourse has drawn attention to 'those involved, normally working with others, in continuing serious criminal activities for substantial profit, whether based in the UK or elsewhere' (Home Office, 2004, p. 7) and 'the definition of organised crime is individuals, normally working with others, with the capacity and capability to commit serious crime on a continuing basis, which includes elements of planning, control

and coordination, and benefits those involved' (Home Office, 2011, p. 8). Whilst, in principle, many crimes could fit into these definitions, certain crimes tend to be viewed as inherently more organised than others for the purpose of contemporary law enforcement. In the UK 'threat assessments' have drawn particular attention to trafficking of controlled drugs; organised immigration crime (people smuggling and human trafficking); financial crime (fraud); and organised acquisitive crime (e.g. armed robbery, road freight crime and organised vehicle theft) (Home Office, 2011, p. 9).

There is also a sizable literature which examines how 'serious' we believe crimes to be, the extent to which we 'worry' about or are 'fearful' of crime (Farrall, Gray, & Jackson, 2007; Jackson, Farrall, Hough, & Bradford, 2008) as well as the degree to which we are 'confident' in the criminal justice system (Bradford et al., 2008; Jackson & Bradford, 2010). Indeed, the British Crime Survey has provided wide-ranging data on public perception about crimes and the criminal justice system in England and Wales since its inception (Parfrement-Hopkins & Green, 2010, p. 11). The extent to which crimes have the potential to generate feelings of insecurity is not straightforward though and some crimes, termed 'signal crimes' (Innes, 2006b; Innes & Fielding, 2002), can have a disproportionate impact on the fear of crime. Despite the efforts which have been made to unpick the factors which shape citizen perceptions about crime (Bradford et al., 2008), research explicitly examining views about serious organised crime is more limited. A telephone survey concerning public perceptions of organised crime has been conducted in Scotland (Ipsos MORI, 2013) which found that one in ten respondents had been personally affected by serious organised crime. The researched organisation in this study, though, wanted to understand the views of the public about serious and organised crime better, and in particular how it could make the more invisible aspects of policing more visible within neighbourhood policing. The aim of this study was to use a conversation about serious and organised crime to examine the subject of community

intelligence from the perspective of the citizen, to inform the design of a subsequent study to improve citizen participation in policing.

Method

In order to use the subject of serious and organised crime to examine how public participation in neighbourhood policing might be increased through the provision of information, the study firstly examined what the public thought was serious and organised crime. It then examined what feelings of insecurity were generated from this type of crime. These questions provided necessary context to finally consider, given the importance of events as an opportunity for participation, what information the police (or any other agency) should provide, and through which mechanism, in the event of a serious and organised crime occurring.

Design (SOC study)

The issue of what the public think about serious and organised crime is underrepresented in the literature so a qualitative approach has been taken. This affords an opportunity to consider in more detail some of the complexity – and contradictions – inherent in citizens' stated views on serious and organised (and other) crime problems. The data source for this research was focus groups. This method was selected after consideration of other qualitative methods such as interview and questionnaire. Focus groups provide the opportunity to explore specific questions through general discussion, but because of the small number of participants they do not provide the opportunity to make statistical estimates about the population (Maxfield & Babbie, 2001). As the objective of this study was to explore rather than to quantify what the public think about SOC, precise generalisation was not necessary to meet the research objective. Interviews are a useful qualitative approach where the views of specific people or groups are sought, and for very sensitive topics. Interviews and focus groups also enable non-verbal communication to be observed which conveys

information that supplements the response (Stewart & Shamdasani, 1990). Interviews can also be easier to manage than focus groups and enable independent responses to be obtained without the influence of other members of the group (Robson, 2002). However, when early on in the discovery process, the presence of other people is of benefit because it generates the opportunity for counterpoint discussion and the opportunity to illuminate latent issues in the discussion; through diverse views focus groups enable ideas to build (Ritchie & Lewis, 2003). Questionnaires enable the views of more participants to be collected than is typically possible through focus groups or interviews, and for a lower cost (Rea & Parker, 2005). This enables the views of participants who may not be prepared to travel to the focus group to be obtained, and removes the risk of moderator bias where the results might be influenced by the provision of cues about what type of answers are desirable (Stewart & Shamdasani, 1990).They can also be useful when anonymity is important (Langley, 1987), and they do not have the attendant risk that the live interaction of interviews or focus groups may lead the researcher to place more faith in the results compared to a statistical summary (Stewart & Shamdasani, 1990). However, the design of a survey to capture views of a complex and fluid concept such as serious and organised crime would be challenging. A survey would also provide little opportunity to interact with participants to enable clarification, probing or qualification of the response or to enable follow up questions to be asked (Stewart & Shamdasani, 1990). These opportunities were considered important at this stage of the research. Focus group was therefore selected as the research method rather than interviews or questionnaires.

Participants (SOC study)

The research was conducted in one county police service in England. The site was selected because this force was at the forefront of the design of neighbourhood policing, being a pilot site for the national reassurance policing programme in 2003-04. The research was conducted in 2010 nearly five years after the national reassurance pilot had concluded, which

provided an opportunity to consider whether the working practices established as part of the reassurance pilot for engagement with the public had survived the test of time. Police inspectorate data indicates the force is similar to the national average for police forces in England and Wales with 77% of its workforce in frontline roles, compared to the national average of 78%, a workforce of 3.2 staff per 1,000 population compared to a national average of 3.6 staff, and 0.04 victim-based crimes per person compared to a national average of 0.05 crimes (HMIC, 2016).

In order to recruit participants for the focus groups the researcher used a list of contacts maintained by the police force communications department and the local authority. Consideration was given to the use of a neighbourhood policing list of 'high knowledge' citizens termed 'neighbourhood sentinels' (Lowe & Innes, 2012, p. 299) or 'key individuals' (Innes & Roberts, 2008, p. 253), but at the time of the research the list was not being systematically or routinely updated and was out of date. The police communications department and local authority list, built over several years, contained the contact details of local residents who had previously indicated they would be prepared to participate in research and consultation. Residents had been contacted through a variety of mechanisms including the annual council tax notification, letters to victims of crime, leaflets and the force website. The list is regularly updated. This provided a broader demographic from which to recruit participants than typically attend public consultation meetings. Whilst the list is not generated randomly it did enable contact to be initiated with segments of the local population, in this case adult residents, and in an attempt to reflect demographic diversity also allowed invitations to be initiated by age. As previously reported the research was being utilised by the police force to provide insight for the development of policy, and the researcher for this thesis. The purpose of the research was therefore described for participants as a police public consultation exercise aimed at generating information to inform the development of a police

communication strategy for serious and organised crime within the wider context of improving confidence in the protective services. In order to collect a diverse set of views from participants, four focus groups were held in different towns of the county police force. This provided the opportunity for participants to be recruited from both urban and rural areas of the force, and representation from each of the three geographical policing areas of the force in the study. The research was authorised by the department responsible for the development of force policy and by the chief officer responsible for operational delivery of policing to tackle serious and organised crime. The force did not operate any other mechanism to consider the ethical implications of research. The police force in this study was the same force as the neighbourhood study reported in Bullock and Leeney (2013). The research was also conducted in the same year as that study. This research was conducted in July and August 2010. In total 77 participants attended the focus groups and volunteered to be part of the research. In keeping with the expectation set by the force when building the list, participants were paid £25 each to cover expenses. It is possible that payment of expenses introduces a bias into the research sample, but the researcher had to balance this disadvantage against the need to secure the attendance of participants. The groups were evenly split in gender, and whilst the groups reflected a range of ages, from 25-75 years old, the majority of the participants were 35-55 years old.

Materials (SOC study)

The force was experienced at using this approach to recruit participants for focus groups, and it also employed staff trained in consultation techniques such as focus group facilitation. This enabled up to four group discussions to be facilitated at the same time. Four venues were therefore selected to accommodate up to 40 people. This enabled the groups to consider the research questions in with an intended group size of eight participants. This is the preferred size for focus groups because it is small enough for all within the group to have time

to contribute to the discussion, but large enough to collect a range of views (Ritchie & Lewis, 2003). The researcher set the focus group questions and produced template materials. Facilitators were secured to support four simultaneous focus groups, and produced sufficient materials to conduct each focus groups.

A short preliminary questionnaire was designed for participants to complete when they attended the focus group at the beginning of the meeting. This provided the benefit of getting participants to think about the issues that would be discussed in the focus group before it started. This was felt important because the concepts might be new for participants. It also provided a practical benefit of keeping participants occupied whilst participants arrived and waited for the focus group to start. The questionnaire consisted of six open questions which asked participants to describe serious and organised crime, rate their level of concern about serious and organised crime, and set out their confidence of the force in dealing with such crime together with asking about what information participants would like in the event a crime occurred where they lived. The questions reflected the questions the facilitators would use in the focus group discussion.

Two scenarios were developed for presentation on posters (A1 size) to be used by facilitators during the discussion, as described below. One was about drug dealing; the other about fraud. Drug dealing was selected because it has been shown to demonstrate high levels of public concern and is associated with wide-ranging harms from the health and social implications for individual users, to the implications for communities, to the wider costs to public services and society (Bullock, Chowdhury, & Hollings, 2009). Fraud was selected firstly because of its prevalence (the Home Office (2011) estimated the cost of fraud as between £20 and £40 billion a year), but also because it is a form of crime viewed to be organised, and prioritised by the British government at the time of the research. The drug-dealing scenario described a large-scale importation of cocaine from Brazil and Ghana, and

the subsequent distribution of the drugs in the region. The investigation took place over two years and involved the use of covert policing tactics. The use of fear, intimidation and violence to control drug dealers in the criminal network was evident in this case. In total, 19 defendants were charged and 17 of those subsequently convicted. The ring leader was sentenced to serve 21 years in prison and to pay an £800,000 asset confiscation order. The other defendants were sentenced in total to over 100 years' imprisonment. The second scenario concerned a series of boiler-room frauds which had been committed in the region and had received local press attention. It involved two perpetrators who cold-called individuals and persuaded them to buy shares in a company which turned out to be overpriced or worthless. Some 'investors' had lost significant amounts of money, including one elderly gentleman who had lost nearly £200,000. Ultimately, the two perpetrators were charged with conspiracy to commit fraud. Both were found guilty and received sentences of 3½ years and 18 months respectively.

Procedure (SOC study)

Potential venues for the focus group were identified together with their availability. The services of four facilitators trained by the force to conduct public consultation were also secured, together with their availability. This enabled the final location, date and time of the focus group to be identified. The researcher briefed facilitators about the purpose of the focus group and the procedure to be followed in the focus group. Participants were invited to attend the focus group using the email contact list, and asked to indicate if they would attend. The facilitator was briefed to make clear at the beginning of the focus group what the purpose of the focus group was, to ensure that the participants were put at ease, and to ensure that the focus group understood a recording of the discussion, with their consent, would be made. On arrival at the focus group venue, participants confirmed their consent to be part of the research and completed the short preliminary questionnaire. They were then separated into groups of

approximately eight to conduct the group task. The facilitators were provided with a written list of questions to be covered in the focus group but still given some discretion about how and when they were introduced into the interview to ensure that the conversation flowed. Facilitators first asked participants to identify and discuss definitions of 'serious and organised crime'. This included asking participants how they understood the term serious and organised crime and asked for examples of the sorts of incidents that it might incorporate, the elements that define 'serious and organised', and how such incidents differ from crime in general. They then discussed the nature of their concern about serious and organised crimes which had occurred in their localities. Participants were then asked to reflect on state responses to serious and organised crime incidents and the effect that these have on confidence in the police service and other criminal justice agencies. In doing so, discussion was aided by the use of the two scenarios (one about drug dealing, the other about fraud). Lastly, the participants were asked to consider the nature of the information that they believed the police service (or other organisations) should provide about serious and organised crime both for the purposes of crime prevention and in the event of serious and organised crimes occurring where they lived.

Analysis (SOC study)

Stewart and Shamdasani (1990) assert that as the most common purpose of a focus group is for an in-depth exploration about a topic of which little is known, a simple descriptive narrative is appropriate and more detailed analysis not necessary or efficient. To that end the focus groups were recorded with the consent of participants. However, the acoustics made full audio transcription problematic. A note-taker therefore kept track of the key themes of the discussion and noted down key comments made by participants. The notes enabled a transcript of the focus group to be compiled but in the absence of a full audio transcript and, because this was a benchmarking study content analysis software was

considered but not utilised, instead the 'cut-and-paste' analytical strategy described by Stewart and Shamdasani (1990, pp. 104-105) was used. The researcher debriefed the lead facilitator at the end of the focus group to identify broad themes. The transcripts of the focus group were reviewed and read twice, initially for content understanding and then to identify useful themes from which to create broad categories for analysis. The transcript was then re-examined against these categories in order to answer the research questions, and the content sorted to reflect the categories. Pertinent comments from the discussion were identified to be used in the write up of the results.

Ethical considerations

The police force in this study did not operate any form of governance process to specifically consider the ethical considerations of proposed research. The force has experience, though, in conducting research with the academic community and has an in-house consultation capacity. It therefore has some experience with determining whether research is appropriate. This research was authorised by the department responsible for the development of force policy and by the chief officer responsible for operational delivery of policing to tackle serious and organised crime. Participants in the research all gave their informed consent. Consent to participate in research in general is obtained when recruited to the force list and consent to the specific research obtained at the start of the focus group. The research did not entail access to personal data, or require participants to disclose personal details about crime in front of other participants in the focus group. Participants were reassured their responses would be treated confidentially, and facilitators briefed to intervene in the focus group discussion in the event of inappropriate disclosure of personal details. No personal data was retained about participants in connection with this research. In conclusion, the researcher has taken full responsibility for ensuring the research was conducted in accordance with the British Society of Criminology's statement of ethics.

Results

This research is concerned with improving the production and consumption of information by the public. In order to provide a benchmark from which to consider how such participation in policing might be improved this study used the subject of serious and organised crime to consider what information the public would like to consider about a specific subject: serious and organised crime. This study therefore examined what the public thought was serious and organised crime, what feelings of insecurity were generated from this type of crime, and finally it considered what information the police (or any other agency) should provide, and through which mechanism, in the event of a serious and organised crime occurring.

What do the public think is serious and organised crime

The police and government definitions of serious and organised crime did not necessarily resonate with participants. The broad consensus amongst participants was that any crime, from low-level anti-social behaviour to burglary to kidnap and murder, could all be organised. Participants drew attention to how the *context* in which the crimes occur and the *consequences* of the crime shape whether they should be viewed as serious and organised crime. The structured and profit-driven nature of organised crime, the use or threat of violence, and the role of the Mafia and gangs were stressed by many when participants considered the context of a crime: *'the crime types need to be serious <u>and</u> organised'* (FG/03), *'it must be premeditated and involve more than one person'* (FG/13), *'I rejected random, opportunist crime when making my decisions'* (FG/35), *'the mafia and gang crimes spring to mind'* (FG/04).

For participants in this study the consequence of a crime was a clear factor in shaping how serious they viewed it to be. Crimes which had a physical impact on the victims were viewed as the most serious. It was clear that respondents did not differentiate between crime

types when considering how serious they were perceived to be. Instead, participants drew attention to how it was the nature of the act, coupled with the harm that it caused and to whom that shaped the level of concern that crimes – and other events – generated: *'I base my decisions on whether or not violence was involved'* (FG/50). For citizens then, it is not the state's definition, but context and consequence that counts in determining whether a crime is viewed as serious or organised.

How fearful are the public of serious and organised crime

The potential impact of serious organised crime was evident in participants' responses to the drugs scenario. The violence and intimidation of members of the criminal group by its leaders generated strong emotions and were associated with feelings of insecurity: *'I am frightened by this incident'* (FG/10), *'this frightens me'* (FG/14), and *'I would be scared if it wasn't for my dogs'* (FG/41). However, the accounts of participants in this study drew attention to how notions of seriousness appeared to interact with participants understanding of relative day-to-day crime risks in determining which crime types created most concern. Forms of crime generally considered organised for the purpose of law enforcement did not generate high levels of concern amongst participants in our focus groups. Instead, participants in this study expressed heightened concerns about volume crimes such as burglary and vehicle crimes along with behaviours which fall below the threshold of criminal offence such as forms of anti-social behaviour: *'I worry more about minor crimes in my area'* (FG/25). Participants believed they were more likely to be affected by, or indeed had been affected by, volume crime rather than those rarer violent crimes which have physical consequences.

The majority of participants in this study did not worry about becoming a victim of, or impacted by, serious and organised crime. These crimes were considered to be unusual: *'no I do not feel these are everyday crimes'* (FG/55), and remote: *'I worry about organised crime from London'* (FG/44). Participants felt that they were unlikely to be *directly* affected by

many forms of serious and organised crime. Whilst well aware that victims of organised crime could suffer from wide-ranging harm, participants drew attention to how this is a crime type that the majority will not be directly affected by on a day-to-day level. Participants reported that their concerns were framed in terms of the potential threat to their personal safety. This threat was primarily constructed in terms of the wide consequences of Class A drug dealing for communities, such as acquisitive crime committed by drug users and the associated potential for violence. Their concern was heightened through proximity to places where risk of victimisation was either known: *'I get more nervous in places where you know the crime stats are higher'* (FG/27), or believed to be higher: *'my daughter lives in Liverpool and I notice the difference when I go up there'* (FG/45).

For many participants, serious and organised crime was a risk that could be avoided. Some participants drew attention to how they believed the effects of drug dealing could be circumvented by avoiding certain areas where drug dealing was known to be a problem: *'I don't worry about serious organised crime in my area as I know the places to avoid'* (FG/48). The avoidable nature of organised crime was most evident in the group discussions on the fraud scenario. Whilst participants expressed sympathy for the victims of these frauds, especially those victims who might be considered vulnerable, there was a view that the victims were partly responsible for the crime: *'I don't know .... because on one hand I feel sorry for the victim, but on the other feel he has contributed to it, he was bitten and caught'* (FG/70). So whilst participants did raise concerns about the vulnerability of their elderly friends and relatives, boiler-room fraud was viewed as avoidable for the majority.

The presumption for participants that they were not only at a low risk of being directly affected by serious and organised crime, but able to actively manage that risk, generated strong emotions for those who had nevertheless been affected by serious and organised crime. One participant had a drugs raid on their street where drugs were being manufactured and

stated: *'I was very surprised when we found out about the drugs, it was a very sophisticated system they were using and I never thought that it could happen so close to home'* (FG/11).

For most participants though, perceptions of serious and organised crimes were event-led and mediated through the experiences of other people and media reporting of the events. Whilst these reports did not lead to day-to-day worry about victimisation for participants, media reports of serious organised crime certainly raised broader concerns about British society, and its structures and institutions. Concerns were generally expressed with the competence of the police and other institutions to tackle serious and organised crime, and wider concerns about moral decline throughout society: *'it happens time after time in one particular house and obviously there are issues that the council are not resolving'* (FG/51). The notion that serious and organised crime is representative of wider moral decline was also strongly evident in participants' discussions. Participants expressed their disgust at the boiler-room fraud and drug-dealing examples discussed above. This disgust reflected the impact of the crime on the victims, condemnation of the perpetrators and the wider implications for society as a whole. Participants believed these sorts of crimes were indicative of broader decline in wider social structures which were thought to create the conditions in which serious and organised crime could flourish: *'we used to know everybody in our street years back and we would be able to spot unusual behaviour, now you don't know who your neighbours are'* (FG/05). Serious and organised crimes then were acting in a similar way to signal crimes (Innes & Fielding, 2002), in that some crime has a more disproportionate effect on perceptions of social order than others.

Participants in this study expressed sympathy for the police service which was generally perceived to be doing a good job. Participants tended to assume that the police were doing a good job, in the absence of any information to suggest that they were not: *'the police must be getting it right; I don't see much of that crime around'* (FG/05). Public confidence in

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the ability of the police service to tackle serious and organised crime, though, was somewhat vague, and in the absence of personal experience was based on perceptions and media reports. Prior positive experiences of contact with the police: *'I've received a good service in the past and the standard of communication was excellent'* (FG/10), and negative experiences of police contact: *'I've had numerous issues with the police and it's not worth reporting anything as there is no action or support'* (FG/21), were introduced to support a participant's position. In this sense, when making judgements about confidence, participants did not differentiate by crime classification.

Participants' perceptions about the effectiveness of the police in tackling serious and organised crime did not appear to be informed by any understanding of police activity in the area of serious and organised crime: *'I don't feel particularly well informed about how they are tackling it, but I don't feel particularly concerned that they aren't'* (FG/16). Indeed, several participants said that they could not comment on the issue of the police response to serious and organised crime because they did not feel informed enough: *'I don't know if there is organised crime in my area, either the police are dealing with it or it doesn't exist'* (FG/73).

In keeping with the previous findings about the potential for incidents of serious and organised crime to act as a signal crime, some action taken by the police in response to crimes was noticed by the public: *'there were incidents in my area and I thought it was good the police were knocking on the doors'* (FG/01). Action taken to tackle such crime was welcomed by the public: *'I would rather raids like this happened from time to time. It's reassuring to know the police are there and doing something about these criminals'* (FG/26). Some activity taken by the police to tackle such crime could be recollected for a long time: *'the police did well three years ago when my friend found illegal immigrants in the back of his truck, they ran off but the police found every single one within 48 hours'* (FG/32).

Participants were less confident in the wider criminal justice system. Accordingly, participants believed that the sentences received were too short (at least in the case of the boiler-room fraud): *'It all goes wrong at Court – criminals get off lightly'* (FG/01). Where they did receive lengthy sentences participants believed the perpetrators were likely to be released early anyway: *'is that sentencing a deterrent? doesn't seem so'* (FG/36). They also believed that the proceeds of crime were unlikely to be recovered and, even if they were, that they would not be returned to the victim.

What information do the public want about serious and organised crime

One area in which participants felt that the police could perform better was in the provision of information. Participants were clear that their role in the response to serious and organised crime was to remain vigilant and to report to the police any incidents. However, participants did not feel confident that they were prepared to do so or confident in the action that they should take: *'the police should enlighten the public on what to do to help'* (FG/13), *'they should document the tell-tale signs that we need to be aware of'* (FG/73), and *'the police should point us in the right direction on what to do'* (FG/47). Participants felt there was an information vacuum about serious and organised crime: *'the police could do more in terms of sharing information'* (FG/06), they felt ill-informed about the extent of this criminality, and ill-informed about how they should respond to it.

In return for information passed to the state by the citizen, several participants felt the state had a duty to explain to the citizen, and the wider public, what action they have taken, or are taking, as a result of information that has been provided, and are critical of the police when this does not happen: *'I never find out information, when I see police work I never know what has occurred. I never know why there are helicopters flying over my house late at night'* (FG/34). The appetite for information and expectation that in some circumstances it should be provided varied with context. One participant explained that information was expected from

the police in order that they could update their assessment of their own personal risk of victimisation: *'I'm worried about what they* [criminals] *will do in retaliation'* (FG/19).

Participants expressed an appetite for information about crime (organised or otherwise). However, beyond this general point, participant views on the nature and extent of police-community consultation about crime problems were not straightforward. For one participant: *'I'd like information, I want to know the police are dealing with concerns efficiently and realistically'* (FG/76), whereas for another: *'what we don't know won't hurt us. Unless it's direct to you and as long as police deal with it I do not want to know'* (FG/25). The views of this participant were echoed by others; returning to the theme of their personal risk of victimisation: *'bottom line, I would want to know if there was a drug dealer on the street'* (FG/49). This raises questions about how much information about serious and organised crime is communicated to the public, and the appropriate mechanisms through which to do so to ensure the message or signal is filtered and heard by the public.

Information about serious and organised crime is generally provided to the public from the media. Participants' accounts indicated that this potentially leads to at least two problems. First, participants noted that media coverage can be extensive and ongoing, especially in relation to significant events (such as a murder) which led some to believe that heightened information leads to heightened concerns about crime. One participant noted that *'I do worry about media coverage; it gets so out of proportion'* (FG/74). Secondly, participants drew attention to how the media acts as a filter through which citizens absorb information about crime.

The relationship between media reporting of crime and fear of crime is of course a complex one. However, participants certainly felt that the media distorts through condensing or editing police reports of crime or by overlooking certain information, stressing other

information and changing the tone. Participants felt that media reports of serious and organised crime tend to focus on the more 'graphic' details of the crime and the *modus operandi* of the offenders rather than on the police operation and its outcomes. The consequence for some participants was heightened anxiety, and a distorted personal risk radar.

This led participants to set out a distinct role for the police that contrasts with their expectations of the media, they expected the police to provide and promote 'trusted' information: *'we believe information from the police to a greater extent than any other source'* (FG/06). To that end the police must first filter signal from noise: *'we need the correct info, instead of it leading to Chinese whispers'* (FG/02), and then importantly to actively amplify the signal: *'promote the sharing of information between neighbours'* (FG/48).

Participants stated that they would look to the police for both reassurance and crime prevention and protection advice in respect to serious and organised crime. Given that participants' concerns about crimes seem to be shaped by proximity, it is perhaps unsurprising that proximity to an event would seem to be a critical factor in the need for reassurance from the police service. Participants stated that they would look to the police first and foremost for reassurance in the event of an incident involving serious and organised crime in their *immediate* locality (e.g. in the road that they live in). However, as highlighted in a previous response, it was clear that participants did not necessarily expect to receive information from the police about events in this way. One participant who had witnessed an armed police raid on a house in his street said: *'I don't know if I'd expect the police to update us. I did have a similar incident like this in my neighbourhood once and was annoyed that the police were silent to us after that'* (FG/31).

However, participants certainly stated that they had an appetite for pre and post-event advice about serious and organised crime. Participants tended to accept that they could not be

informed of ongoing police investigations into serious and organised criminals, they recognised that this could compromise ongoing investigations or court cases. However, this was not without tension: *'I would want the police to let me know where the offenders are'*, *'we should be made aware of events quicker'* (FG/57). Participants felt that wider information could be given in order to protect people: *'need a list of dos and don'ts'* (FG/08). Participants suggest that this might include information about the mechanisms through which organised criminals operate in order that people might recognise and avoid it, other crime prevention advice, and information about hotspots.

Participants were asked to reflect on where they would get information from if a serious incident occurred in their neighbourhood, should they want it. There was a general lack of awareness amongst participants about how to access information from the police. Most participants spoke of looking to the media for information, while a minority mentioned telephoning the police directly. When asked how they would like to receive information from the police participants firstly suggested traditional media: *'local information from the local media'* (FG/08), and also other traditional marketing methods: *'flyers through your door'* (FG/60), *'leaflets are a good way forward'*. In addition, participants suggested the use of new media: *'via the internet'* (FG/33), although views were mixed on the likely effectiveness of this approach: *'I never look at the …. website, I feel posting it on the internet would be a waste of time'* (FG/07).

Participants did not report proactively looking for information or answers to questions that reports might raise. Overall, participants relied on passive communication methods to receive information about serious and organised crime and the police response to it. No one considered contacting their local neighbourhood policing team. Indeed, despite the development of neighbourhood policing in England and Wales over the last fifteen years there appeared to be a distinct lack of awareness of these teams and the associated arrangements

which have been put in place to communicate with the public. Many participants discussed how good it would be to have local meetings where communities could share information with the police and were surprised to hear that these already existed.

Whilst it was clear that participants did not expect to get information from the police about serious and organised crime, nor know where to look for it if they did want it, they did indicate preferences for the nature and format of police communication in the event of serious crimes occurring in their communities. Most clearly, participants expressed a desire for communication directly from the police where incidents were local: *'I would like someone to come to my door, or if I was out at least to leave a letter explaining a bit more about it. Because it is that much closer to you, I think it's important to know about it'* (FG/10). This perceived need for information predominately related to concerns about personal safety and reassurance that, in the aftermath of a serious incident, it was safe to go about day-to-day business, that there had been a return to normality. The majority of participants favoured direct face-to-face communication with police officers as a mechanism to communicate information about the event in these circumstances and suggested that this should occur as soon as possible: *'I would want to receive face to face contact if on my street'* (FG/06). The desire for a personal visit was not limited to immediate neighbours; there was an expectation for wider contact which was subjective, and thus difficult to define: *'let people know in a certain radius e.g. the next street'*, *'I would expect a uniformed officer to knock on the door and inform us of a big incident in the local area'* (FG/04).

Over the longer term, participants expressed a desire to know the outcome of any serious and organised crime incident in their locality. Participants suggested that failure to communicate outcomes leaves people wondering whether the offenders have been released and that communities *'make up their own stories'* (FG/33). Participants wanted to know that their elevated risk of victimisation was temporary and now over: *'I want to see that the police*

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have put a stop to it' (FG/20), but also that there has been closure, and that the perpetrators have been held to account: *'nice to know they don't get away with it'* (FG/12), but also that justice has been restorative: *'I'd like to know the money has gone back to the relevant community'* (FG/32).

However, as stressed, most people do not believe they have experienced serious and organised crime, or its aftermath, first hand. The first that most will hear about serious and organised crimes is what is reported in the media. In general, participants were happy to rely on traditional media outlets for police communication about serious and organised crime where incidents occurred outside of their immediate locality. They were more worried about 'everyday crime' and, accordingly, whilst some participants wanted information so that they could help, most wanted information about how to stay safe and prevent victimisation.

Discussion

This research is concerned with improving the production and consumption of information by the public. This study (St1) described the findings of qualitative research that examined the nature of public concern about serious and organised crime. In so doing it considered citizen views of the nature of the police response to serious and organised crime (and other crime) with a focus on the mechanisms for communication and public engagement. The study found a considerable appetite for information about crime, be it serious and organised crime or otherwise, which was rooted in participants' consideration of their relative risk of victimisation. However, this appetite for information did not translate into proactive activity to reach beyond their existing social network, or established channels of communication, to generate information for themselves. The findings are discussed with reference to the literature, and the implications for the practice of neighbourhood policing.

It was clear that respondents did not differentiate between crime types when considering how serious they were perceived to be. Reflecting Jacoby and Cullen (1998), participants drew attention to how it was the nature of the act, coupled with the harm that the act caused, and to whom that harm was directed, that shaped the level of concern that crimes – and other events – generated. On the face of it, crimes which had a physical impact on victims were certainly viewed as the most serious. This reflects the findings of many studies which have examined public perceptions of the relative seriousness of crime types. Drawing on a comprehensive review of the literature in this area, Stylianou (2003, p. 42) noted that 'violent behaviours (causing bodily harm) are generally perceived as the most serious followed by property crime (causing property loss or property damage)'.

However, whilst relative seriousness might provide a context in which concerns about crime were raised and discussed by participants, strongly evident were proximate or situational factors in participants' accounts of why some crimes generated more concern than did others. This echoes studies which have found that 'citizens generate their own subjective risk estimates, which comprise of the interplay between perceived consequence, likelihood, and control' (Jackson, 2011, p. 531). Bullock et al. (2009) argued that concerns about organised crime types seemed to be shaped by an interaction of the severity and probability of impact. For Warr and Stafford (1983, p. 1040) the fear of crime is not simply a function of the perceived outcomes of victimisation, but that citizens are well aware of the relative risk of different types of victimisation: 'perceived risk carries as much weight in producing fear as perceived seriousness'. Certainly, the notion of proximity was very evident in this study, with participants reporting heightened awareness of the crime (and other problem) types they thought they might be at risk from. For citizens then, and for those seeking to develop frameworks to weight counts of crime (Ashby, 2017), it is not the state's definition of serious

and organised crime, but context and consequence that counts in determining whether a crime is viewed as serious or organised.

Most participants in this study (St1) did not recognise that they were at risk of victimisation from serious and organised crime, and accordingly did not report heightened concern about such crimes. They reported that these crimes generated strong emotions associated with feelings of fear and insecurity, but rather than worrying about these crimes, participants remained concerned with day-to-day issues such as environmental problems, nuisance behaviours and lower-level property crimes. This finding corresponds with a wider body of evidence. Concerns about crime in local areas seem to be shaped by citizen perceptions of 'moral consensus, social order, and collective efficacy' (Jackson & Sunshine, 2007). Issues such as anti-social behaviour come to act as indicators of public concern about neighbourhood and moral breakdown, along with the pace and direction of social change (Jackson, 2011). Certainly these kinds of concerns were evident in the accounts of the focus group participants. This finding reflects Bullock and Leeney (2013), who found that officers reported that residents prioritised 'quality of life' over 'crime' problems; the 'local' and 'visible'. There is therefore a risk that 'invisible' serious and organised crimes may not feature on community safety agendas which are oriented around the results of public consultation.

For participants in this study (St1), though the situation was not straightforward, whilst anti-social behaviour would appear to be an indicator of social or moral breakdown, and therefore prioritised by participants for police attention, they did not exclude serious and organised crime as an indicator either. When discussing serious and organised crime general concerns about its effect on societal and moral health were raised. In fact, reflecting Innes and Fielding (2002), the notion that serious and organised crime is representative of wider moral decline was strongly evident in participants' discussions, who felt it exposed weaknesses in

not just the community but in social structures, such as the police and criminal justice agencies.

This has implications for how communities understand their risk of victimisation and potentially how the police and other agencies respond to them. In contrast to government discourse, which describes serious and organised crime as causing 'untold harm on our streets, damage to our communities and nets billions of pounds each year for those responsible' (Home Office, 2004, p. iii) as well as being 'a threat to our national security' (Home Office, 2013, p. 7), it may be viewed by the majority of the public as something that is happening to someone else, somewhere else. At the point though of recognition that serious and organised crime is no longer an experience mediated through others this perception changes profoundly. When citizens recognize that they are now within range of a serious and organised crime; that they have become, or are at a higher risk of becoming, a victim of serious and organised crime, then the strength of the signals emitted by such crime becomes more powerful. Substantial 'signal crimes' are likely to demand a substantial 'signal intervention' (Innes, 2004), which means that in the event of such crime the police, or other law enforcement agency, will need to rapidly mobilise a visible response to deal with that criminality. Given the availability of the sophisticated policing tactics that are utilised to target such criminals and the covert nature of them, such a response may be beyond the capability of local police to deliver.

The relative responsibilities of the police and citizens in the response to serious and organised crime was clear for the participants in this study. They considered that it was the responsibility of the state rather than the citizen to respond to serious or organised crime, and that this was not an area for active citizen participation. Using the Innes and Roberts (2011) model of intervention modes for Prevent policing (see page 66 for a description), and applying it to the response to serious and organised crime, it was clear that participants'

expectations of the appropriate response primarily rest in the 'protective' mode; that of problem and response being police-defined and police-delivered. Their expectations of response would shift to community-defined and police-delivered; a 'type 1 co-production' mode solution, when the criminality has become visible to the community; when it has become a 'signal crime'. Clarity about the respective roles of police and citizen at any given time is likely to be important when producing and consuming information about serious and organised crime; particularly when making judgements about the effectiveness of the police, the utility of information in one mode may not be the same as in another.

Public confidence in the ability of the police service to tackle serious and organised crime, in either mode, was somewhat vague and based on perceptions and media reports. Participants tended to assume that the police were doing a good job, in the absence of any information to suggest that they were not. It was clear that participants' views were not informed by any real understanding of the 'protective' activity that police were undertaking to tackle serious and organised crime. Whilst some 'type 1 co-production' action taken by the police in response to such crimes was noticed by the public, one area in which participants felt that the police could perform better was in the provision of information.

Participants felt there was an information vacuum leaving them ill-informed about the extent of criminality, and ill-informed about how they should respond to it. Participants were clear that their role in the response to serious and organised crime, and other crimes, was to remain vigilant and to report any incidents to the police. In return for information passed to the state by the citizen, participants felt the state had a duty to explain to the citizen, and the wider public, what action they have taken, or are taking, as a result of the information provided. If the police were providing such explanations participants did not credit them with doing so; instead they felt the police were not fulfilling their part of this implicit *information contract*. The first study helps to illuminate why the information contract may be breached.

Officers reported that in practice the information generated from residents was viewed by the police as less useful than that generated from other sources, and less likely to be collected, kept or used to shape police practice. If officers do not systematically value public information it is not surprising that the public feel their expectations about collaborative information exchange are not met by the police.

The notion of a breach of the information contract may come into sharper focus with serious and organised crime, than other crimes, because of the strength of the signal that can be emitted through such crime. Participants' understanding of this type of criminality is context and consequence-dependant, and closely associated with their assessment of their personal risk of victimisation. So whilst in the abstract concern about serious and organised crime is low because it is generally avoidable, when directly affected, for example by actively intervening to pass information to the police, there might be an elevated expectation of an exchange of information because at that time the concern about their personal risk of being affected by serious and organised criminality is elevated. In order to create and update one's own personal risk assessment information is expected from the police, and because of the potential for serious and organised crime to signal significant insecurity, the nature of these expectations are higher than that for other types of crime.

Weaknesses in the mechanisms for information exchange between police and citizen have implications for the current serious and organised crime strategy. The Home Office seems to be putting its faith in ability of neighbourhood policing teams to generate information about crime problems, to resolve those problems, and to actively communicate the nature of risks with local people (Home Office, 2011, p. 28; 2013, p. 67). Yet those officers that must operationalise such plans have a different perspective of citizen participation. In Bullock and Leeney (2013), frontline officers expected the extent of citizen participation in policing as, essentially, to control their own behaviour, report incidents, and

pass information to the police. There is limited empirical evidence regarding the relationship between neighbourhood policing and the generation of information about crime (Innes & Roberts, 2008) from which to assess which position is likely – though, certainly, successive governments continue to put faith in the principle. However, we do know more about the nature of community engagement in neighbourhood policing and, reflecting the findings of other research, this study has demonstrated that citizen understanding of and engagement in neighbourhood policing is not widespread. Citizens in this study (St1) then describe similar relationships with information for both the citizens and the police, a relationship that is based on police-delivered rather than community-delivered solutions. In contrast to the rhetoric of participation set out by politicians and senior police leaders, citizens in the current study describe a role that at best amounts to passive participation. The absence of active participation by citizens in this study raises questions about the principle that neighbourhood policing can act, as is purported, to stimulate a debate about serious and organised crime (or any other crime) problems at the local level.

Nevertheless, this study, like others, has suggested that citizens continue to express an appetite for information about crime, be it about serious and organised crime or otherwise, and the Home Office continues to pursue a strategy of increasing the volume and quality of information about crime and policing that is made available to the public in order to enhance knowledge, transparency and foster greater scrutiny of police performance (Quinton, 2011). The Home Office, together with police services, has made available 'crime maps' which draw together recorded crime statistics for local areas. The information has been made available at least in part to help citizens work with the police to prioritise local problems for attention (Home Office, 2008b). These maps are certainly evolving and more detail is being provided over time (Home Office, 2012b). However, it is unlikely that they will ever, or indeed are intended to ever, provide the level of detail needed to unpick the scale and nature of local

serious and organised crime problems in communities. Given the findings of this study local forces may face an uphill battle in ensuring organised crime receives the local attention it needs.

To fulfil the information contract the challenge is to develop meaningful mechanisms to exchange rather than simply disseminate information. One issue is that citizens seem to consume information about crime passively. They are unlikely to seek it out themselves. Citizens would seem to rely on the media for information rather than, for example, asking the police directly, searching the internet or attending police-community meetings. Media coverage is believed by citizens in this study to be disproportionate, distorted, and filtered, and the result is heightened public anxiety, and a distorted personal risk radar. Quinton (2011, p. 2) suggests that it is a 'myth' that sharing information with the public increases people's fear of crime and provides evidence which suggests that making information available does not increase fear of crime. Indeed, some research has highlighted a positive association between people being well-informed about policing and holding positive opinions of the police and wider criminal justice system (Bradford, Jackson, & Stanko, 2009; Chapman, Mirrlees-Black, & Brawn, 2002). The police (and other agencies) need to recognise the inherent weakness in communication strategies that rely on active engagement by citizens, because this study has shown citizens are passive consumers of information. Instead, law enforcement agencies themselves will need to be proactive in developing ways of communicating with communities, which means looking for new ways to 'push' information to the public rather than simply relying on them to 'pull' appropriate information from 'crime maps'.

In this study (St1) participants set out their aspirations for information disseminated by the police and provided a new perspective from the literature. In Bullock and Leeney (2013) officers described their role as providing *accurate* information. In this study (St1) the public

expected the police to both provide and promote *trusted* information. The distinction between accurate and trusted information is important. For Luhmann (1988, p. 97) 'trust presupposes a situation of risk. Trust is based on a circular relation between risk and action, both being complementary requirements'. Trust is therefore active, it is something citizens must do. Whilst officers may consider their role discharged by the transfer of accurate information, citizens must choose to accept the risk attendant to the information and therefore the consequences of that definition of the future. To this end, the public expected the police to do more than officers described they should do, expecting the police to filter signal from noise, and then amplify that signal so that it is heard above other background noise. In addition to redefining the nature of information provided by the police participants in this study, it also broadened the role of the police from that described by Bullock and Leeney (2013). Whereas officers described their role as building bridges between police and public, the public expanded the police role to both bridging with and between citizens. Given that whilst citizens state they want information, but do not actively seek it, and that citizens set out a role for the police as bridging agents for community-defined and delivered solutions, but do not actively engage themselves unless directly affected, questions remain about whether police services will realistically be able to bring this information together in a meaningful way. Whilst the police have sought to introduce new ways of pushing information to the public using new technology, including mobile phone applications, they require active participation on the part of the citizen, to anticipate their utility and download the application for use in advance of a crime. This study indicates this approach is unlikely to be successful, at least for the demographic of citizens that participated in the research.

Another issue relates to the type of information being disseminated by police. This study draws attention to how citizens look to the police for information for both reassurance *and* crime prevention advice. When people read or hear about serious and organised crime,

their first reaction is to risk-assess what this information means to them, and their family or friends. This is a psychological, and often subconscious, process of interpreting information through their worldview and their proximity to the crime. This means that different people will have different and complex responses to serious and organised crime. In general, people were consistent about the type of information that should be provided; people expected to be told details of the crime, who was involved, how the police are dealing with the issue, how people can protect themselves, and how they can help. Participants also expressed a desire to know the outcome of any serious and organised crime incident in their locality. Participants wanted to know that their elevated risk of victimisation was temporary, and now over, but also that there had been closure, that the perpetrators had been held to account and that their street had returned to normality. The Home Office since May 2012 has published outcomes of crimes on the police.uk website. The website relies on the active participation of the citizen to pull information from the site to ascertain their particular risk of victimisation. However, the information is not linked to a specific investigation or immediate locality, and the crimes are a subset of the incidents that people use to assess their security. Serious and organised crime is not one of the categories reported. The way in which the outcome date is published then does not enable people to easily maintain or update their risk of victimisation. Information in this format is unlikely to fill the information gap identified by participants in this study (St1).

For outcome and other types of crime information the findings of this study suggest that local information is highly valued and therefore there may be gains to stratifying communication strategies by place. Reflecting the significance that Weisburd (2008) provides to 'place' in his place-based policing model, participants in this study wanted to know about crime in general (i.e. current 'hotspots') and crime in 'their street' (as opposed to their neighbourhood) to ensure that the information provided is relevant to the nature of the problems present in a specific community. This study has drawn attention to a preference for

swift and direct personal communication from the police in the event of incidents occurring in the immediate locality. Face-to-face communication may be difficult to achieve in practice. The police utilise a variety of different channels to communicate with the public; the findings of this study (St1) suggest that messages delivered through traditional channels such as leafleting, communication with community or residents' groups, neighbourhood watch, or 'key individual networks' are unlikely to reach the target audience. Come what may, the window of opportunity for the police service to communicate information about risk is limited to during or just after operations. Whilst a preference for direct contact with police where events occur in the immediate vicinity was evident, participants were happy to rely on passive communication – such as through the media – where events were in the wider neighbourhood or area. This presents challenges for the way in which the service publishes information. At present, police communication strategies tend to be generic rather than differentiated by place. Finally, and more broadly, whilst the police may be concerned about communicating crime prevention advice about serious and organised crime, there seems to be a real appetite for such preventative information. Indeed, as noted, the Home Office organised crime strategy stresses the need to do just this. The challenge will then be to develop meaningful mechanisms to disseminate such information in light of citizens' tendency to consume information passively and preference for information tailored to their local context.

Limitations

To secure funds, facilities and facilitators to conduct the research, the focus groups were conducted as part of a force public consultation exercise which resulted in trade-offs in the methodology used to recruit participants. This study is limited in that it is a study of the views of residents within one police force. The methods section highlights that this force reflects the national average, however this does not mean that the results can be generalised to the force area or that the results can be considered to be representative of residents in the other

42 police forces in England and Wales. This force has one of the highest levels of confidence of any of the forces (HMIC, 2016) and so it would be valuable to empirically examine how citizens' views about serious and organised crime vary in forces that have lower confidence ratings or higher crime rates. Ideally, it would have been useful to contrast areas with high and low organised crime, but as serious and organised crime is not a crime classification it would not be straightforward to identify such areas, or measure how well forces are dealing with such crime. The study was further limited in that participants may not be representative of the population of England and Wales, or the force area. There are, after all, areas of the country with far higher deprivation than that experienced by residents in this force area. The study was not constructed to be able to empirically consider the extent to which participants agreed with the views expressed by other focus group participants.

Despite these limitations the focus groups were well-attended in comparison to many public consultation events run by the force, and resulted in healthy debate amongst participants. This study was the first to provide an account of how residents participate through neighbourhood policing in the production and consumption of information about serious and organised crime.

Conclusion

Neighbourhood policing anticipates police and citizens working together to produce community safety solutions, whether serious and organised or otherwise. This study, which took place at the height of neighbourhood policing, suggests that whilst the literature (in particular Bullock & Leeney, 2013) found that the police remain concerned with reactive crime control, the public were concerned about their personal relative risk of victimisation. To these ends officers valued, and sought, 'real time' information about crime and criminals that could be acted on immediately, whilst the public prioritised for action by the police 'quality of life' over 'crime' problems; those problems that were local and visible to them. This

misalignment of concerns is a recurring feature of policing over time (Loftus, 2010; Reiner, 2000), so timeless as to become criminological orthodoxy. Citizen concern about serious and organised crime did not challenge this orthodoxy.

Whilst serious and organised crime had the potential to act as a signal event and demand a signal intervention in response, for most citizens it was considered to be something happening to someone else somewhere else. For frontline officers and citizens the expectation and experience was of police-delivered rather than community-delivered solutions. Citizens acted and expected to act as consumers of, rather than co-producers of, their communities' safety. In this community, safety-economy information was the currency. The role of the citizen was to report incidents and pass information to the police, in return for which the implicit contract was that citizens expected trusted information to be disseminated to them in order that they maintain and update their risk-of-victimisation radar. This reflects the role for the police as communicators of risk set out by (Ericson & Haggerty, 1997), and a perspective that the research develops in subsequent chapters.

The SOC study (St1) found a considerable appetite for information exchange about crime, be it serious and organised crime or otherwise, but even at the height of neighbourhood policing, citizens felt there was an information vacuum leaving them ill-informed about the extent of criminality, and ill-informed about how they should respond to it. It is surprising, then, that this appetite for information did not translate into proactive activity by citizens to reach beyond their existing social network, or established channels of communication, to generate information for themselves. Citizens nevertheless expected their risk radar to be well-tuned with disseminated information, and set out a broader role for the police in doing so than the police did for themselves in the literature review. Whereas officers described their role as building bridges between the police and public, the public expanded the police role to

both bridging with and between citizens. In this respect citizens expected the police to find, and filter out the noise from, the information they might not otherwise have ready access to.

Given that whilst citizens state they want information, but they do not actively seek it, and that citizens set out a role for the police as bridging agents for community-defined and delivered solutions, but do not actively engage themselves unless directly affected, questions remain about whether police services will realistically be able to bring this information together in a meaningful way. The police have tried to make use of technology to reduce the transaction cost of citizen engagement, but the current approach is predicated on providing information through dedicated police websites or bespoke police applications. This approach relies on active citizen participation in advance of, and in anticipation of, a crime. This study suggests that this approach is unlikely to be successful. An alternative technological strategy would instead aim to deliver information for passive consumption by citizens, either to citizens' own online spaces, or those spaces that are occupied by those people they are most likely to be influenced by: their friends and family. This of course raises questions about the way in which the police are invited into such online spaces, and where the boundaries between public and private information lie to determine what information is shared, at what time, and to whom.

There has been government recognition that law enforcement agencies cannot tackle the problem of crime without the support of communities. This study, conducted at the height of neighbourhood policing, suggests that the policing of serious and organised crime occurs in relative obscurity, and that unless the invisible can be rendered visible, law enforcement agencies will continue to tackle these problems alone. The challenge then, particularly as the resources available to neighbourhood policing start to decline, is to develop meaningful bridging mechanisms, to disseminate information in light of citizens' tendency to consume information passively and their preference for information tailored to their local context.

Social media tools provide such mechanisms, however in this study there was no evidence the police had started to make use of social media or other Web 2.0 technologies. The next chapter reviews the literature concerning the use of social media by the police. At the time of the research, that use was still in its infancy. This will necessitate examining the use of social media through a broader lens than just that of neighbourhood policing to ensure that a thorough understanding of the state of the exchange of digital information at the time of the research is provided. The literature review also introduce the framework of an information market to better situate the existing information theory presented in the review and the research in this thesis that complements it.

PART II

CHAPTER FOUR: LITERATURE REVIEW II – FROM NEIGHBOURHOOD POLICING TO THE INFORMATION MARKET

Introducing the Information Market

Industrial age information theory set out that a criminal investigation was 'a battle over information' (Willmer, 1970, p. 36), within which criminals were 'emitters' of signals and the police 'detectors', and 'interpreters', of those signals. The signal strength (i.e. the likelihood of the police identifying a suspect) varied depending on type of information emitted by the criminal but also with the measures taken by the police to collect and act upon information. Lack of detection success was explained as 'noise': either internal noise (as a result of signal loss or distortion) or background noise (information not flowing to the police). In this theory all information could be useful, although as Leeney (2007) was to demonstrate empirically, not all information is as useful. Information from the community was recognised as useful because it could reduce background noise (Willmer, 1970, p. 32). However, the focus of this theory was principally on the police and offenders; information was either active (information that leads the police directly to a suspect) or passive (other information the police might associate with a suspect). Subsequent models for the management of information or intelligence continued in this vein. From the Baumber Report (ACPO, 1975), the Pearce Report (Pearce, 1978), the Ratcliff Reports (Ratcliffe, 1986a, 1986b), the Kent Policing Model (Audit Commission, 1993) and the Cybernetic Model of Intelligence (Gill, 1998), to the National Intelligence Model (NCIS, 2000) the models replicated Willmer (1970) and were written for and from the perspective of law enforcement professionals. With this history, it is understandable that in contrast to the rhetoric of neighbourhood policing, the reality for neighbourhood policing officers is that they value information they believed will be useful for

facilitating the enforcement of the criminal law; 'real time' information about crime and criminals (Bullock & Leeney, 2013).

The information age changes the way the public create, share and use information, particularly from the widespread adoption of social media, which presents new challenges (Bartlett, Miller, Crump, & Middleton, 2013) and opportunities for policing to use information in a way that produces public value (Mayo & Steinberg, 2007; Moore, 1995). In order to situate the use of these new tools within a conceptual framework that complements, but goes beyond, the police-centric theory offered by Willmer (1970) – one where information consumption reaches beyond the police – reference will first be made to the public administration literature for descriptions of industrial and information age participation between citizen and the state.

Several models of citizen participation have been put forth over the years to classify the relationship between the citizen and the state. One of the earliest models is Arnstein's (1969) ladder of participation. Developed from observations of urban planning processes in the 1960s, the level of citizen participation in decision making is expressed as the steps on a ladder. The bottom rung represents no involvement on the part of citizens and the top rung reflects an active and engaged role for citizens. Reflecting Giddens (1986) understanding of power (an actor's capability to enact favoured decisions), the extent to which citizens participate in decision making is categorised and placed by Arnstein as rungs on the ladder according to the formal degrees of power each rung affords.

The public administration literature continues to utilise Arnstein's ladder as a basis for the development of new models to describe how the relationship between the citizen and state works (Box, 1998; Timney, 1998; Vigoda, 2002), to propose other models for that relationship (Callahan, 2007), or to examine how in the information age new technology

might be used as an enabler for new collaborative behaviours; perhaps a way to move up the ladder (Stein, 2013). Arnstein's ladder has also been used in specific contexts to build models for the operation of specific interactions between the citizen and state. Casey (2008) advocated the expansion of 'active citizens', a concept from Box (1998), developed from Arnstein (1969). Box (1998) described citizens in one of three ways; 'freeriders', 'watchdogs' or 'activists'. Freeriders do not get involved, and entrust public administrators to act in their best interest; watchdogs get involved if, and only if, public issues impact them directly; and activists are involved on a continuous basis as they feel it is their responsibility to be informed and engaged.

Successive governments have sought to generate notions of citizenship where people come together to improve their own lives (Cabinet Office, 2011; May, 2017). Whilst the concept of 'active citizens' as a specific policy proposal did not survive the 2010 change of government, the concept of co-production of community safety (Innes & Roberts, 2008; Morgan, 2011) continues to permeate proposals for police citizen interaction. The College of Policing (CoP) used Arnstein's ladder as the basis for an operational model of engagement (Simmonds, 2015, p. 17) between the citizen and the police. This model describes seven levels of citizen involvement from 'contact' to 'what comes next?' as police empowerment and citizen commitment develops. The name of the seventh level – 'what comes next?' – suggests that the model is not a complete description of the engagement process. Pretty (1995) uses the label 'self-mobilisation' and Innes and Roberts (2011) 'mobilisation' for this level of activity.

Arnstein's ladder itself is not without criticism. It is argued that the model fails to account for influences that sit outside of formal processes, that the ladder is missing key rungs related to the aims of participation, that the value-laden ordering and labelling of participatory types (from the inferior to the superior) convey disapproval of particular participation types

and therefore inhibit decisions to deploy them (Tritter & McCallum, 2006), and that it does not describe how one might move up or down the ladder (Simmonds, 2015).

The police model replicates the value-laden ordering seen in Arnstein's ladder, but to address the last criticism the police operational model of engagement uses arrows to indicate how to navigate the model. In order to move up the equivalent of Arnstein's ladder the police must empower citizens; unless the police cede power it will not be possible to generate greater engagement. For this model, it is the exchange of information that represents police ceding power; information is the currency of power. The model relabels Arnstein's rungs using language more familiar to the policing practitioners in the UK. The implicit difference between levels 1 (contact), 2 (communication) and 3 (engagement), and between levels 4 (participation) and 5 (involvement), and between level 6 (co-production) and 7 (what comes next?) is that provided by Willmer (1970); the levels represent passive and active forms of activity. Whilst this helps the reader develop an understanding of behaviours that are indicative a particular level of engagement, the typology as framed does not clearly delineate the theoretical difference between the levels. The distinction between active and passive activity, though, is useful, and evident in a typology for civic engagement developed by Ekman and Amnå (2012). In addition, this model distinguishes between manifest participation, latent participation and non-participation. The police model does not explicitly have the levels for non-participation which were evident in Arnstein's ladder, and as with Arnstein's ladder, the police model does not recognise latent participation (related informal activity that has the potential to influence engagement, for example public conversation on social media about the police as opposed to with the police about policing or community safety). Non-participation or latent participation is important because it might occur for a variety of reasons. For example, citizens who rate police higher on scales of 'procedural justice' are more likely to participate (Frank, Brandl, Worden, & Bynum, 1996; Reisig, 2007),

those with a higher awareness of local policing are more likely to participate (Bullock &

Sindall, 2014), and those living in high-crime areas are more likely to get involved in

community policing than those in low or average crime areas (Skogan, 1989; Skogan &

Hartnett, 1997; Skogan & Steiner, 2004). A more complete model would therefore consider

citizen behaviour at both ends of the continuum; those that could be engaged as well as those

that are already engaged, it would also recognise that passive or active forms of participation.

A useful typology in this regard is the Prevent model of co-production of social

control put forward by Innes and Roberts (2011, p. 14) to understand how counter terrorism

strategy was being delivered. The model, through the use of a four mode quadrant, introduces

the distinction of whether it is the police or the community that defines a problem and which

of these has the principle lead of the response.

For Morgan (2011), it is fundamental to the sociology of policing that policing is not

undertaken by the police but by the public at large or other institutions for themselves, that

systems of formal and informal control are related, and that the achievement of order and the

effectiveness of the police is critically dependent on the regard in which the police are held by

the public because it is as a consequence of this regard the public report crime, tell the police

whodunit, and testify at court (Morgan, 2011, p. 12). It is thus through the exchange of

information that the legitimacy of the police is established and constantly renewed (Beetham,

1991), and as previously argued through the exchange of information that power is ceded

from state to citizen. Information is therefore not just – according to the truism – the lifeblood

of policing (HMIC, 1997), it can also be considered the currency of power and legitimacy.

The production and consumption of that information is a useful lens to examine the

relationship between citizen and police with the active or passive use of latent or manifest

information.

On this basis a conceptual framework of four key markets for information exchange is introduced (see Figure 1). The boundaries between the four quadrants use arrows to indicate that there is tension between the four markets. The boundaries do not extend to the edge to represent that there is information that is not yet being used by police or citizen for social control. The edge is not a solid line because the amount of latent information available to the market is unknown.

Quadrant 1	Quadrant 2
Police Produced / Police Consumed	Citizen Produced / Police Consumed
Police Produced / Citizen Consumed	Citizen Produced / Citizen Consumed
Quadrant 3	Quadrant 4
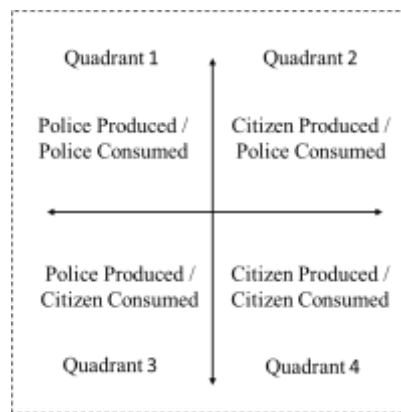
Figure 1. Markets of Information

The top half of the framework represents information used by the police, whether generated by the police in quadrant one (e.g. through covert surveillance or the synthesis and analysis of information held by the police) or generated by the citizen in quadrant two (e.g. through a report of a crime or provision of witness descriptions). The models of intelligence set out earlier would typically be concerned with the first quadrant, and the information 'noise' described by Willmer (1970) with the second quadrant. The bottom half of the framework represents the information being consumed by citizens as opposed to the police. Quadrant three represents information consumed by citizens and produced by the police, for example neighbourhood newsletters. In the case of quadrant four this is information used by citizens and not the police either because the police have deliberately ceded control of the information to citizens (i.e. mobilisation (Innes & Roberts, 2011)), or because the police have either lost or not established legitimacy and citizens are using information to create their own forms of

social control. These new forms of collective action in quadrant four are made possible from the reduced transaction cost of sharing information (Shirky, 2009).

This framework can used to understand the research reported in the literature review in part one and the findings reported so far. The study by Bullock and Leeney (2013) was concerned with quadrant two: information from citizens consumed by the police. The SOC study (St1) was concerned with quadrant 3: information consumed by citizens produced by the police. The findings of the SOC study (St1) indicate that in quadrants three and four there is an appetite for information and there is an information gap. The SOC study (St1) and the study by Bullock and Leeney (2013) found that there is information asymmetry with the focus of information gathering in quadrant one as opposed to the other three quadrants of the framework. The SOC study (St1) found that the police do not fulfil the information contract; they collect rather than tell, operating as information consumers in quadrant one and two. The SOC study (St1) also found the police have a role to provide and promote trusted and timely local information in quadrant three, and are an information bridge with and between citizens, in quadrants two and three.

The research has also started to provide insight into factors that might motivate citizens to move from passive to active producers and consumers of information in quadrants two, three and four. The SOC study (St1) and the study by Bullock and Leeney (2013), consistent with the literature on the role of the police as communicators of risk (Ericson & Haggerty, 1997), suggests that context and consequence are important and that within quadrant three citizens are concerned with their risk of victimisation. The research did not explore what motivates citizens to produce information, a quadrant two or four activity, although the economics literature suggests that social media may provide opportunities to increase participation if through quadrant two activity citizens gain 'social approval' (Ariely, Bracha, & Meier, 2009; Bénabou & Tirole, 2006). There is also no indication from the SOC

study (St1) about whether the tipping point before citizens move from passive to active producers of information differs to that of moving from passive to active consumers of information. The psychological literature suggests the threshold for production of information may be higher than that of the consumption of information as a result of the 'free rider effect' (Frohlich & Oppenheimer, 1970; Kerr, 1983) and the 'bystander effect' (Latane & Darley, 1970).

The literature does not indicate whether there is a causal link between the production of information by the police and the consumption of information by the public. Ciampaglia, Flammini, and Menczer (2015) from a 2012 study of 93,491 Wikipedia pages predict that there is a causal link between the supply and demand for page creation and that for Wikipedia pages at least, demand precedes supply. The SOC study (St1) was not designed to test whether such a link exists for traditional police information production, although the literature and the SOC study (St1) find that the public do not routinely consume information provided by the police through the apparatus of neighbourhood policing. This issue, though, is beyond the scope of this research, which is concerned with whether social media has the potential to improve the exchange of information between the police and the citizen (quadrant two and quadrant three activity of the information market).

Neighbourhood policing meets the internet

The widespread adoption of computerized information systems by police forces, which began in the 1970s, together with improvements in the capabilities of information technology, have influenced police-citizen communication (Manning, 1992). The channels through which police and citizens communicate and the scope of information available to both police and citizens have increased. The widespread use of technology, though, has yet to transform the way in which police services are delivered, and strategy remains locked into service silos of contact management (HMIC, 2005) or engagement (NPIA, 2010).

It is not surprising that strategy has not kept pace with technology. The growth of the internet has occurred faster than the growth comparable communications technology (Mayo & Steinberg, 2007). It took 38 years for the first 50 million people to own a radio, 13 years for the first 50 million people to own a television, 5 years for the first 50 million people to be on the internet, and just 5 months for the social networking site (SNS) Facebook to reach 50 million registered users. The absence of a strategy is, though, untenable. Since 1990, when the World Wide Web first made the internet usable by audiences, the number of global users has now reached 1.9 billion users and is predicted to be 5 billion by 2020. In the UK, internet use is now at 44 million, and grew by 2 million in 2010. 73% of households have internet access, and the UK now has the fifth largest broadband population in the world. 30 million people use the internet in the UK every day, and 14 million people surf the internet on their mobile phone every day (Nicklin, 2011). The impact of this transformation is diverse and profound. For example, when making purchasing decisions online, citizens now consider a search engine to be as important as talking to a trusted friend (Mayo & Steinberg, 2007).

Initial computerised police-citizen information-sharing efforts were pioneered in the USA in the late 1980s and 1990s. They consisted of summary crime reports for neighbourhoods or police beat areas. A 1997 survey by the National Institute of Justice indicated that approximately 13% of all law enforcement agencies were using computer mapping (Mamalian & La Vigne, 1999). Two years later, a 1999 survey by the Police Foundation found a marked increase in adoption with over half of the agencies surveyed using computer mapping for crime analysis (Weisburd, Mastrofski, McNally, & Greenspan, 2001). By 2005, citizens in the US routinely had access to crime data over the web 7 days a week, 24 hours a day (Groff et al., 2005).

Crime maps were first published in the UK by the Metropolitan Police Service in 2008. Other forces followed soon after (Crump, 2011). Successive national governments have

promoted policies which require the police to make geocoded crime data available to the public. Taking its lead in part from the 'Smith Review of Crime Statistics' (2006) and Louise Casey's 'Crime and Communities Review' (2008), the Home Office has sought to increase the volume and quality of information accessible to the public about crime and policing. By 31 December 2008, all police forces in England and Wales were expected to comply with the 'Code of Good Practice for Public Access to Local Crime Information' (2008a), and to publish maps on their websites that showed the level of crime and anti-social behaviour (ASB) at a neighbourhood level. Early in 2009, forces were also required to make available information about neighbourhood policing. After forces started to make crime maps and policing information available to the public, the NPIA was commissioned to develop a standardised national interface for force crime map websites which would enable the public to make comparisons across England and Wales (http://maps.police.uk/). The national website was launched in October 2009. This policy direction was given renewed impetus under the Coalition government, which was committed generally to making official data openly available to the public and specifically to extending the scope of crime mapping down to street level (Home Office, 2010).

Fulla and Welch (2002, p. 10) articulate the value of information provision to neighbourhood policing: 'Display of crime statistics and other information reorients the role of citizen-bureaucrat interaction from one heavily steeped in information request and distribution to more substantive issue-based communication where citizen and bureaucrat are more equally capable of contributing to problem solving'. However, concern has been expressed that making information more widely available will increase the public's fear of crime. There is some research in this area. One study looked at the impact of crime maps on public perceptions (Groff et al., 2005). This experimental study from the US looked at whether different ways of presenting (paper-based) crime data had an adverse effect on people's fear

of crime. The 314 participants included in the study were randomly assigned to one of three treatment groups; they were shown either a point map, a hot spot map, or tabulated crime statistics for Redlands, California. Overall, the crime maps were found to be no worse, and in some cases much better, than traditional crime statistics in their effect on people's fear of crime. Furthermore, no difference was found in the extent to which maps or statistics stigmatised neighbourhoods. The National Policing Improvement Agency (NPIA) has also carried out a randomised controlled trial to test the impact of crime maps and policing information in the UK. The trial involved giving a large and nationally representative sample of people crime maps and/or policing information for their local area. Their views about the local police and the area where they lived were then compared to an equivalent group of people who received no information. In total, 7,434 members of the public participated in the trial. The public's reaction to information about crime and policing was positive; a large majority thought it was informative and trustworthy. Information was found to improve people's perceptions of their neighbourhood and of the local police. Most people, however, said they were unlikely to access crime maps regularly themselves. They had a passive interest and tended to say they were much more likely to get their knowledge about crime and policing from a range of other sources. People said they knew which areas were safe or unsafe from living in their own neighbourhood (Quinton, 2011).

People were, however, anything but passive on the launch of the street level UK crime map website. It was reported as receiving 75,000 hits per minute (BBC, 2011). It remains to be seen to what level citizens' use of this site will settle at following the initial flurry of interest. Those researching early crime mapping sites (Fulla & Welch, 2002) envisioned a bright future for crime mapping as an engagement tool. However, if the more passive findings from Quinton (2011) prove to more accurately reflect actual use by the public then benefits of

using the internet will not be realised. A large community of users are required to realise the power of the internet which derives from the network effect.

The internet and social media

In talking about the Web one of the most important things to keep in mind is the network effect. The Web, if it were simply a collection of pages of content, would not have the value it has today. It is precisely because every Web page can, in principle, link to any other page that the Web has grown as it has. Without this linking, information would get cut and pasted onto larger and larger individual pages; instead of the Web, we would have a large number of disconnected pages and little or no index. The power of the Web emerges through the link space realized between Web pages. This is evidenced in a number of pieces of work, most famously the PageRank algorithm (Brin & Page, 1998) that was behind the early success of Google. Unlike traditional information retrieval algorithms, which were solely based on the information content of the individual pages, PageRank takes into effect how Web pages are linked to each other. The network effect describes the value of a service to a user that arises from the number of people using the service. At its core, it captures that value increases as the number of users increases, because the potential links increase for every user as a new person joins. This is best quantified by what has come to be known as Metcalfe's Law. Metcalfe hypothesised that while the cost of the network grew linearly with the number of connections, the value was proportional to the square of the number of users. Metcalfe's Law makes it clear that the value of these systems, viewed as networks of communicating agents (whether human or machine), arises from the many connections available between online resources. To exploit this space, however, there must be explicit linkages between the resources: 'when it comes to the network effect, if you don't have links, you don't get it. ' (Hendler & Golbeck, 2008, pp. 18-19).

The web was originally built to link static documents together, but has evolved to incorporate social media (O'Reilly, 2005). The rise of social network sites (SNSs) indicates a shift in the organization of online communities. While websites dedicated to communities of interest still exist and prosper, SNSs are primarily organized around people, not interests. People are therefore spending much less time consuming content and more time interacting through social media (Adams, 2012). This has facilitated the rise of two new groups of citizens. The first group comprises people who create information on the internet. The second group is composed of people who take information from various sources, including government, and mix it together to make new tools and services (Mayo & Steinberg, 2007).

The first recognizable SNS launched in 1997. SixDegrees.com allowed users to create profiles, list their Friends and, beginning in 1998, surf the Friends lists. Each of these features existed in some form before SixDegrees, but SixDegrees was the first to combine these features. While SixDegrees attracted millions of users, it failed to become a sustainable business and, in 2000, the service closed. From 1997 to 2001, a number of community tools began supporting various combinations of profiles and publicly-articulated Friends (D. Boyd & Ellison, 2008). The next wave of SNSs began when Ryze.com was launched in 2001 to help people leverage their business networks, but Ryze never acquired mass popularity. Friendster launched in 2002 as a social complement to Ryze. The site encountered technical and social difficulties (D. Boyd, 2006). Friendster's servers and databases were ill-equipped to handle its rapid growth, and the site faltered regularly. From 2003 onward, many new SNSs were launched. Most took the form of profile-centric sites, trying to replicate the early success of Friendster or target specific demographics. Furthermore, as the social media and user-generated content phenomena grew, websites focused on media sharing began implementing SNS features and becoming SNSs themselves. Examples include Flickr (photo sharing), Last.FM (music listening habits), and YouTube (video sharing). MySpace differentiated itself

by regularly adding features based on user demand and by allowing users to personalize their pages (D. Boyd, 2006). Facebook began in early 2004 as a Harvard-only SNS. It was designed to support distinct college networks only. In September 2005, Facebook expanded to include high school students, professionals inside corporate networks, and, eventually, everyone. Unlike other SNSs, Facebook users are unable to make their full profiles public to all users. Another feature that differentiates Facebook is the ability for outside developers to build applications which allow users to personalize their profiles and perform other tasks, such as compare movie preferences and chart travel histories (D. Boyd & Ellison, 2008). Twitter is a microblogging service that was founded in early 2006 to enable people to share short textual messages – tweets –with others in the system. Because the system was originally designed for tweets to be shared via SMS it allows users to post short messages that can be read by any other Twitter user, the maximum length of which is 140 characters (D. Boyd, Golder, & Lotan, 2010).

D. Boyd and Ellison (2008) therefore define social network sites (SNSs) as web-based services that allow individuals to: (1) construct a public or semi-public profile within a bounded system; (2) articulate a list of other users with whom they share a connection; and (3) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site. What makes SNSs unique is that they enable users to articulate and make visible their social networks. SNSs then are a kind of transactional dataset enriched by the types of previously hard to access, private and mundane aspects of everyday life that they communicate (Beer, 2008). The largest websites are now often those that bring together information created by the people who use them. The proportion of people using such sites to help themselves and others is now on a par with the friendly and mutual societies of the nineteenth century (Mayo & Steinberg, 2007).

Social media meets neighbourhood policing

The National Policing Improvement Agency took a facilitating role as forces began a series of experiments with SNS. A meeting with forces to discuss new initiatives in 2008 showed that a number of them, notably North Yorkshire and West Midlands, had begun to use Facebook and YouTube to share information about the work of some of their local policing teams (Crump, 2011). Further impetus to the police service's interest in social media was given by the experience of the G20 protests in April 2009, when it was apparent that the protesters were using Twitter for tactical management but the police lacked the capacity either to use it themselves or to feed information into the public domain which would both aid management of the crowd and put across their view of what was happening (BBC, 2009).

During this period, most police forces in England and Wales began to use social media in their communications strategies. By October 2010, 36 police forces had corporate accounts on Twitter, as did 140 neighbourhood or other local police teams. Police web sites generally use YouTube and Flickr to publish videos and photographs, and many have Facebook pages. Increasingly, forces are hosting webcast meetings, sometimes simultaneously in a physical location and online (Crump, 2011).

On 14-15 October 2010, Greater Manchester Police (GMP) published a short message about every incident which was notified to its control room over a 24-hour period using Twitter. In all GMP tweeted about 3,025 incidents. This exercise, called GMP24, produced 2,400 Twitter followers within two hours, and by the end of the exercise GMP had 17,000 followers. GMP24 highlighted a growing awareness in the police service of the potential of commercially-developed social media to provide new channels for public engagement.

There is little academic analysis of the aims of police force use of social media or the way in which it is being used, and far less an evaluation of impacts. The first exception is a

study by Brainard and McNutt (2010) into the use by Washington DC of Yahoo! Groups as a means of promoting citizen engagement in the period 2005-7. They conclude that the bulk of activity is informational, a fair amount of activity is transactional, and less activity is collaborative.

Madison et al. (2010), in a study of over 1,089 police and police-related Twitter accounts in the UK, USA, and Canada, found few have a social media strategy in place. Researchers proactively searched for potential accounts and then collected data from July to August 2010. It found that British police have the fewest accounts (21%), but the highest proportion of active Twitter accounts. According to the survey, about half of all users tweeted about on-duty activities, including arrests, whilst just 9% tweeted personal opinions about crime or criminal justice.

To identify how the police are using social media as part of their engagement strategy, research has also examined the size and density of police Twitter networks and the nature of the content (Crump, 2011). Instead of a proactive search for accounts the list of police accounts kept by the NPIA to identify police Twitter accounts was used. All the active force accounts and the 50 most active (by number of followers) local team or individual local police officer accounts were included. The data was collected between 22 October and 10 November 2010. The oldest force account (i.e. the official site run by the force centrally and using the force name and branding) is West Midlands Police. Its oldest returned tweet was sent in December 2008. In keeping with Brainard and McNutt (2010) and Madison et al. (2010) Crump (2011) found that forces' websites are largely used for broadcasting force press releases and appeals for information from the public. In addition, Crump (2011) found that all police networks are sparse. Most of their members were not linked to other members within the network, which limits the volume of new information flowing through the network. Crump (2011) also found that police Twitter feeds do not enable third parties to see both sides

of engagements with the public, so they do not usually serve to spark wider debate within the network. In effect, police force use seems to be non-transformational. It's about an extra channel, not about changing the balance. The network effect has yet to take effect in police-citizen communication.

Exploiting the network effect to increase the flow of information

In policing, then, we have yet to see SNSs become an integral part of neighbourhood policing. The question is whether SNSs can or should be anything more than an additional channel of communication. Hogan and Quan-Haase (2010) remind us of the transient nature of social media as forms for communication, and Huberman, Romero, and Wu (2009) warn that we should not be deceived by the apparent density of Twitter networks. An SNS link between any two people does not necessarily imply an interaction between them. The average number of friends on Facebook is 130 (Burke, Marlow, & Lento, 2010; Golder, Wilkinson, & Huberman, 2007), yet most people only interact regularly with 4 to 6 people (Wilson, Boe, Sala, Puttaswamy, & Zhao, 2009). The real driver of usage is a sparse and hidden network of connections underlying the declared set of friends and followers (Huberman et al., 2009).

Social networks are not a creation of the Web. The emergence of the social network is just our online world catching up with our offline world. The members of every community can be thought of as linked by a network of one-to-one ties between people who are related to one another as friends, neighbours, relatives, or co-workers. Economic sociologist Mark Granovetter linked micro-level interactions within the confines of small groups to macro-level phenomena such as community organization. Using network analysis, he differentiated people by the density of their social network. Ties were defined into two groups: weak (acquaintances) or strong (close friends). Ties can be bridging (inclusive or inward looking) and bonding (exclusive or outward looking) (Gittell & Vidal, 1998), and form around life stages and shared experiences. A study of 3,000 randomly-chosen Americans showed that the

average American has just four strong ties, and that most have between two and six (Christakis & Fowler, 2009). These groups are very independent. Another study of 1,178 adults found that on average people have about 10 friends they meet or speak with at least weekly (Spencer & Pahl, 2006). Within each group some ties are stronger than others. Our brains can only handle a limited number of weak tie relationships. Most can only stay up to date with up to 150 weak ties (Dunbar, 2010). Research shows people have ongoing communication with between 7 and 15 people, but most is concentrated around a person's five strongest ties.

Haythornthwaite (2005) argues that whilst SNS participation can result in connections between individuals that would not otherwise be made, that is often not the goal, and these meetings are frequently between 'latent ties', people who share some offline connection. He also argues that strong and weak ties are not enough when we think of relationships online. He introduces a new category of tie. 'Temporary ties' are people whom you have no recognised relationship with, but whom you temporally interact with. Temporary ties are becoming more commonplace online. Once the task is completed you are unlikely to interact with them again.

As the internet has developed we now see a Web built around people. As their profiles and content move with them as they visit different websites. As their profile moves, so too does their network of connections (Adams, 2012). This presents a new opportunity for community policing. Studies show that police attempts to work with the community do not successfully achieve reach or scale beyond the usual suspects (Squires & Measor, 2001). Better understanding of how the police can operate as part of the digital network may open up engagement opportunities with different groups of citizens. Innes (2006a) uses economic sociologist Mark Granovetter's work to illustrate a fundamental weakness with police community engagement. He explains that the police seek to instigate 'strong ties' to key

individuals located within particular communities rather than building an extensive social network of weak ties. This is problematic for two reasons: firstly because weak ties (acquaintances) are less likely to be socially involved with one another than are our strong ties (close friends), so more novel information flows to individuals through weak rather than strong ties. Secondly, 'the more local bridges … in a community and the greater their degree, the more cohesive the community and the more capable of acting in concert' (Granovetter, 1973, p. 1376). The volume and heterophily of weak ties therefore becomes not just a crucial bridge within and between communities for the diffusion of novel information, but a pre-condition for new information transactions between police and citizens.

Centola (2015) develops the concept of information diffusion using mathematical modelling to show that, for the transition of new behaviours, the network topology that follows from the way in which social ties are connected matters; 'it is not just social ties but group structures that control the dynamics of social integration' (Centola, 2015, p. 1329). Centola (2015) explains that network topologies follow from patterns of relations that emerge from individual and structural features of society such as population composition, group heterogeneity, homophily, and social consolidation. Social diffusion depends on 'moderate levels of consolidation and homophily' (Centola, 2015, p. 1332), which create broad bridges of overlapping patterns of social relations throughout society, facilitating both the initial emergence of a critical mass and the subsequent spread of social reinforcement for the new behaviours. Centola (2015) asserts that social institutions have a role to support the formation of broad bridges. This necessitates choices being made by the police about whether, or to what extent, to pursue an information diffusion strategy that seeks to maximise the volume and heterophily of its weak ties to produce more information for the police, or whether to pursue a social diffusion strategy that seeks to change the behaviour of police and citizens through the formation of broad bridges between weak ties to facilitate the exchange and use

of information by police and citizens. The police then must determine to what extent they wish to enable greater citizen participation in community policing through the curation rather than the custody of community intelligence.

The challenge, though, is more complex yet. Some people are more connected than others (Barabasi, 2002): not all weak ties are of equal value. It also does not inevitably follow that just because a weak tie, or indeed a strong tie, has novel information, that it will flow through a network of broad bridges from one person to another. Research indicates that weak ties need strong ties to activate the flow of information (Jack, 2005). Citizens may not recognise that they have novel information or that there is a requirement for that information. Recognition that there is a requirement for your information is a consequence of a competition for the limited resources of the brain's attentional system (Levitin, 2015). In the same way that our brains are a limiting factor in the number of simultaneous ties that we can maintain (Dunbar, 2010), our brains have evolved to filter information, and only let important information through our attention filter. Critically, there is a limit to the number of things we can attend to at once (Levitin, 2015, p. 11). The real challenge then, to increase the flow of information between citizens and the police, is not just to use SNSs to increase the volume of weak ties, but to use SNSs to provide broad bridges between temporary, weak and strong ties, that activate the attention of those ties.

Conclusion

The police have long sought to build their stock of intelligence (Collier, 2001). However, neighbourhood policing places value not on the stock of information, but on the flow of information from, to and between police and citizens. The flow of this information can be situated within a market of information where citizens and the police can both produce and consume information to co-produce social control. Initial police-citizen information-sharing efforts consisted of summary crime reports for neighbourhoods or police beat areas

published as crime maps on the internet. However, government information is hard to find, in the wrong format or not being made available when needed (Mayo & Steinberg, 2007); timeliness of information-processing for action is critical (J. R. Boyd, 1986). The SOC study (St1) found that in quadrant three of the information market, whilst citizens have an appetite for information, there is an information gap. In part, this is explained by Bullock and Leeney (2013) who found information asymmetry: the focus of information gathering is in quadrant one, the production and consumption of information by the police rather than the public. The SOC study (St1) also found that the public do not think the police fulfil the information contract; they collect rather than tell, preferring to operate in quadrant one and two of the framework. Consistent with Ericson and Haggerty (1997) the SOC study (St1) found that the public expect the police to be concerned with communicating risk in quadrant three and, in addition, have a role to provide and promote trusted and timely local information, and to be a local information bridge with and between citizens so that citizens can both produce and consume information.

The information age has changed the way the public create, share and use information. The internet is at a stage that has facilitated the rise of two new groups of citizens: those who create information on the internet, and those who mix it together to create new services. The widespread adoption of social media presents new challenges (Bartlett et al., 2013) and opportunities for policing to use information in a way that produces public value (Mayo & Steinberg, 2007; Moore, 1995). This raises questions about the way in which citizens and the state could use information to participate in the production of social control. SNSs provide a platform from which to explore participation in neighbourhood policing further. Networked approaches to intelligence offer opportunities for action that traditional intelligence systems do not, because they avoid overload and paralysis. Overload is alleviated because all have a concept of what is useful, and paralysis is avoided because all have a concept of what is

enough (Clark, 2004). Networks also provide the opportunity for novel information from weak ties to flow (Granovetter, 1973, 1983) across broad bridges built by the police (Centola, 2015) and activated by strong ties (Jack, 2005). Research indicates that some citizens are more connected to the network than others (Barabasi, 2002), which suggests some broad bridges may be better bridges than others between strong and weak ties. The challenge, then, for the design of an intervention is to effectively link places in the real-world (Weisburd, 2008) to the virtual world, to establish whether the volume of weak ties produced as a consequence of technology can be harvested by technology. Social media tools provide the opportunity, but the SOC study (St1) found no evidence that the police at the time of the research had started to use them effectively for the production (quadrant two) or consumption (quadrant three) of information by citizens. The next study will examine the police service's first forays into the use of social media in the context of the 2011 riots.

CHAPTER FIVE: STUDY 2 – SOCIAL MEDIA AND 2011 RIOTS

Introduction

During five days in August 2011, England experienced what was described as the most serious disorder in a generation (HMIC, 2011). On Thursday 4th August, 2011, at about 6:15pm, Mark Duggan, 29, was shot dead by the police in Tottenham in the Greater London area, during an operation aimed to arrest him. Questions about whether or not Duggan shot first and whether this was an act of self-defence started a debate about the police operation. Rumours circulated within the local community that Duggan had been 'executed' by the police. By the morning of Saturday 6th August, the police had uncorroborated information which expressed threats towards police and suggested that anger was building in Tottenham. A protest march later that day was followed by a demonstration held outside Tottenham Police Station. During the Saturday evening a crowd of about 300 people gathered outside the police station and what started as a peaceful demonstration, turned into a forceful riot (HMIC, 2011), the impact of which was to be felt in both the real and digital world.

The following day disorder spread to six other areas in London (Brixton, Enfield, Islington, Oxford Circus, Ponders End and Wood Green). On the third day, Monday 8th August, telephone calls to the police started to increase during the day, reflecting the growing tensions and public fear about potential disorder. There were 14 new areas subjected to rioting in London and for the first time, rioting occurred outside the capital in Bristol, Birmingham, Gillingham and Nottingham. Calls to the police continued to increase overnight and into the fourth day, Tuesday 9th August, when people were reporting both actual incidents and their concerns and fears about further incidents occurring, and the capability of the police to respond. There was also a significant increase in the volume of information passed from citizens to the anonymous telephone reporting service, Crimestoppers; its call volume across the UK reached a peak of three times normal volume that day (HMIC, 2011). New

information received by the Metropolitan Police Service were converted into intelligence

reports on its intelligence system at the rate of one per minute during the afternoon, and

increased to one every 15 seconds at one point on Tuesday 9th August. There were no new

riots in London that day, but new or further rioting happened in the Midlands and the North

West: Birmingham, Bury, Leicester, Liverpool, Manchester, Nottingham, Oldham, Rochdale,

Salford, Sefton, West Bromwich, Wirral and Wolverhampton. The fifth day, Wednesday 10th

August, was the last day of rioting, with the only reported unrest being in Birkenhead,

Leicester, Manchester and Salford (HMIC, 2011).

Five people lost their lives during the five days of disorder and more than 300 police

officers were injured. The damage caused was significant with 2,584 commercial premises

targeted and attacked and wholesale ransacking destroyed entire shopping areas. The financial

costs of the disorder were also very high, with estimates of Riot Act damages reported to

range between £200 and £300 million. However, the criminality was not evenly spread across

communities or the country; whilst rioting was typically in the areas of highest deprivation,

most offences (68%) were recorded by the Metropolitan Police Service. Crime records also

indicate that the nature of the offences varied from location to location: some areas (notably

Greater Manchester, London and the West Midlands) saw mainly acquisitive crimes, while

disorder in other places seems to have been dominated by criminal damage offences (HMIC,

2011).

Riots are not new to England, and in the last 40 years there were recurrent incidents of

civil unrest including riots in Bristol in 1980, Brixton and Toxteth (Liverpool) in 1981,

Broadwater Farm (London) in 1985, West Yorkshire in 1987, Oldham and Bradford in 2001,

and the Lozells (Birmingham) in 2005. Whilst the 2011 riots took different forms (both within

and between police force areas) at different times (HMIC, 2011), they shared a common

connection with previous riots in that the place of public protest occurred on the street (Baker,

2011). One characteristic, however, differentiated the 2011 riots from previous periods of disorder: the widespread simultaneous use of digital communication by both citizens and the police.

Previous chapters have set out that mobile phones did not exist in the UK in a commercial form until 1985, the internet did not exist before 1993, and the first social networking site until 1996. However, it was the bringing together of this technology into a single device and the subsequent mass adoption by citizens of this smartphone technology such as Blackberry in 2003, Apple iPhone in 2007, and Android and Microsoft Windows Phone in 2008 that changed the nature of the 2011 riots. In previous riots, therefore, the capability to mobilise and direct the masses through *mobile* social media did not exist.

Mobile social media mattered during the riots for two reasons. Firstly, because mediated communication alters the scale and speed of mass mobilisation. Social networks enable messages to be communicated instantly to other members of the public across vast temporal and spatial spheres, resulting in larger crowds than is possible from standard face-to-face interactions. Secondly, social media does more than just accentuate the speed and scope of crowd membership; these new instant, mobile forms of communication reorganise and extend temporal and spatial boundaries rather than simply replicating 'real' time and space. Social media opens up novel temporal and spatial contexts for mediated interaction that may operate simultaneously with live interactions in a shared geographical locale (Baker, 2011). As a consequence, social media became instrumental to the organisation and proliferation of the 2011 English riots, and at a speed that was unprecedented (HMIC, 2011).

The primary focus of this research, though, is not the use of social media by citizens to facilitate or organise protest, but the use made of social media by citizens and the police to generate and disseminate information during the riots. Previous academic studies of the police

use of social media during the 2011 riots are limited. Denef, Bayerl, and Kaptein (2013) systematically analysed the Twitter communication of two police forces during the riots and interviewed police officers to gain their perspective, and found different police practices for using Twitter. While one force followed an instrumental approach in its communication, in which the police aimed to remain in a controlled position and keep a distance from the general public by simply broadcasting messages, the other developed an expressive approach, in which the police actively decreased the distance to the citizens and engaged in conversation. In both forces tweets contained reassurance messages, requests for information, and information messages about police performance. They concluded that choosing an instrumental versus an expressive strategy may lead to different relationships between police and public, and that this should be a deliberate choice for forces wishing to increase public co-operation with the police. The social media study by Crump (2011) examined the tweets of 33 forces from 2008 until October 2010, so ended before the 2011 riots. However, the study did observe that during the policing of the G20 protests in April 2009, protesters were using Twitter for tactical management but the police lacked the capacity either to use it themselves or to feed information into the public domain which would both aid management of the crowd and put across their view of what was happening. Crump (2011) found that forces operated both force and local social media accounts, and that there is some correlation between the number of followers that a force site has and the time the site has been active (0.65), and a moderate correlation between the number of followers and the population of the force area (0.5) and the number of tweets (a proxy for the level of activity on the site) (0.53). In contrast to the previous two studies, Crump (2011) found that force sites are largely used for broadcasting force press releases and making appeals for information from the public. The study found little evidence of information about the outcomes of cases or of previous requests for information. One unpublished study (Procter, 2011) examined the tweets and followers of four English police forces during the riots and noted that the number of followers increased

sharply in every force during the riots. The study also observed the differences examined by Denef et al. (2013) in tone of the tweets between the forces studied. A review of the police response to the 2011 riots was undertaken by Her Majesty's Inspectorate of Constabulary (HMIC, 2011). The review reported on the social media use of five police forces that had experienced violence during the disorder. The review found that forces differed in their approach to social media; some used their media departments, others their intelligence units, while others had officers at police stations scanning for information using their personal internet-enabled devices. Forces tried to monitor social media but were on the whole overwhelmed by the amount of information available. Studies to date, then, indicate the lack of a common and systemised approach to the use of social media by police in the 2011 riots. The literature, however, is focused on those forces that experienced violence. In order to be satisfied that these findings are representative of all police forces in England and Wales, further research is required.

In summary, the academic literature on policing and social media does not provide a representative description of the way in which police forces in England and Wales monitored and utilised the latest methods of mass communication during the riots or indeed utilise social media as part of their operational response to an incident. Neither does the literature examine whether the way in which police forces utilise social media influences the participatory behaviour of citizens in policing. These are important considerations in advance of the design of a digital intervention to increase routine participation in neighbourhood policing. The second study in this research consisted of a mixed methods approach to explore the way in which police forces in England and Wales utilised social media as part of their operational response to the 2011 riots. In order to provide a more representative view than the current literature this study sought to elicit the views of forces where there had been violence as well

as the views of those forces where there had not been violence. The specific research question for this study was 'how do the police use social media to provide information to the public?'

The first method in the study was a survey of police forces that captured organisational information about what social media channels are utilised by the police, which police department had responsibility for the operation of those social media channels, and whether the information communicated to the public differed between the police forces and social media channels during the 2011 riots. The second method in the study consisted of a secondary data analysis of Twitter data, both during and subsequent to the riots to describe firstly the pattern of tweets made by the police and secondly the pattern of the number of followers of the police force Twitter account. The study then sought to empirically examine whether a statistical relationship existed between tweets by the police and followers of their Twitter account.

Method

Riots study (St2 - Riots survey)

The first part of this study seeks to provide a representative description of the way in which police forces in England and Wales utilised social media during the 2011 riots, from the perspective of those who were involved in the policing operation at the time of the riots. Having recognised the opportunity to conduct the research it was evident that the window of opportunity to secure useful results diminished with the passage of time. This influenced the research design.

Design (riots survey)

The researcher is a senior police officer, so the selection of research design has therefore been heavily influenced by the need to maintain objectivity and avoid researcher bias (Maxfield & Babbie, 2001), in addition to the need to utilise finite resources to address the research questions. Direct contact through telephone interview or face-to-face interaction

with participants was considered. Such approaches may have increased the sample size, but may be more prone to researcher bias. A survey design was therefore selected; being more remote it enables greater control of bias and provides a product that can be independently validated. In addition, it still provides a cost effective but robust way to achieve the research aims within the research time constraint (Robson, 2002). It is contended that surveys are 'weaker on validity and stronger on reliability' (Maxfield & Babbie, 2001, p. 269), and recognised that an organisational survey in this context has a number of limitations. The researcher is unable to control who actually completes the survey and what action they take to address gaps in their knowledge before doing so. It will therefore be unclear who the best person is within the organisation to target the survey at or whether the view expressed is a personal view or an organisational one. The degree to which the person completing the survey was actually involved in the policing operation may vary; their view may also contain biases that are not transparent to the researcher. The environment the survey is completed in or the time invested by the respondent may also vary. To mitigate these limitations the content of the survey was largely restricted to factual information with less room for subjectivity.

Participants (riots survey)

The survey design enabled confidential participation by the entire population of police forces in England and Wales (*N*=43). It was sent by the researcher in his capacity as head of the department responsible for organisational development in a police force to elicit the support of police forces to improve the use of social media in the force. It was considered that the request for help from a peer would improve the survey response rate. Given that the population of police forces was below the threshold from which it is possible to use assumptions of normality equations (i.e. 500), Rea and Parker (2005) advocate that a 50% sample will provide a representative result, and according to Maxfield and Babbie (2001) be adequate for analysis and reporting. Of course, the representativeness of the results may be

influenced by not just the number of forces that respond but the characteristics of the forces that respond compared to those that did not. Research also suggests that police forces operate social media accounts at both corporate and officer level (Crump, 2011). The nature of social media accounts means that, in contrast to corporate accounts, there is no reliable way of identifying the number of accounts held by officers, and such accounts are also operated at a distance from the organisation. The focus of this research is therefore the corporate social media accounts, operated and controlled by the organisation.

Materials (riots survey)

A questionnaire consisting of seventeen different questions was designed to establish the use of various forms of popular social media by each of the 43 different England and Wales police forces, during the 2011 riots. A closed question survey procedure was selected to ensure a uniform response that was easily processed. The survey consisted of contextual questions to establish what the social media capability of the force was at the time of the riots, and which organisational unit within the police force had responsibility for their corporate social media account. Participants were also asked riot-specific questions concerning rioting activity in their police force area, whether a specific policing operation was mounted to manage the force response to the riots, and which tools were used for which purpose during that operation. Policing purposes were framed to examine how information might move between police and citizen using the following categories that were derived from the literature (Crump, 2011; Heverin & Zach, 2010) but adjusted using the researcher's operational knowledge: to push information to citizens (provide reassurance or counter rumour), to push information to citizens more urgently (provide dynamic updates), to pull information from (proactively look for intelligence, or make witness appeals), or to exchange information (engage with individuals). Participants were also questioned about follower behaviour and the utility of social media to the police during the operation.

Procedure (riots survey)

Following pilot of the survey, the Police Almanac was used to ascertain contact telephone numbers for each of the different forces. Each was then contacted to establish an appropriate contact name, telephone number and email for a member of staff or department able to provide this information. The survey contained contact details of the person who completed the survey from the department that owned the corporate social media account. On 21st September 2011, the questionnaire was sent to each force with a requested 'complete and return by' date of Wednesday 28th September, 2011. By the 28th September, 2011, twelve responses had been received. On 10th October, 2011, a further effort was made to try to gain a greater response rate; each of the thirty one forces that had not initially responded was telephoned once again. Following this second attempt, a further 14 responses were received giving a total of 26 responses from 43 forces (60% response rate). Responses included 23 out of the 39 police forces in England and 3 out of the 4 police forces in Wales. There were responses from all of the policing regions in England and Wales. Police force areas are not categorised according to whether they are urban or rural, however there were responses from both urban and rural police force areas (e.g. Merseyside Police and Devon and Cornwall Police). Respondees included 6 of the 10 forces subsequently reviewed by HMIC in its review of the 2011 riots (HMIC, 2011).

Analysis (riots survey)

The results were added to a spreadsheet for analysis and the data from this research was analysed using SPSS. Analysis of the data included descriptive statistics to rank order the results, and Pearson bivariate correlation coefficients to test for strength of statistical relationship. All significance tests reported use the significance level of .05, the accepted level for psychological research (Field & Hole, 2006). The results are reported in the next chapter.

Riots study (St2 – Riots Twitter analysis)

The second part of this study sought to empirically examine whether a statistical relationship exists between tweets by the police and the followers of their Twitter account.

Design (riots Twitter analysis)

The riots Twitter analysis (St2) sought to describe the volume and frequency of tweets made from the corporate Twitter accounts of police forces in England and Wales, both during the period of the August 2011 riots, and in the years following the riots. Tracking Twitter activity in the years following the riots enabled a longer-term view to be provided concerning any changes in Twitter activity, an issue not considered elsewhere in the literature. The study also mapped tweets against follower numbers of the Twitter accounts. Only one other published study has explored the relationship between tweets and followers in the police, however as this study did not report the significance levels of its findings, it is important therefore to address the legitimacy of those results and whether the conclusions remained valid during and since the riots. The design of this study therefore includes the approach used by (Crump, 2011) in order that direct comparisons be made. This study therefore consists of a secondary data analysis of information made available by Twitter.

Participants (riots Twitter analysis)

Consistent with the approach in the riots survey (St2), the focus of this research is the corporate social media accounts, operated and controlled by the 43 police forces in England and Wales.

Materials (riots Twitter analysis)

The data subject of analysis can be collected directly using the website Twittercounter.com, which is a third party service that uses data obtained from Twitter through its public API. Twittercounter was selected because at the time of the research it enabled access to historical data, was free and had been operating for several years. The

limitations of this approach are dealt with in the Limitations section. No additional materials were created.

Procedure (riots Twitter analysis)

The name of the corporate Twitter account for each of the 43 police forces in England and Wales was obtained from a number of sources which included the results of the riots survey (St2) and a list maintained by the College of Policing. Using the name of the account a search on the website Twittercounter.com produced data for collection about the number of tweets, and number of followers. A data set was produced for the period 1st August 2011 to 14th August 2011 to enable analysis before during and immediately after the riots. At the time of the research historical data was not publicly available free of charge, so in order to build up a longitudinal dataset, to enable any changes found during the riots to be considered in the context of behaviour after the riots, the process was repeated each year for the following three years on the 15th August to produce yearly data for analysis. Compiling data for each day of the following three days would have provided a more complete picture for analysis but it was beyond the capacity of the researcher to do so. The data for all forces was not available from Twitter, so interpolated data was discarded.

Analysis (riots Twitter analysis)

The results were added to a spreadsheet for analysis and the data from this research was analysed using SPSS. Analysis of the data included descriptive statistics, and Pearson bivariate correlation coefficients to test for strength of statistical relationship. All significance tests continue to be reported using the significance level of .05 (Field & Hole, 2006). In addition, multiple regression analysis was undertaken where bivariate correlations indicated multiple significant correlations. Whilst preparing the data for analysis it was clear that the data for one force was larger than that of the rest of the sample. In order to be confident that this one participant did not have a disproportionate effect on the results, analysis was

undertaken both with and without that force in the sample. The result were unaffected, and therefore the results reported in the next chapter are from the full dataset (n=19).

Ethical Issues

This research in both methods did not entail access to personal data. The data from the riots survey (St2) would have been available in response to a Freedom of Information Act request, and the data from the riots Twitter analysis (St2) is public data. Nevertheless, because storage of data took place on police force computers it was handled in accordance with the forces' information security policy and consent from the researchers' employer was obtained to store the data gathered during this research. Consent to name the forces that participated in the research was not sought as part of the questionnaire, so results have not been reported with the identity of the participating force. In conclusion, the researcher has taken full responsibility for ensuring the research was conducted in accordance with the British Society of Criminology's statement of ethics (BSC, 2015).

Results

All police forces that participated in the riots survey (n=26) provided information about the digital communications channels operated by their force. A website was operated by every force. Whilst e-mail predates the inception of the Internet, was the first electronic communication medium to be widely accepted by the business community, and at the time of the riots survey was still more popular than social media or the internet for many citizens, less use of email was reported by police forces than use of social media. Only 57.7% of forces used email as a channel of communication to regularly push information to citizens in the form of neighbourhood newsletters. Two forces commented that the emails were a good method for local communication.
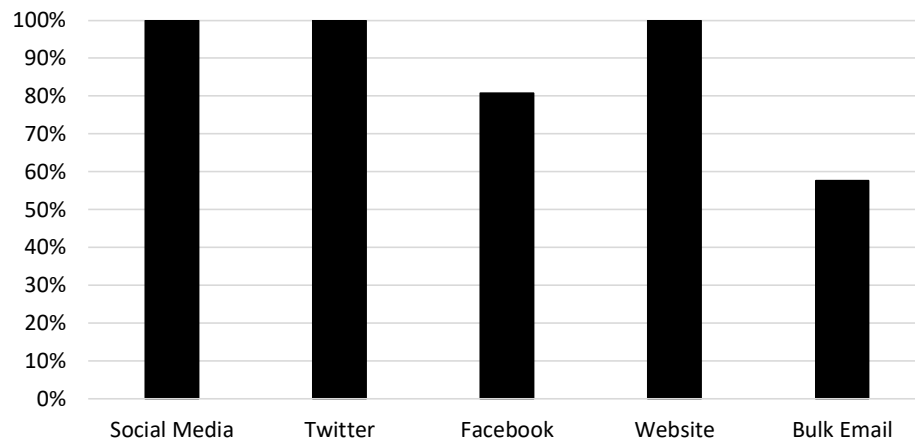
Figure 2. Digital media channels available to the police during the 2011 riots (*n*=26)

In contrast to email, all police forces reported having a social media capability. Whilst that capability varied between forces, all the forces in this study operated a Twitter account and most forces (80.8%) also utilised Facebook pages. Two forces reported that their digital channels did not operate in isolation; updates from one digital channel could automatically 'feed' another digital channel.

The questionnaire sought information from participants about which department or function of the force was responsible for the force social media account. The terminology used to describe the department responsible for the content of internal and external communication channels varied between participants. In addition to the name 'Communications Department' used for these results, the names included 'Media and Marketing', 'Press and Communications', 'Media', 'Corporate Communications and Public Engagement', and 'E-Communications' Department'.

The police force communications departments were the primary owners of their social media accounts. A small number of forces also shared ownership with the public contact centre (3.8%) and the local neighbourhood policing team (11.5%).

Websites and email communication channels are used to broadcast media monologues produced by the police for consumption by the public. In contrast, social media has the

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capability to facilitate dialogue with and between the police and the public. It enables both police and the citizen to be both producer and consumer of information. In order to understand whether police forces engaged with digital channels differently, participants were asked whether they proactively monitored the internet or social media. As this study is concerned with the use of social media during the riots, forces were specifically asked about behaviours before the riots. This questioned was answered by 96.2% (n=25) of forces. All these police forces reported that the communications department, as a matter of routine, proactively monitored the internet for mentions of their force. In addition, in just over half of the forces (56%) the intelligence department was also responsible for proactive monitoring of internet activity.

To ensure that the results of the riots survey included responses from police forces that experienced rioting, and responses from those that did not, participants were asked about the level of disorder in their force area during the riots. All forces that responded answered this question (n=26). In 19.2% of the police forces significant incidents of disorder were experienced and a further 11.5% of forces reported elevated levels of disorder, experiencing minor disturbances. One force that did not experience actual disorder nevertheless reported making arrests for incitement to riot.

All forces in this study, whether they experienced disorder or not, recognised that the riots were a significant policing event, termed a 'critical incident' (CoP, 2013), and 96.2% of them mobilised a structured policing operation to manage their policing response. One force explained that the operation was to *'ensure actual incidents were dealt with, retain confidence police were on top of potential issues and ready to respond, and the resourcing to support other forces'*.

All the police forces that managed their response to the riots through a specific policing operation utilised a social media component as part of that response. The tools utilised varied between participants. Twitter was the most utilised social media tool, used by 96.2% of forces. Facebook followed with 76.9% of forces using it as part of their response.
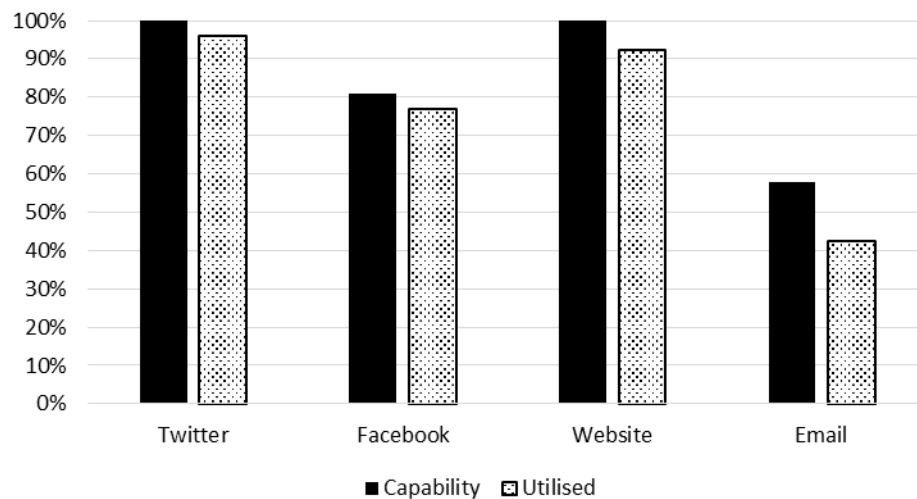
Figure 3. Digital media channels available to and utilised by the police (*n*=26)

Some forces have the capability to use both a force Twitter account and also Twitter accounts for individual officers. Of the forces that used Twitter (*n*=25), 52% just used the force account to post information about the riots, and the other forces used both force and local officers' accounts as part of their response. A few forces (12%) left the decision to tweet to the discretion of local officers.

Some use was made of other social media channels by 34.6% of police forces. These included AudioBoo (15.4%), YouTube (11.5%), Flickr (3.8%), and TwitPic (3.8%). The range of sites is indicative of the types of media available: text, audio, and image. Photographs or CCTV images were published by 26.9% of forces in this study. Two other forces reported that they had intended to publish images as well, but *'they had caught all those responsible'* so no longer needed to do so.

Traditional digital channels were also used, which included the force website (92.3%) and email (42.3%). Whilst the use of specific digital channels differed between forces, there was a correlation (albeit at the 0.05 level) between the force's capability and its deployment as part of the policing response ($r(26) = .99$, $p = .010$).

The significant majority of forces in this study (84.6%) reported that they had increased their use of social media during and as a consequence of the riots. The proportion or type of increase was not reported by forces, and no reasons were given by forces that did not report an increase. Of note is that those participants that did not report an increase in the use of social media during the riots were those forces that already utilised a wider variety of tools than just Twitter or Facebook.

Participants were asked about the type of digital content they generated. The most-utilised channel to give reassurance messages during the riots was Twitter (92.3%). Significant use was also made of the force website (73.1%) and Facebook (65.4%) for reassurance. Less use was made of email (38.5%) by forces, and in this study, whilst this was the joint highest use of other social media, a relatively small proportion for forces (15.4%) used other social media tools to provide reassurance. One participant noted that whilst they put out a brief reassurance message on Twitter, they used Twitter *'to direct people to more comprehensive daily reassurance updates published on the force website'*. Two forces reported that they used Facebook in a similar way to Twitter (to direct people to the force website), but they also used Facebook to re-publicise the reassurance message from the force website.
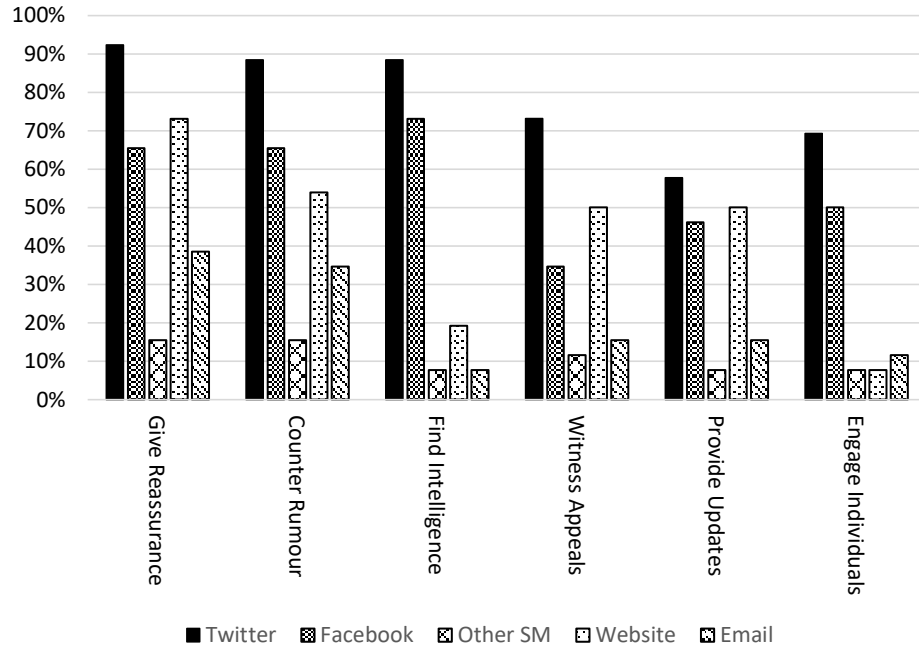
Figure 4. How social media channels were utilised by the police during the 2011 riots (*n*=26)

The forces in this study reported very similar results for the channels used to counter rumour as they did for giving reassurance messages (*r(26)* = .97, *p* = .008). Twitter was the most-utilised channel (88.5%), Facebook was used to counter rumours by 65.4% of forces, email by 34.6%, and other social media by 15.4% of forces. Whilst the use of the force website was still high (53.8%) the core social media channels of Twitter and Facebook were used more for this type of message than the force website.

Table 1. How social media channels were utilised by the police during the 2011 riots (*n*=26)

	Twitter	Facebook	Other SM	Website	Email
Give Reassurance	92.3%	65.4%	15.4%	73.1%	38.5%
Counter Rumour	88.5%	65.4%	15.4%	53.8%	34.6%
Find Intelligence	88.5%	73.1%	7.7%	19.2%	7.7%
Witness Appeals	73.1%	34.6%	11.5%	50.0%	15.4%
Provide Updates	57.7%	46.2%	7.7%	50.0%	15.4%
Engage Individuals	69.2%	50.0%	7.7%	7.7%	11.5%

During the riots the utilisation by forces of the digital communication channels examined in this study to seek information varied. The most-utilised channels to find

information were Twitter (88.5%) and Facebook (73.1%). This was the highest use of Facebook by forces. The use of other social media tools to find information remained low (7.7%). Those forces that made use of other social media reported using tools designed to search for and report on relevant information such as *'socialmention.com'*, *'tweatdeck'* and *'google alerts'*, rather than other social publishing or social networking sites. The use of the force website (19.2%) and email (7.7%) in contrast to giving reassurance or countering rumours was low. This was the lowest use of email by forces. One force ruled out the use of email for information gathering as *'not applicable'*. The similar use by forces of other social media and email to find information highlights how forces used these channels throughout the study; there was a significant correlation between the use of other social media and email ($r(6) = .94$, $p = .006$)[1].

Table 2. Correlation of social media use by digital channel (*n*=6)

		Facebook	Other SM	Web	Email
Twitter	Pearson Correlation	.773	.648	.259	.546
	Sig. (2-tailed)	.072	.164	.620	.262
Facebook	Pearson Correlation		.242	-.017	.318
	Sig. (2-tailed)		.644	.975	.539
Other SM	Pearson Correlation			.776	**.938****
	Sig. (2-tailed)			.070	**.006**
Web	Pearson Correlation				.803
	Sig. (2-tailed)				.055

** Correlation is significant at the 0.01 level (2-tailed)

In order to focus on an area of specific information gathering linked to investigation, police forces were asked about their use of digital communication channels to make appeals for witnesses. Twitter remained the most utilised channel (73.1%), followed by the force website (50%), Facebook (34.6%), email (15.4%) and other social media (11.5%). Whilst

[1] The small sample size means that only very high correlations can become significant. The r=.77 for Twitter and Facebook for example is not treated as significant. Had the *n* been higher it would have been significant.

high, the use of Twitter for witness appeals was lower than the previous categories. One force stated that Twitter was *'not appropriate'* for such use in an investigation. This was the lowest use of Facebook, in contrast to the general use of the three social media categories examined in this study. Where witness appeals were made on Twitter, forces commented they did so in conjunction with images from CCTV, or links to CCTV images on photo-sharing websites such as *'Twitpic'* or *'Flickr'*.

The nature of digital communication channels is that, in addition to control over what information is published, they also enable police forces to determine when that information will be pushed out for consumption. Police forces were therefore asked about the timeliness of information published, specifically about whether dynamic updates about crimes or incidents were provided. Fewer forces provided dynamic updates about specific incidents than general reassurance or witness appeals. Once again, Twitter was the most-utilised channel (57.7%), with similar use of the force website (50%) and Facebook (46.2%). Email was used, but only by 15.4% of forces. Other social media channels were used by 7.7% of forces. This question provoked diverse views about the utility of digital channels to provide dynamic updates; whilst one force maintained that providing dynamic updates was *'not appropriate'*, another set up a *'live log of all incidents in the force'* on its website. Despite this difference in views there were similarities in practice. The correlation between giving reassurance and countering rumour was reported earlier, but there is also a significant correlation between providing updates and giving reassurance ($r(5) = .98$, $p = .004$). Of note is that there is also a correlation (at the 0.05 level) between providing updates and countering rumour ($r(5) = .94$, $p = .019$) suggesting that the primary motivation of forces when providing updates is to give reassurance and counter rumour as opposed to using updates to undertake other investigative or engagement activities.

Table 3. Correlation of social media use by purpose (*n*=5)

		Counter Rumour	Find Intelligence	Witness Appeals	Provide Updates	Engage Individuals
Give Reassurance	Pearson Correlation	**.965**[**]	.771	.950[*]	**.977**[**]	.713
	Sig. (2-tailed)	**.008**	.127	.013	**.004**	.176
Counter Rumour	Pearson Correlation		.903[*]	.915[*]	.936[*]	.869
	Sig. (2-tailed)		.036	.029	.019	.056
Find Intelligence	Pearson Correlation			.743	.776	**.983**[**]
	Sig. (2-tailed)			.150	.123	**.003**
Witness Appeals	Pearson Correlation				.927[*]	.702
	Sig. (2-tailed)				.024	.186
Provide Updates	Pearson Correlation					.686
	Sig. (2-tailed)					.201

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

A characteristic of some digital communication channels is that they enable two-way communication. Information about the community engagement strategy of the force can therefore be gained from the choices that police forces make about the digital communication channel they choose and the decisions they make about how to subsequently use the channel. In order to move from a strategy that simply pushes information to the public to one where information is consumed collectively and collaboratively the use of timely two-way communication is important. Therefore, in addition to exploring how police forces simply published information during the riots, forces were also asked whether they used this capability to interact with people. There was a distinction between social media and traditional media with the high use of Twitter (69.2%) and Facebook (50%) for such engagement activity in contrast to email (11.5%), other social media (7.7%), and the force website (7.7%). One force noted that Twitter was *'particularly effective in keeping [statutory] partners updated'* as well as the public.

There was a significant correlation between find intelligence and engage individuals (*r(5)* = .98, *p* = .003). Police forces reported that they actively encouraged the two-way flow of information, and designed bespoke marketing campaigns to increase engagement and

information flow; *'we used our website to encourage people to submit intelligence and support the "Shop a Looter" campaign'*. One force also used the digital channel to help it manage down demand to other communication channels; *'to reduce calls we directed them to contact us by Twitter'*.

One force reported that it was not responsible for the creation of all the material used to facilitate engagement, as material was created by the public; *'we were invited to become administrators of a page that was set up titled "Support Nottinghamshire Police". This page attracted 13,500 likes within 3 days ... of it being set up'*.

Most police forces in this study (84.6%) reported that their use of social media during the riots resulted in a positive outcome. The results are subjective, but many forces provided examples to support their response. The majority of forces (73.1%) felt that the provision of information through social media helped secure public confidence in the police response to the riots. One force reported receiving 10,000 messages of support from the public through its social media channels. In another force: *'When we tweeted about arrests, charges and convictions a large number of people commented that they felt reassured knowing that action was being taken'*.
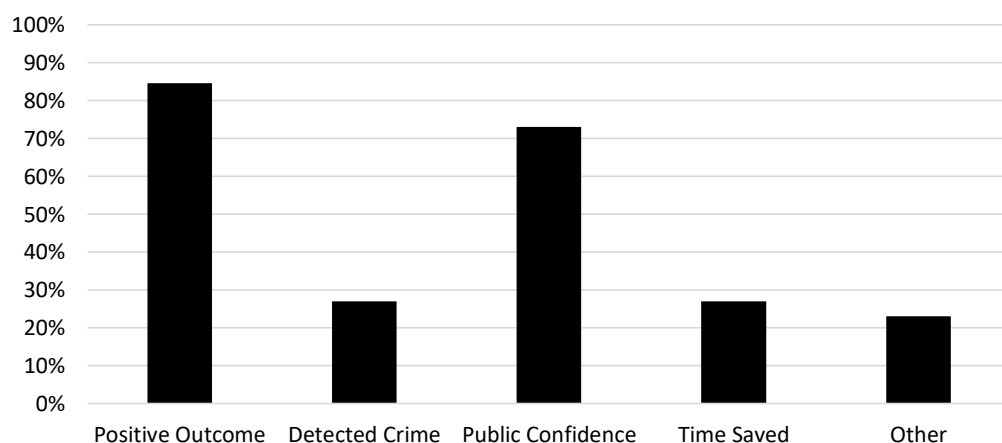
Figure 5. Police view of the outcome of their digital activity during the 2011 riots (*n=26*)

Forces also reported more tangible positive outcomes, with 26.9% forces stating that their use of social media during the riots enabled them to detect more crime, because it improved the flow of information; *'both from monitoring social networks and the public sending information directly to us'*. One force reported that following the release of riot images via social media its website received *'21,000 views and led to 9 arrests within 24 hours'*.

The study did not explore whether social media enabled more crimes committed in the street as opposed to crimes committed online to be detected by the police. One force noted that *'it was a very useful intelligence tool and led to some eight investigations related to Facebook incitement to riot offences'*.

There were mixed views on whether the use of social media saved the force time. Whilst 26.9% of forces in this study felt it did, two forces disagreed, reporting that *'it had not saved time and arguably was labour intensive'*.

One force reported that through engagement on social media it was able to prevent crime through digital patrol; 'we signed up to join a Facebook group which was planning to riot. Once the Police became a friend of the group, it had the desired effect, of preventing the disorder getting off the ground'.

Police forces in this study reported that they received feedback about their use of social media. For most forces this was a positive experience with 80.8% of forces reporting that they had received good feedback. One example was given of negative feedback. This *'centred around the inability to respond to individuals'*. The force providing this feedback was a force that did not use Facebook, or use any other social media tools than Twitter. It was a force that used its digital communication channels to simply push information.

Most forces (84.6%) reported that the number of followers of their Twitter account increased during the riots. For one force this was *'by several thousand'*, and for another this was; *'from 1400 to 5000'*. The impression created by forces was that the increase in followers for these forces was rapid and significant *'traffic spiked considerably!'* Two forces (7.7%) stated that they did not experience an increase in followers, and the remainder had no facility to monitor the number of followers. Interestingly, one of the forces that stated its followers did not increase was incorrect. The following analysis of Twitter data indicates that its followers increased by 11% during the riots.

In summary then, the survey indicates that at the time of the riots the police use of social media was owned and controlled by the central department responsible for the management of official communication between the police and the public, and that messaging was starting to utilise the two main social media channels that existed at the time of the riots (Twitter and Facebook) but that these channels were mainly intended to be used to give reassurance and counter rumour. In short, the use of social media by the police at the time of the riots was instrumental and immature.

In order to contextualise and build on the results of the survey of police forces, Twitter data has been examined to determine what tweeting and follower activity took place on the official police corporate account during, and in the three years following, the riots. Data was available from Twitter for 19 of the 43 police forces, of which 11 of the forces featured in the survey study.

The total number of Twitter followers for the police forces for which data is available on Twitter (n=19) in England and Wales on 1ˢᵗ August 2011 was 94,161. The number of followers that day increased by 472, however in subsequent days the number of followers per day increased significantly. The next day there were 5,131 new followers, the day after 6,560.

As can be seen in Figure 6 this rate of increase in new followers per day increased through the start of the riots on 6th August until mid-way through the riots on 8th August, when 9,706 new followers were added, to make the total number of followers 147,565. Over each of the next three days the total number of followers increased dramatically. There were 18,198 new followers on the 9th August, 21,692 on the final day of the riots, and then 20,961 the day after that. The number of new followers per day then started to reduce, but by 14th August the total number of followers now stood at 228,820, a 143% increase over the 14 days. This was a higher rate of increase than that seen in the three years since the riots (see Figure 6 and Table 4).

Table 4. Increase in followers of police Twitter accounts over three years (*n*=19)

Police Force	Followers Pre Riots	Followers Post Riots	% Increase	Followers 2011/12	% Increase	Followers 2012/13	% Increase	Followers 2013/14	% Increase
Force #01	4,005	7,211	80%	15,356	113%	26,237	71%	41,126	57%
Force #02	3,421	3,787	11%	8,481	124%	15,731	85%	21,372	36%
Force #03	2,409	6,844	184%	13,378	95%	21,020	57%	27,237	30%
Force #04	2,977	3,608	21%	10,331	186%	18,892	83%	26,659	41%
Force #05	27,539	98,717	258%	105,567	7%	129,218	22%	157,571	22%
Force #06	1,102	1,959	78%	5,863	199%	11,265	92%	13,936	24%
Force #07	2,878	3,315	15%	6,708	102%	14,076	110%	22,494	60%
Force #08	3,260	12,468	282%	21,665	74%	35,581	64%	47,437	33%
Force #09	4,439	8,394	89%	15,571	86%	25,152	62%	35,485	41%
Force #10	2,445	3,202	31%	7,954	148%	17,209	116%	27,167	58%
Force #11	4,455	9,311	109%	15,553	67%	25,377	63%	37,429	47%
Force #12	3,632	6,551	80%	12,486	91%	19,872	59%	31,586	59%
Force #13	3,332	5,940	78%	13,194	122%	27,092	105%	39,877	47%
Force #14	7,876	9,762	24%	17,803	82%	30,654	72%	43,381	42%
Force #15	3,794	7,917	109%	14,551	84%	31,410	116%	48,442	54%
Force #16	1,689	5,460	223%	10,191	87%	17,974	76%	26,095	45%
Force #17	8,063	24,450	203%	40,130	64%	79,758	99%	103,559	30%
Force #18	4,762	7,689	61%	16,825	119%	27,816	65%	40,249	45%
Force #19	2,083	2,225	7%	5,501	147%	9,711	77%	14,645	51%
Total	**94,161**	**228,810**	**143%**	**357,108**	**56%**	**584,045**	**64%**	**805,747**	**38%**

A similar pattern can be seen with the tweets made by the police. At the start of the study the number of tweets per day was 112. This rose to 215 tweets the day before the riots started. However, in the early days of the riots, unlike the number of new followers, the total number of tweets per day decreased, and did not rise above pre-riots levels until nearly the end of the riots on 9th August (273 tweets) before the number of tweets peaked on the last day,

after the riots had ended, at 447 tweets. The number of tweets then fell in the days after the

riots to 199 a day on 14th August, however the decrease occurred more slowly than the fall in

the number of new followers. This suggests that the police were tweeting in response to the

rise in new followers as opposed to recruiting new followers as a result of their elevated levels

of tweeting activity. This will be explored further through correlation and regression analysis

later in the study. In the three years following the riots the number of tweets steadily

increased, to an average of 173 in 2011/12, 214 in 2012/13 and 258 in 2013/14. This remains

below the level seen during the 2011 riots.
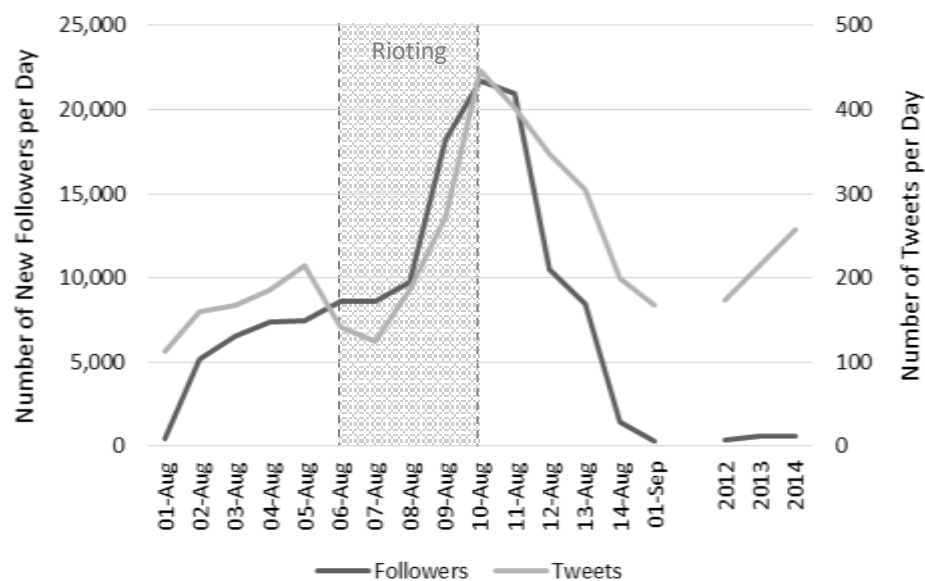
Figure 6. Total number of tweets and followers per day of police Twitter accounts (*n*=19)

The literature on participation in civic life suggests that 9% (Bullock & Sindall, 2014)

of citizens report being actively engaged in policing. There is no research that suggests

whether this limit has relevance to the proportion of the force population that follow the

police force account. The data from this study shows that no force has reached this level of

participation yet. This study did not statistically consider whether the rate of new followers

decreases as it approaches 9%, or whether there is such a ceiling, Figure 7 suggests that to

date there is not.
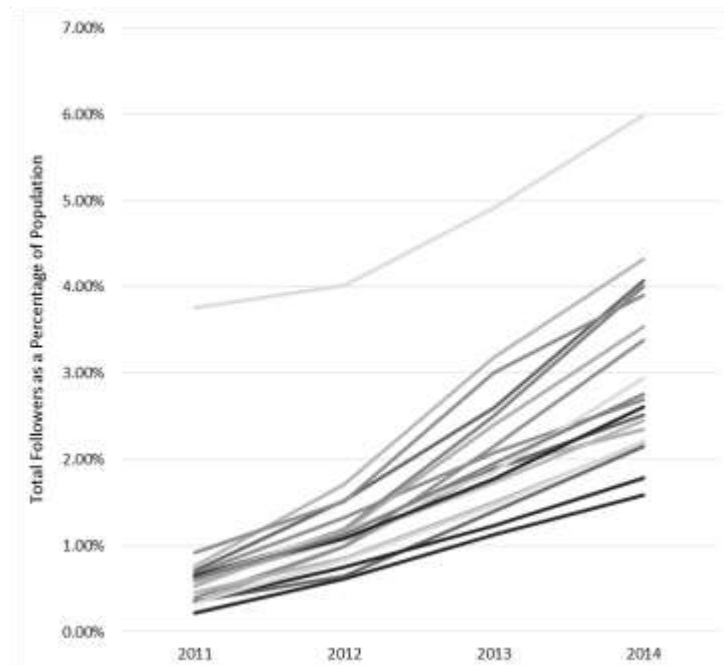
Figure 7. Increase in followers of police Twitter accounts 2011-2014 (*n*=19)

The results have so far been examined looking at the cumulative number of followers and tweets. The pattern of new followers and tweets though differed between forces. The data of four forces is considered to illustrate this. They have been selected using the survey responses in order that forces that experience rioting and forces that did not were represented. All four forces opened their Twitter account in 2009, although their maturity level, assessed by the range of capabilities reported in the survey, varied.

Force #5 was a mature social media force, with Twitter, Facebook and other social media accounts. This force reported that there was an increase in violent crimes in its force area during the riots. The number of followers before the riots was 27,539. Followers increased at the same rate, throughout the riots to reach 70,172. The number of tweets made by the force during this period also remained steady at 20 tweets a day. After the riots ended, the rate of new followers increased, and the total number followers of Force #5 reached 98,717 by 14th August, an increase of 258%. The number of tweets made each day by Force #5 increased after the rioting had ended in the force area. There were 59, 61 and 62 tweets made respectively over the following three days, before the number of tweets fell back

towards the pre-rioting level. The proportion of population following the force after the riots was 3.75%. The number of followers over the last three years has continued to increase, and the proportion of the force population now stands at 5.99%, the highest of the forces in this study.
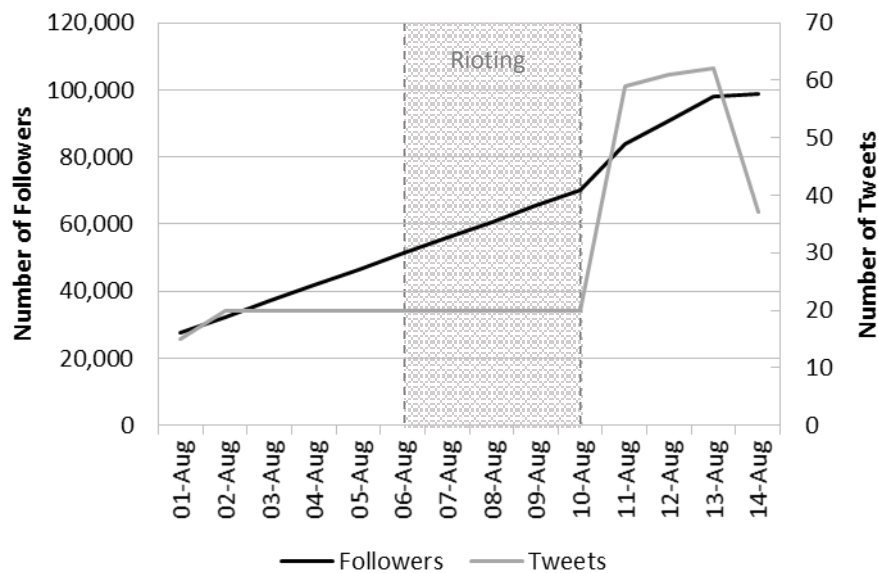
Figure 8. Total number of tweets and followers per day of Twitter account – Force#5

Force #18 shared many of the characteristics as Force #5. In the survey it reported using the same social media tools as part of its policing response, and it also reported experiencing rioting within its force area. The pattern of tweeting, though, differed. Prior to the riots the number of followers was 4,762, with a small number of new followers each day. The rate of new followers increased the day before the riots and continued at this level until the day after the riots ended. The rate of new followers a day then returned to pre-riot levels, reaching 7,689 by 14th August, an increase of 61%. The number of tweets from Force #18 was constant before the riots at 6 tweets a day. This increased to 8 tweets the day before the riots, which the force explained was related to the launch of a new force Twitter account for the force helicopter rather than to the riots. During the riots the number of tweets fell to 5 tweets a day. There was a rise to 9 tweets a day after the riots had ended which were lined to the force

riot response. In the three years following the riots the number of followers of this account has increased and has now reached 1.79% of the force population.
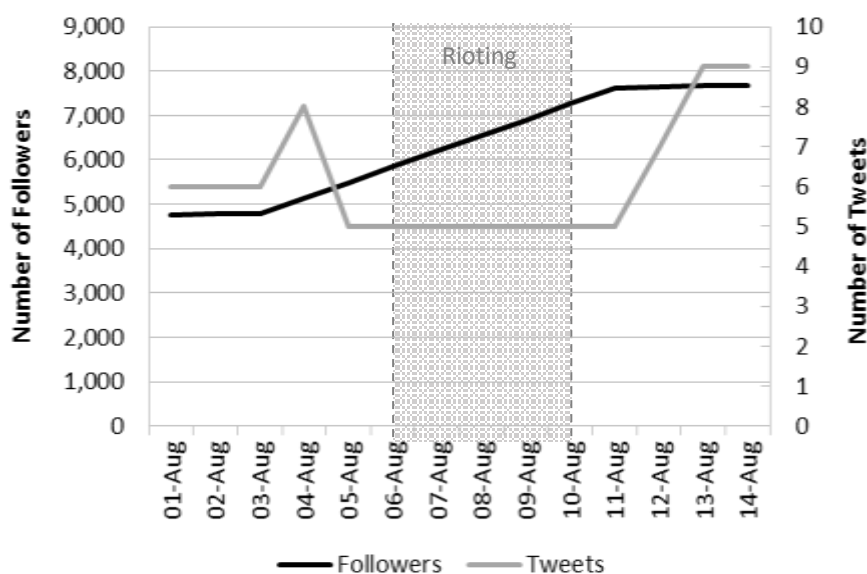
Figure 9. Total number of tweets and followers per day of Twitter account – Force#18

In contrast to the previous two forces Force #7 and Force #12 did not report, in the survey, rioting in their force area. The HMIC review into the riots did not suggest there was rioting in these forces either. One other difference between this force and the other three in this section is that whilst the force has operated a Twitter account for a similar period as the others this force did not have the capability of or used other social media tools or neighbourhood emails as part of its policing response. The number of new followers added per day and the number of tweets per day (15 tweets) remained relatively unchanged during this period. There were 2,878 followers at the start of study which rose to 3,315 followers by 14th August, an increase of 15% to 0.59% of the population. In the three years since the riots the number of followers has increased to 4.01% of the force population.
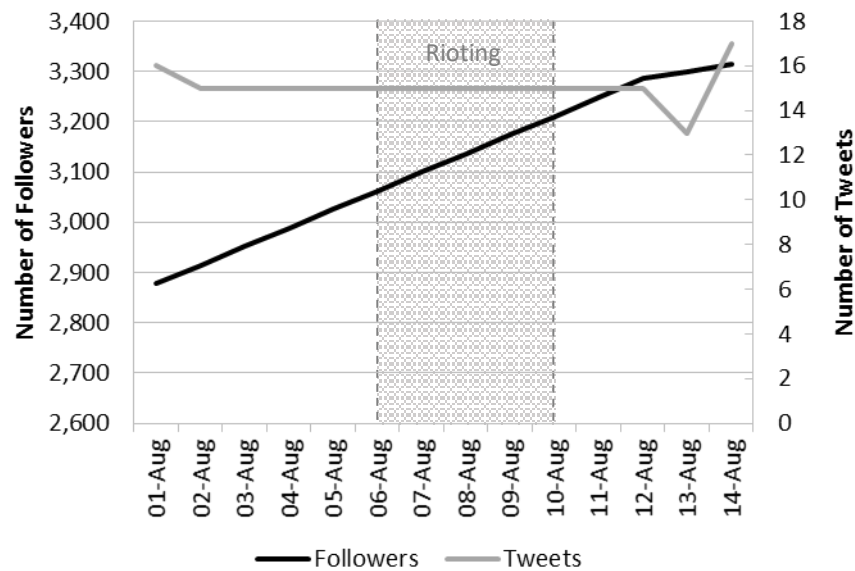
Figure 10. Total number of tweets and followers per day of Twitter account – Force#7

Force #12 has a pattern of tweets and new followers that reflects the totals reported earlier. This is a mature social media force, in that it has the full range of capabilities, and reported in the survey that it utilised them during the riots, although did not report rioting in its force area. The number of new followers remained small until the second day of rioting. There was then a noticeable increase of new followers, to 6,342, on the last day of the riots, before the numbers of new followers reduced resulting in 6,551 followers, or 0.61% of the force population, an increase of 80%. In keeping with all forces in this study the number of followers has continued to increase over the three years following the riots to reach 2.95% of the force population. The force made few tweets before the riots, increasing to 37, 38 and 76 respectively during the last three days of the riots, falling back to the pre-riot level by 14th August.
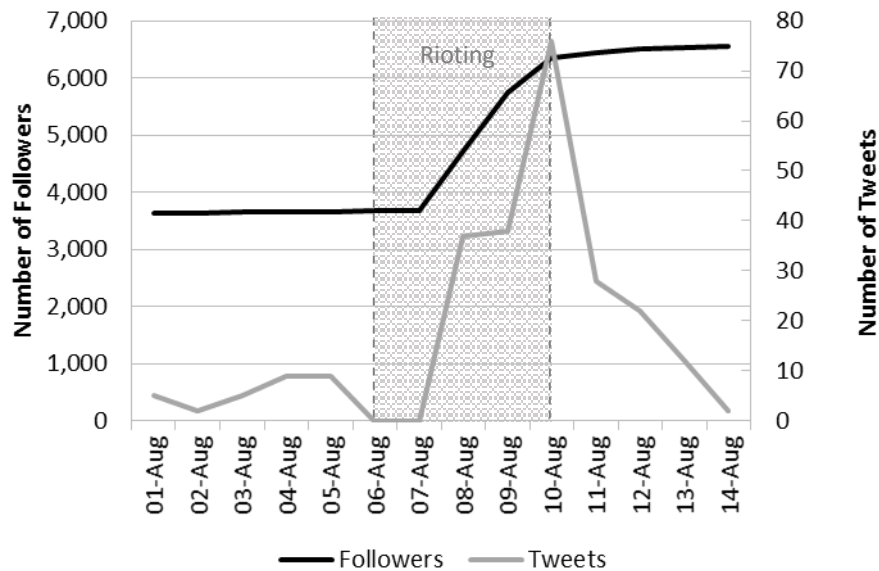
Figure 11. Total number of tweets and followers per day of Twitter account – Force#12

Notwithstanding the differences in the pattern of tweets and new followers found between the forces in this study, the apparent similarity of the increases during and after the riots, when considered with previous academic research (Crump, 2011), suggests there is a link between the number of tweets and the number of new followers. This hypothesis was initially explored using Pearson correlations.
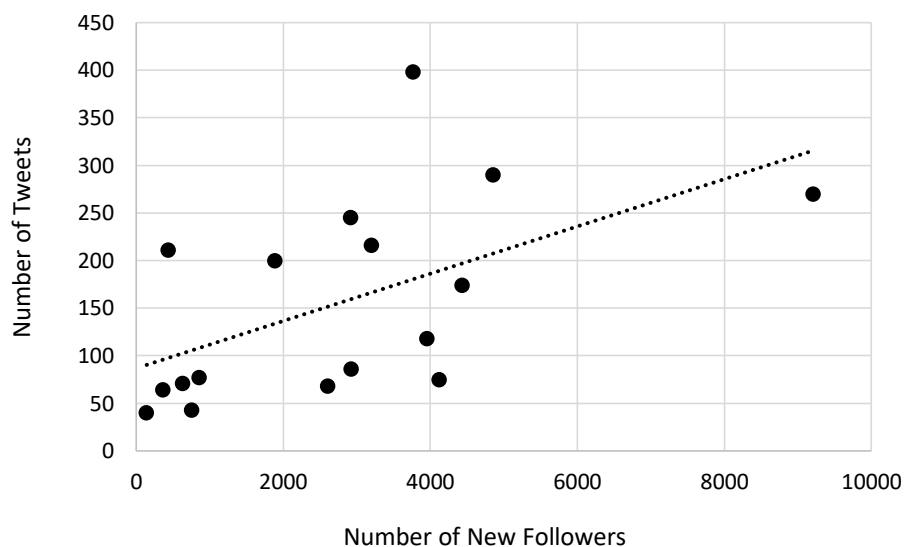
Figure 12. Tweets vs new followers during 2011 riots (*n*=19)

As can be seen by Figure 12, consistent with Crump (2011), there is a moderate relationship between the number of tweets with the number of new followers added during the

riots, producing a Pearson correlation coefficient of $r(19) = .58$, $p = .010$. However, whilst

there was not a statistically significant correlation between the number of followers added

during the riots and the age of the account, there was also a moderate relationship between the

number of new followers and the size of the local police force population, producing a

Pearson correlation coefficient of $r(19) = .58$, $p = .010$ (Table 5).

Table 5. Correlation between followers added during 2011 riots with tweets and population
($n=19$)

		Tweets Sent Riots	Account Age	Population Size
Followers Added Riots	Pearson Correlation	.576**	.262	.577**
	Sig. (2-tailed)	.010	.278	.010
% of Population Added - Riots	Pearson Correlation	.627**	.248	.538*
	Sig. (2-tailed)	.004	.306	.018
% of Population Following 2011	Pearson Correlation	.586**	.340	.444
	Sig. (2-tailed)	.008	.155	.057

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

A multiple regression analysis was conducted in order to determine which variable

was the strongest predictor of follower growth. The dependant variable was the number of

followers added during the riots. The independent variables were number of tweets made,

account age and population size. No statistically significant results were found (Table 6). The

multiple regression analysis indicates no independent relationship during the riots with the

number of new followers and the number of tweets made by forces or the size of the force

population.

Table 6. Regression analysis of followers added during the 2011 riots (*n*=19)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-6613.215	5638.315		-1.173	.257	-18509.020	5282.590
	Tweets Sent - Riots	79.798	27.492	.576	2.903	.010	21.794	137.801
2	(Constant)	-18660.365	14858.121		-1.256	.227	-50158.176	12837.445
	Tweets Sent - Riots	75.984	28.019	.548	2.712	.015	16.586	135.382
	Account Age	16.968	19.339	.177	.877	.393	-24.030	57.966
3	(Constant)	-25303.546	13697.620		-1.847	.085	-54499.332	3892.240
	Tweets Sent - Riots	58.369	26.442	.421	2.207	.043	2.008	114.730
	Account Age	11.822	17.544	.124	.674	.511	-25.573	49.217
	Population Size	.010	.004	.419	2.190	.045	.000	.019

a. Dependent Variable: Followers Added - Riots

The proportion of the local population following force Twitter accounts varied at the start of and after the riots. As can be seen from Table 5 there was a stronger relationship between the number of tweets made during the riots and the number of new followers as a proportion of the local force population, producing a Pearson correlation coefficient of $r(19) =$ .63, $p = .004$. A multiple regression analysis was therefore conducted to determine whether the increase in new followers as a proportion of the population was related to the number of tweets made.

Table 7. Regression analysis of followers as a proportion of population during 2011 riots (*n*=19)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.189	.198		-.953	.354	-.608	.230
	Tweets Sent - Riots	.003	.001	.627	3.320	.004	.001	.005
2	(Constant)	-.576	.525		-1.098	.289	-1.689	.537
	Tweets Sent - Riots	.003	.001	.603	3.121	.007	.001	.005
	Account Age	.001	.001	.154	.798	.437	-.001	.002
3	(Constant)	-.787	.499		-1.576	.136	-1.850	.277
	Tweets Sent - Riots	.003	.001	.494	2.628	.019	.000	.005
	Account Age	.000	.001	.108	.598	.559	-.001	.002
	Population Size	3.089E-07	.000	.359	1.904	.076	.000	.000

a. Dependent Variable: Followers Added as Percentage of Population - Riots

As can be seen from Table 7, this multiple regression analysis indicates a stronger relationship between tweets made and the followers added as a percentage of population ($r(19)$ = .49, p = .019) than tweets made with simply the number of new followers ($r(19)$ = .42, p = .043, Table 6).

Table 5 also shows a moderate relationship between the number of tweets sent and the percentage of the local population following the police force Twitter account in 2011, which produced a Pearson correlation coefficient of $r(19)$ = .59, p = .008. This correlation is absent in subsequent years.

Whilst the bivariate and regression analysis do not produce a robust conclusion, the results suggest a relationship between tweets and followers during the riots, and also the tweeting during the riots influenced the results for that year.

In order to understand whether the results found during the period of riots were consistent with results for the three years following the riots, bivariate correlations were conducted for the numbers of tweets each year, the age of the account, the population size, the number of new followers each year, the cumulative number of followers and the followers as a percentage of the population.

Table 8. Correlations tweets over time (*n*=19)

		Tweets Sent 2011-2012	Tweets Sent 2012-2013	Tweets Sent 2013-2014	Cumulative Tweets 2011	Cumulative Tweets 2012	Cumulative Tweets 2013	Cumulative Tweets 2014	Account Age	Population Size
Followers Increased 2011-2012	Pearson Correlation	**.466**	.545	.619**	.171	.341	.491	.551	.339	**.739**
	Sig. (2-tailed)	**.045**	.016	.005	.485	.153	.033	.015	.156	**.000**
Followers Increased 2012-2013	Pearson Correlation	.527	**.554**	.686*	.238	.413	.537	.605*	.331	**.774**
	Sig. (2-tailed)	.020	**.014**	.001	.327	.079	.018	.006	.166	**.000**
Followers Increased 2013-2014	Pearson Correlation	.443	.394	**.703****	.460	.509	.499	.583*	.363	**.813**
	Sig. (2-tailed)	.057	.095	**.001**	.047	.026	.029	.009	.127	**.000**
Increase in % of Population Following 2011-2012	Pearson Correlation	-.147	-.034	-.210	-.385	-.313	-.191	-.204	.182	**-.654**
	Sig. (2-tailed)	.549	.891	.388	.103	.192	.434	.402	.455	**.002**
Increase in % of Population Following 2012-2013	Pearson Correlation	.184	.294	.241	-.178	-.018	.155	.188	.366	-.201
	Sig. (2-tailed)	.450	.222	.320	.466	.943	.528	.441	.123	.410
Increase in % of Population Following 2013-2014	Pearson Correlation	.028	.058	.176	.029	.032	.050	.092	.449	-.290
	Sig. (2-tailed)	.910	.814	.470	.906	.896	.839	.707	.054	.228
Cumulative Followers 2011	Pearson Correlation	.295	.137	.497	**.555**	.493	.347	.408	.287	**.586**
	Sig. (2-tailed)	.221	.577	.030	**.014**	.032	.145	.083	.233	**.008**
Cumulative Followers 2012	Pearson Correlation	.342	.200	.557	.557	**.518**	.396	.462	.319	**.657**
	Sig. (2-tailed)	.152	.412	.013	.013	**.023**	.093	.046	.183	**.002**
Cumulative Followers 2013	Pearson Correlation	.423	.318	.639*	.511	.531	**.469**	.541	.349	**.744**
	Sig. (2-tailed)	.071	.185	.003	.025	.019	**.043**	.017	.143	**.000**
Cumulative Followers 2014	Pearson Correlation	.433	.336	.661**	.509	.535	.481	**.557**	.356	**.768**
	Sig. (2-tailed)	.064	.159	.002	.026	.018	.037	**.013**	.134	**.000**
% of Population Following 2011	Pearson Correlation	.272	.096	.437	.545	.476	.315	.366	.340	.444
	Sig. (2-tailed)	.260	.695	.061	.016	.040	.189	.124	.155	.057
% of Population Following 2012	Pearson Correlation	.249	.092	.406	.479	.423	.284	.333	.395	.313
	Sig. (2-tailed)	.304	.707	.084	.038	.071	.239	.163	.095	.193
% of Population Following 2013	Pearson Correlation	.273	.181	.425	.337	.347	.292	.345	.459	.190
	Sig. (2-tailed)	.258	.458	.070	.158	.145	.225	.148	.048	.436
% of Population Following 2014	Pearson Correlation	.230	.164	.397	.282	.291	.252	.307	.505	.069
	Sig. (2-tailed)	.343	.502	.093	.242	.226	.299	.200	.027	.778

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

There was a moderate relationship between the number of tweets made during the year 2013/14 and the number of new followers in that year, producing a Pearson correlation coefficient of *r(19) = .70, p = .001*. The relationship between tweets and followers had strengthened year on year. There was also a strong relationship between new followers and local population size, producing a Pearson correlation coefficient of *r(19) = .81, p = .000*. No relationship was found between the age of the account (*r(19) = .36, p = .127*).

Similar results were found between the total number of followers and the total number of tweets. There was a moderate relationship between tweets and followers (*r(19) = .56, p = .013*), a strong relationship between population and followers (*r(19) = .77, p = .000*), and no statistical relationship between followers and the age of the account (*r(19) = .36, p = .134*).

In order to determine which variable is the strongest predictor of the number of new followers a regression analysis was undertaken for the dependant variables of new followers in 2013/14 and cumulative followers in August 2014.

Table 9. Regression analysis of new followers in 2013/14 (*n*=19)

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	4254.975	2097.472		2.029	.058	-170.305	8680.255
	Tweets Sent 2013-2014	1.508	.370	.703	4.081	.001	.729	2.288
2	(Constant)	5007.680	5193.443		.964	.349	-6001.926	16017.287
	Tweets Sent 2013-2014	1.548	.455	.722	3.400	.004	.583	2.513
	Account Age	-1.267	7.951	-.034	-.159	.875	-18.122	15.587
3	(Constant)	-2174.710	4310.014		-.505	.621	-11361.287	7011.867
	Tweets Sent 2013-2014	.547	.431	.255	1.269	.224	-.372	1.467
	Account Age	4.132	6.081	.110	.679	.507	-8.829	17.093
	Population Size	.006	.002	.639	3.740	.002	.003	.009

a. Dependent Variable: Followers Increased 2013-2014

Table 10. Regression analysis of cumulative followers in 2013/14 (*n*=19)

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	11490.086	13014.978		.883	.390	-15969.118	38949.290
	Cumulative Tweets 2014	2.071	.750	.557	2.763	.013	.489	3.653
2	(Constant)	-3336.289	32265.928		-.103	.919	-71737.001	65064.424
	Cumulative Tweets 2014	1.862	.872	.500	2.136	.049	.014	3.710
	Account Age	23.981	47.541	.118	.504	.621	-76.802	124.764
3	(Constant)	-37741.570	25619.504		-1.473	.161	-92348.250	16865.110
	Cumulative Tweets 2014	.462	.746	.124	.618	.546	-1.129	2.052
	Account Age	36.403	35.407	.179	1.028	.320	-39.064	111.870
	Population Size	.033	.009	.673	3.755	.002	.014	.052

a. Dependent Variable: Cumulative Followers 2014

As can be seen from Table 9 and Table 10 multiple regression analysis indicates a moderate relationship between new followers added and population size for both the cumulative total of followers, producing Pearson correlation coefficients of *r(19)* =.67, *p* = .002, and for the new followers added in 2013/14, with a Pearson correlation coefficient of *r(19)* = .64, *p* = .002. Contrary to Crump (2011), no relationship was found for the number of

tweets made or the age of the account. Of course the study by Crump (2011), whilst slightly larger in size, was conducted a year earlier than this one and therefore closer to the start of the use of social media by the police. It is therefore not surprising that he found a relationship to age of the account.

Multiple regression analysis of the data in this study therefore suggests that during a significant event such as the riots the number of tweets and new followers are related, but at other times increases in new followers of force Twitter accounts is explained by the force population size. This finding might be consistent with the level of social media maturity reported in the riots survey (St2), an issue which will be further explored in the discussion.

Discussion

This research concerned a mixed methods study focused on the use of social media by police and citizens during and subsequent to the August 2011 riots. Firstly the research described the way in which police forces in England and Wales operationalised their use of social media for digital engagement through a survey. The research then used secondary data to examine 'follower' behaviour of citizens in order to understand whether the police, through digital engagement, facilitated or influenced participatory behaviour of citizens.

Previous research has situated the riots as a significant event for police digital engagement (Denef, Kaptein, Bayerl, & Ramirez, 2012), this research replicated and extended those findings. The research found that whilst significant, the 2011 riots were also an exceptional social media event, for both police and citizens; the number of tweets by forces per day in the three years following the riots has remained below the level seen during the 2011 riots, and the rate of increase of Twitter followers per day during the riots has not been seen since the riots.

The police in the riots survey (St2) set out two reasons to explain the increase in followers of their social media accounts. They reported that followers increased firstly because they had an established social media presence through which the public could obtain information, and that secondly the information they provided to the public was reliable. These explanations were consistent with those provided by the police in formal debriefs conducted by the police following the riots to identify what they could learn about their use of social media (NPIA, 2011).

The explanations would also be consistent with the literature that indicate people want information about crime. It is also consistent with the earlier study on serious organised crime (St1), which found that the public expected the police to act as a bridge for the community, to provide and promote 'trusted' information, and that during periods of insecurity citizens turned to the police to inform and update their risk radar to understand if it is safe to go about their day-to-day business. It is the case that the police attracted more followers than other statutory community safety partners, such as the council (Newton, 2011).

However, digital engagement by the police through social media was far from being the established presence in 2011 that the police purported it to be. In fact it was found to be a relatively new activity for the police in England and Wales, and by the time of the riots, whilst one force was approaching its third anniversary on Twitter, other forces had only been operating an account for several months. More importantly, for this research, whilst their social media activity was positively received by some citizens, and had a positive outcome, the police may not be correct in their perception that it was their provision of reliable information that drove follower increases. This research suggests that rather than the police anticipating and providing reliable information through established channels of communication to the public which resulted in an increase in followers, the police were actually tweeting in response to the rise in new followers. One perspective, then, is that

citizens in an information vacuum during the riots looked to police for reliable information, and the police eventually responded; the demand for information resulted in its supply.

The review into the policing of the 2011 riots focused on ten police forces, and whilst some examples of the good use of social media were identified, in general the report concluded that whilst forces were overwhelmed, social media was not well understood or well managed (HMIC, 2011). This research concerned more forces in England and Wales than HMIC reviewed, and whilst the scope of this research was tighter, the tenor of HMIC findings were replicated and extended upon in this study.

The riots survey (St2) found variations in the range of digital channels available to forces, and different utilisation of those channels by forces. When considering uses such as providing or looking for information, or when seeking to engage the public forces reported that they would use the channels in similar ways, but then during the riots some forces reported their use increased whilst others did not. The differences were not explained by looking at which forces were subject of rioting and which were not.

Forces also varied in the way staff were empowered to utilise social media in the force. Researchers (Procter, Crump, Karstedt, Voss, & Cantijoch, 2013) have found that the content of force and local accounts differs; in some forces the decision about what and when to tweet locally is controlled by central staff, whereas in others it is left to the discretion of local staff.

Forces also differed in the way in which they monitored their own use of social media with some forces using tools provided by their content management platform, others using tools available on the intranet and others not undertaking any monitoring at all. The differences found in the riots survey (St2) in utilisation, empowerment and monitoring suggest the use of social media by the police in 2011 was immature, and that until practice

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becomes more systemised and standardised researchers should be cautious before generalising their findings to other police settings, or representing social media research as the way in which the UK police utilise social media.

Whilst there were differences in the way forces in the riots survey (St2) utilised social media there were also similarities in their approach. In most forces, responsibility for the utilisation of social media rested with those departments in the force that managed communication with the media and not those departments responsible for collection and analysis of intelligence, investigation of crime, prevention of crime, safeguarding vulnerable people, or managing public contact. This is likely to influence the way in which the force utilised social media. For example, proactive monitoring of social media took place, but with the aim of identifying reputational issues. There was little evidence of forces routinely searching for criminal intelligence which might be expected if social media was managed by the intelligence community, or opportunities for service recovery if the public contact department had responsibility for social media. Ownership of the way in which social media is used has not been subject to academic scrutiny, although it is implicit in the literature on public contact that the police make little use of online reporting (Cabinet Office, 2012), there is a gap in the capability of forces to investigate crimes involving social media (HMIC, 2015), and the intelligence opportunities from social media – the potential for which is recognised in this study – are not considered (HMIC, 2011). There was no mention of social media by crime prevention staff in the study by Bullock and Leeney (2013), or by the public in the SOC study (St1). This indicates there is considerable potential yet for the police to make more effective use of social media.

With the ownership, and therefore the control, of social media resting with communications departments it is interesting that according to the literature one style of communication dominates. The literature finds that the police favour a more instrumental

style of communication (Brainard & Edlins, 2015; Crump, 2011; Denef et al., 2013; Procter, 2011): one that is largely used to provide information. While there are examples of forces that use a more expressive style (Denef et al., 2013), there remains little collaborative conversation (Brainard & Edlins, 2015). The riots Twitter analysis (St2) suggested that the primary purpose in providing information was to reassure and counter rumour as opposed to investigation or engagement activity which is again indicative of where ownership rests for the use of social media. Good practice models for police communication departments set out that the purpose of information provision to the public is to foster the police–public relationship and increase trust and confidence (Wünsch & Hohl, 2009). It is unsurprising, then, that the riots survey (St2) found more forces utilised social media tools such as Twitter as opposed to Facebook during the riots. Whilst Twitter and Facebook are both web-based social media tools that enable content creation, on Twitter users focus on content creation to contribute to a collective conversation, whereas on Facebook users interact with others to facilitate collective action (Brainard & Edlins, 2015).

The literature on the police use of social media is increasing, however it typically looks in isolation at the way police used social media rather than considering its utility in the context of the way the police use the range of digital channels available to them. The riots survey (St2) identified that forces operate across a number of different digital channels, and participants reported increases in the use of these channels by citizens. Participants reported that not only were the social media channels (Twitter, Facebook and other social media) used differently to their more traditional digital channels (i.e. email and website), but there were also differences in the way the police utilised the social media channels. For example, when comparing social media to traditional digital channels, whilst both Twitter and the website are valued for reassurance messages, Twitter is used more than the force website for timely and urgent communication to counter rumours. In contrast to Twitter and Facebook, the other

digital channels were not seen as a productive way to engage with people. When comparing

between social media channels the additional capability to use Facebook as a tool for

collective action as opposed to collective conversation was recognised by participants who

valued Facebook as a tool to seek information. The riots survey (St2) also found that that

finding information and engaging the public were correlated, which suggests that Facebook

might offer an opportunity not currently being exploited by the police to generate information

through digital engagement.

It is clear, therefore, that in order to make best use of social media the police will need

to differentiate between the tools available to them, decide how to make best use of each tool,

and then deploy them in a way that enables the resultant digital eco-system to survive. The

functionality available within each digital tool is not static, and therefore the way in which the

police make best use of them will need to continue to evolve for the digital eco-system to

thrive. At the time of this research this would have meant using Twitter to direct and re-direct

the public to either engage through Facebook or undertake online transactions with them

through their website. It is clear from the riots survey (St2) that this practice was not

widespread, and opportunities to use the real-time update nature of Twitter were under-

utilised during the riots. This left participants, as reported earlier from the riots Twitter

analysis (St2), providing reassurance messages in response to the exceptional rise in

followers. The police missed the opportunity to drive the increase in followers of their Twitter

accounts. The SOC study (St1) suggested the police need to rapidly close information gaps,

but they did not do so during the riots. To do so, the riots study (St2) suggests a more

effective use of Twitter would have been to make the focus of tweets during the riots

concerned with providing real-time updates on the relative risk faced by citizens rather than

simply trying to reassure them. This concept was introduced prior to the advent of Twitter by

Ericson and Haggerty (1997), who set out a role for the police as communicators of risk, but not examined empirically before this research.

The literature prior to this research on the use of Twitter by the police was limited, but found that the volume of tweets by the police and the age of the police account was correlated to the number of followers of the account (Crump, 2011), a view accepted by the service (NPIA, 2011). The riots Twitter analysis (St2) challenges that prevailing view, and through multiple regression analysis of three years of Twitter data instead suggests that during a significant event such as the riots the number of tweets and new followers are related, but at other times increases in new followers of force Twitter accounts is explained by the force population size. Encouragingly, though, this research has also shown that the numbers of followers has yet to reach a saturation point and that there are considerable opportunities to improve the way in which the police use social media, so it remains a reasonable aspiration that by evolving the way the police use social media, even though the SOC study (St1) found that the public are predominately passive users of police information, they could yet influence the way the citizens engage with the police through the social media.

Limitations

The main limitation of this study is that the research relies on data made available through the public Twitter API. The researcher is thus unable to verify how accurate the data provided through the API is. Twitter does provide the mechanism to use source data for research but this is only available through Twitter's own research organisation and a cost. This data, though, is representative of the data available to the academic community and thus useful for comparisons to the findings of other research. Whilst the data collection concerned all 43 forces in England and Wales, gaps in the data available reduced the sample available for analysis to 19 forces. Whilst this is still a significant proportion of the force accounts operated by the police, it nevertheless is fewer than the accounts operated by the police and as

such does not represent the total force picture. The study did not consider local accounts operated by the police, there not being an accurate list of them. These can either be local accounts approved by the force for a neighbourhood or accounts operated independently by individual officers. It is likely that there will be differences in the practice of local officers and this would be useful area for further research. The longitudinal data was collected at a fixed point in time and thus did not represent activity over the whole period. The impact of events between these points in time could not therefore be considered. It would be useful to understand whether certain events of style of tweet produced by the force influence the consumption of information by the public, but this was beyond the scope of the study.

Despite these limitations this study provided new insight into the drivers of follower increases and the influence of events on the consumption of information by the public; that events cause the public to move from passive to active consumers of information. The study also provided the first evidence that citizens' demand for information influences the supply of information on social media.

Conclusion

The literature on neighbourhood policing indicated and the SOC study (St1) found that there was not an equal information partnership between the police and the public. Information provided by the public to the police is not shared with the public by the police resulting in information asymmetry. As a result there not only is, but the public perceive there to be, an information gap between police and citizens. The SOC study (St1) found this concerned citizens; they expected the police to act as an information bridge within and between them. The research found, though, that whilst citizens expected the police to provide them with trusted and timely local information situated in the citizens' risk of victimisation, they were passive consumers of police information. This research sought to examine the police service's first forays into the use of social media in the context of the 2011 riots to understand whether

social media provided an opportunity for the police to use new tools to address information asymmetry and close the information gap. The research found that, outside of the riots, citizens' follower behaviour remained relatively passive with follower numbers correlating with the size of the local population. Significantly, this contrasts with the literature (Crump, 2011).

In keeping with the literature, this research in this chapter also found that the police participants' utilisation of social media during the riots was immature, and when citizens moved from passive to active consumption of information and followers of police Twitter accounts increased at an unprecedented rate, the police service was overwhelmed (HMIC, 2011). The research, though, presents a fresh perspective from the prevailing view (NPIA, 2011) about how the police and citizens utilised social media during the riots; instead of being the catalyst for the change from passive to active citizen information consumers, most of the participants simply reacted and filled the growing information gap with reassurance messages.

Encouragingly, though, this research suggests that the numbers of followers has yet to reach a saturation point and that there are considerable opportunities to improve the way in which the police use social media. The research suggests that in order to make best use of social media the police will need to differentiate between the various tools available to them and to integrate their use as part of a police-citizen information eco-system. The research suggests an alternative way that the police could have used Twitter during the riots, reflecting the role of the police set out by Ericson and Haggerty (1997): to use the information they have to communicate risk to citizens.

Of course, the police in the UK do not frequently have to deal with incidents of the magnitude of that experienced in the riots. Whilst the police response to crisis remains an important area of study, this research is concerned with the way in which the public

participate in policing in their neighbourhood. To this end, the riots studies illustrate that the public can be more active consumers of information, and the research suggests that an integrated information eco-system utilising Twitter to provide real-time information might act as that catalyst to increase participation in policing. The next chapter describes a randomised controlled trial in a UK police force to examine whether the proactive use of social media can increase the flow of information from the public to the police to improve the quality of the investigation of crime (Willmer, 1970).

CHAPTER SIX: STUDY 3 – TWITTER: AN RCT OF CRIMINAL DAMAGE INVESTIGATION

Introduction

The thread running through the three studies in this thesis is that to improve the effectiveness and efficiency of social control there needs to be a re-balancing of information traded within the information market and information exchange needs to function within all four quadrants of this market. The research conducted in the two studies reported so far has provided new insight to show how information was traded between the police and citizens from the perspectives of producers and consumers of information. It has also situated that insight within the traditional and emerging digital landscapes of policing. The research findings from the first two studies illustrate that in quadrants three and four there is an appetite for information, and an information gap (SOC study (St1)). The police have a role to provide and promote trusted and timely local information in quadrants one and three, and are an information bridge with and between citizens in quadrants two and three (SOC study (St1)). However, there is information asymmetry with the focus of information gathering in quadrant one (Bullock & Leeney, 2013). The police do not therefore fulfil the information contract; they collect rather than tell (SOC study (St1)), preferring to operate in quadrants one and two (Bullock & Leeney, 2013), as custodians and consumers of information. The public can be both active and passive consumers of information (riots study (St2)). Whilst the triggers that cause the public to switch modes remain to be determined, in quadrant three at least, risk matters and events are likely to be an information opportunity where citizens move from passive to active consumers of information (riots study (St2)). At such times, the police are yet to make effective use of the information eco-system to enable information to flow (riots study (St2)). The next phase of this research will be to ascertain if citizen participation can be increased through the use of contextualised real-time local information delivered through social network sites, a quadrant three activity.

The literature on efforts to measure the increase in the flow of intelligence between police and citizens is limited (Lowe & Innes, 2012; Sherman, 1997), whether that is attempts to examine the flow of information from citizen to police (quadrant 2) or police to citizen (quadrant 3). Studies tend to use either crime reduction, arrests or crime detection as the measure of success, perhaps because of the subjective nature of information (Willmer, 1970). The literature does distinguish between reactive (citizen initiated) and proactive (police initiated) tactics (Reiss Jr, 1971), and against this distinction for quadrant one activities such as catching repeat offenders (Martin & Sherman, 1986), arrests (Sherman, 1997) and directed patrol (Sherman, 1997; Telep, Mitchell, & Weisburd, 2014) proactive tactics are more effective than reactive tactics. For quadrant two activities proactive activity such as door-knocking in conjunction with buy-bust operations produced a crime reduction effect whilst door-knocking alone did not (Uchida, Forst, & Annan, 1992). Reactive door-knocking to seek information such as who is carrying guns on the street produced no drop in crime (Sherman, Shaw, & Rogan, 1995).

The evidence for quadrant three activities is mixed. A meta-analysis by Bennett, Holloway, and Farrington (2008) concluded that Neighbourhood Watch, a proactive tactic, is effective at reducing crime. Of course, Neighbourhood Watch involves more than just the provision of information to the public about crimes: it also includes situational crime prevention measures such as street signs. Until recently, the research on the proactive use of newsletters was inconclusive. Pate, Wycoff, Skogan, and Sherman (1987), in two randomised trials in the USA, found no reduction in victimisation as a result of a monthly newsletter. However, Wünsch and Hohl (2009) found evidence of a positive effect of their newsletters in the UK on overall confidence and perceived police community engagement, suggesting that the design of the newsletter and the actual information produced by the police for citizens was important in determining whether there would be a positive effect. The literature indicates

therefore that proactive activity by the police to publish information for citizens might be more productive than reactive tactics such as door-knocking following the report of crime. Sherman (2013) indicates that a version of this idea is "reverse 911" under which police send by fax warnings of criminal activity to a list of residential and business fax numbers requesting the service. As discussed in the literature review, the rapid increase in weak, or digital ties, as a consequence of the introduction and growth of the internet and social networking sites (D. Boyd & Ellison, 2008) provides a new infrastructure for information to flow from weak ties to the police (Granovetter, 1973, 1983). This chapter describes a randomised controlled trial in a UK police force to examine whether the proactive use of social media to publish police information for the consumption of citizens (quadrant three) can increase the flow of information from the public to the police as part of crime investigation. It was therefore hypothesised that information about crimes proactively published in real time by the police using social media would increase the flow of new information from citizens to the police and therefore result in more crimes being cleared up by the police than existing reactive policing methods.

The focus of this research, though, has also been to consider how the police may use new media to increase participation in neighbourhood policing specifically through the increased flow of information from citizens to the police. Two specific hypotheses will therefore be tested and explained in this study (St3) relating to information flow and crime investigation:

H_1 - Information about crime proactively published by the police on social media would generate more information flowing from citizens to the police than reactive policing methods.

H$_2$ - Information about crime proactively published by the police on social media would result in more crimes being detected than reactive policing methods.

In order to fill gaps in the academic literature and to benchmark the current operating context, the research methods selected in the studies conducted so far consisted of qualitative methods such as focus groups (St1) and survey (St2) and quantitative methods such as secondary data analysis (St2). Sherman (2013, p. 417), however, highlights that in order to deliver strong evidence that can improve policing, experiments beyond the laboratory are necessary: in the real-world. This research study consisted of three real-world methods: a randomised controlled trial to field-test the hypothesis, and an archival analysis and a focus group to examine and explore the RCT finding further. All the research was based in the same police force in the South East of England as the earlier research. The nature of real-world research necessitates trade-offs between optimal research design and the reality of what can be accommodated in the research environment (Robson, 2002). One manifestation of such constraints for this research was to significantly curtail the original ambition as well as the original hypothesis to be tested. The specific hypotheses tested in this experiment, presented later on p.143, was therefore less ambitious following the pilot test.

The methods and results sections of the research in this chapter are presented in three sections. The first section describes the method and results for the criminal damage RCT (St3). The methods section for this pilot study considers the original intention of the RCT and report on the results of the pilot before setting out how the method was adjusted to reflect the subsequent operation of the criminal damage RCT (St3). The findings from the criminal damage RCT (St3) are then reported, which identify that reactive enquiries undertaken locally by PCSOs produce more information for an investigation into criminal damage than proactive enquires such as email requests for information or alerts posted on social media. The second section sets out the method for the secondary data analysis of Twitter data (St3) before and

after the randomised controlled trial. It then reports on the results of that study, which identified that the tweeting style of the police force changed from instrumental to expressive after the randomised controlled trial. The final section sets out the method and results for the third part of this study. In this section, a focus group of those involved in implementing the randomised controlled trial explores the implications for police practice from the findings of the criminal damage RCT and the RCT Twitter analysis. The method and results of all three sections are therefore reported before the results are discussed together.

Method – Randomised controlled trial concerning the investigation of criminal damage

This study concerns an experiment to test whether the police can influence the flow of information about crime through the use of social media. Farrington and Welsh (2005) assert the defining feature of an experiment is that it investigates the impact of prospectively planned variations in an independent variable on a dependent variable and that the major methodological problem is to unambiguously attribute observed variations in the outcome to the effects of the intervention. A randomised experiment can rule out alternative explanations for the observed findings, and is considered the gold standard of experimental design (Sherman, 2013). The design challenge, then, was to find a crime or crime types on which to experiment with information as the outcome, and the use of social media as the categorical independent variable. Robson (2002) advocates that those involved in real-world experimentation restrict themselves to the very simplest designs. This raised several questions about choice of crime, social media channel and information, given that some crime is inherently more solvable than others (Coupe & Griffiths, 1996), and as has been reported different social media channels have different roles, and within a crime investigation not all information is of equal value (Leeney, 2007; Willmer, 1970).

Design (RCT pilot)

In the absence of previous academic research into this subject, a pilot test study was conducted to help inform the design of the experiment. The pilot was intended to test the feasibility of delivering social media treatments within the contact centre environment, as opposed to a full test of potential methodology. The pilot did not, therefore, consider testing a hypothesis or the more challenging components of the experiment such as randomisation or multiple treatment groups. Early discussions with the police force also revealed nervousness about which crimes might be appropriate for a social media intervention and also for the additional demand an experiment might place on contact centre staff. It was therefore agreed that the pilot test would run for a week and focus on one crime type.

In this police force at the time of the research, approximately 65,000 crimes were recorded each year. The proportion of crimes making up this total varied, with crimes such as criminal damage amounting to 18% of the total recorded crime, vehicle crime 10% and robbery less than 1%. With a week available for the pilot test, it was necessary to choose a relatively routine crime type that occurred with sufficient frequency that it was likely this type of crime would be reported within the week. In addition to try to reduce the noise that might come from a crime that would ordinarily be subject of press releases it was necessary to find a crime that would not ordinarily be subject to publicity, but might nevertheless be of interest to the public. Media stories about the police use of Twitter were relatively infrequent at the time of the pilot, an exception being Greater Manchester Police's 24hr tweet–a–thon where all incidents were tweeted for a 24-hour period (BBC, 2010). A news story about how the public used social media to find a stolen 1991 Nissan Skyline GT-R (Feder, 2010) indicated that vehicle crime might be a suitable choice for the pilot. Vehicle crime occurred with sufficient frequency to generate enough content within a week to be of value for the pilot, and was also

a crime that was not routinely investigated by the force and had a poor detection rate. The force therefore agreed to be the pilot site for the study.

Eligibility criteria (RCT pilot)

During the pilot test study, any report of a vehicle crime – whether a theft of or from a motor vehicle – made by the public to the police call centre was included.

Materials (RCT pilot)

This experiment was undertaken in the existing real-world environment, so that those staff involved in the implementation of it would use the equipment and resources that they would ordinarily have access to as part of their job. Staff were provided with access to Twitter from their workstation to enable them to create tweets following the new reports of vehicle crime. A guidance note setting out instructions about the content of tweets was developed. A press release was also prepared so that there was a consistent public message about the pilot. No other materials were developed.

Procedure (RCT pilot)

During the week of the pilot study, any incident that matches the eligibility criteria was immediately assessed by a call-handler for suitability for publication. For those incidents that matched the criteria it was intended that the operator produce a tweet containing details of the incident (time/day/date/location/classification (theft of/from)). The tweet should also point people to crime prevention information on the force website, and provide details of how the public could provide information about the crime online through the force website. During periods of peak demand, in order to mitigate the additional work for call-handlers, arrangements were made for support to be given by community volunteers. Data was obtained through regular checks of the Internet to collect data for analysis. Copies of each tweet were retained. In order to draw attention to the initiative, a press release was issued and a senior police officer interviewed. A web chat was also organised during the pilot week.

Analysis (RCT pilot)

The pilot was not designed to test a hypothesis. Instead, it was intended to establish the feasibility of running an RCT within the call centre environment. Initial scoping work for the pilot identified that the volume of social media data readily available, without using commercial tools to extract and code the data for analysis, was limited. The pilot therefore sought to test what data might be collected as part of the experiment by daily searching of force systems and social media applications. The research is concerned with a general hypothesis about the flow of information. The availability of data for systematic collection would influence the specific hypothesis for testing in the experiment. The pilot test examined the ease of collecting data about numbers of additional contacts generated, changes in account followers, and retweets or comments about tweets made. It also considered other places in which the public might pass information to the police such as Crimestoppers. In addition, the pilot sought to track outcome data such as whether a crime was detected and how the pilot was received by the public in terms of positive and negative comments.

Results and implications for RCT from the pilot

The pilot test commenced at 0600 on Monday 11th July 2011 and operated until 0559 on Monday 18th July 2011. During this time it was demonstrated that it was feasible for call handling staff to undertake an assessment of eligibility criteria at the point they had taken details of, and recorded, a new report of crime. During the assessment process, call-handlers were able to identify whether a reported crime amounted to a report of theft of or from a motor vehicle. There were circumstances, though, in which further guidance would have been helpful. These included where multiple crimes were reported at a single location either by the same caller or by successive callers independent and unaware of the other crimes. Where these calls were taken by the same caller it was possible to link them and determine an appropriate response, but this was not always the case. In an RCT this might have resulted in multiple treatments at the same location and undermined results. In some cases it was not

clear whether a crime had occurred until further assessment had taken place, for example where the person reporting the potential crime was not the last person to have access to the vehicle. In other cases the crime had occurred elsewhere in the country or had occurred some time ago. Clearer guidance about how to treat such crimes for eligibility was necessary for the RCT, to cater for each of these scenarios. In addition, the design of the RCT considered an escalation mechanism for call-handlers to enable them to seek advice from the control room supervisor in order that consistent determination or interpretation of the guidance be achieved. In the pilot, call-handlers used their judgement about whether to tweet or not.

Whilst call-handlers were able to determine whether to generate a tweet and then construct an appropriate tweet for the crime, they did not consistently do so for all eligible crimes. Call centres are pressurised environments where the focus of staff and managers is to deal swiftly with call for service to ensure that the queue of unanswered calls remains within target; this focus is present in police call centres where there is a risk to public safety from unanswered calls. During times of high demand tweets were therefore not always generated. This has implications for the successful operation of an RCT. The situation had been anticipated and at times of peak demand volunteers were arranged to provide additional capacity, but they sometimes either did not turn up or did not have the requisite skills to help. An alternative solution was needed for the RCT which involved using more call-handlers and not relying on volunteers.

A further challenge to a successful RCT was whether call-handlers followed the procedure and enacted their authority to determine whether a tweet would be generated. Whilst the procedure anticipated that call-handlers would have the autonomy to make this decision, in practice where a crime had been allocated to an investigator, or it was anticipated that it would be, then the call-handler tried to consult with the investigator to check they agreed a tweet should be generated before they did so. Call-handlers, being low-status staff

within the organisation, would routinely defer to the investigator whether there was a sound operational reason for not continuing with the tweet or not. Introducing such complexity either pre or post-assignment would be challenging for an RCT.

The pilot test further revealed a number of technical challenges within the contact centre environment, which would need to be addressed for a subsequent RCT. The first was that the specification of desktop computers varied and as a result some of the computers used old software that did not provide either access to social media software or all of the functionality of that software. This placed a further constraint on which staff and therefore which crimes were subject of a tweet. In addition it did not prove possible to tag crimes on computer systems as part of the experiment or extract key data from them, which meant subsequent data extraction would rely on standard information management tools available within the organisation. This constrained the subsequent design, and in particular the tool used for randomisation. Efforts to resolve technical challenges with information technology and information security staff within the force were unsuccessful, this work not featuring as a priority or planned for.

As the pilot test week progressed new shifts came on duty that each had to engage with the pilot anew. Tweeting did continue throughout the week, but only with the support of the contact centre manager who personally took time each day to ensure the pilot was operating as it should and together with the researcher produced daily management information to provide visibility of the rate of tweeting. It was evident that there was resistance to the pilot and that measures to ease this friction with staff would be needed in the event of a further experiment. Some staff felt it was beyond the remit of their role to use social media, instead preferring to simply reactively generate call logs from public contact. Some staff did not feel confident in the use of social media, not being users of the technology

in their private life. Other staff felt that the time they had been asked to spend generating tweets would be better spent answering new calls for assistance from the public.

The pilot, though, was judged by staff to be a success and it was noted that the numbers of followers of the force Twitter account increased by 257 from 2,941 at the start of the week to 3,198 followers at the end of the week. Whilst this was not statistically analysed as part of the pilot, staff reported that this was a higher than usual increase in followers. Indeed, some five years after the pilot, The Digital Engagement Guide website, an independent curator of digital content, still recognises the pilot as an example of good practice for a public campaign on social media (Slee, 2016).

The success, though, came at a cost, which would have implications for the subsequent design of the RCT. The internal stakeholders whose support would be needed to successfully implement an RCT felt the pilot test had provided sufficient evidence to enable the force to decide to increase the use of social media, and would not agree to further testing of the use of social media interventions using vehicle crimes. This had implications for the design of the RCT, set out below, as crimes were removed from the RCT.

Design (criminal damage RCT)

Prior to the pilot study it was envisaged that the research would test the hypothesis that information about crimes proactively published in real time by the police using social media would increase the flow of new information from citizens to the police and therefore result in more crimes being cleared up by the police than existing reactive policing methods. As a result of the pilot, in order to both secure the support of the force to continue to experiment with the use of social media, and to take account of the procedural learning from the pilot, a number of adjustments to the hypothesis, to accommodate what could reasonably be tested, needed to be made.

The initial hypothesis did not specify the type of crime to be tested. Research undertaken and reported in earlier chapters highlighted that whilst the public have an appetite for information about crime, their interest is driven in part by an assessment of their own risk of victimisation. As the literature had not explored which type of crime might lend itself to the use of social media, this research sought to test the use of social media across a number of different crime types. The discussions with the force before and after the pilot, though, meant that this was not possible. The force would only consent to experimenting with random treatments for those crimes that would not normally be subject to any investigation. The fact that there were crimes that would not routinely merit an investigation was not a discussion that the force had previously engaged in with the public, and as a result of the RCT this was to become an issue with chief police officers in the force later in the experiment. At the point of design, though, the force agreed to experimenting to establish if digital media might provide a new cost-effective tactic for the police to utilise for investigating crimes that would otherwise be filed without further investigation. At the time of the experiment, the force governance of the use of social media was provided by a chief officer and a working group of internal stakeholders consisting of communications, intelligence, investigation, contact management, neighbourhood policing and information technology specialists. The force, through this group, agreed to experiment with criminal damage crimes.

The earlier research also identified that the timing of information published by the police was important when considering personal risk of victimisation. Social media provides the opportunity to publish information at any time of the day or week. During the pilot, though, staff were reluctant to publish routine information about crime overnight, because they felt it would not be read. Social media data indicates that users do not monitor evenly throughout the day, and in particular there is low use at night. This presented a challenge for the design of the experiment; routinely publishing at the time of the event to ensure the

information remains relevant to users but at the cost of reducing staff compliance with the experiment and limiting the reach of the information. Alternatively, compromising on the potential utility of the information published by offering more flexibility about timing but in doing so increasing information reach, and staff engagement with the experiment. Relatively few reports of damage are made whilst the crime is in progress, and instead are reported to the police when they are subsequently discovered. The experiment was therefore designed to reduce failed treatments and the hypothesis was therefore adjusted to remove the parameter of real-time publication. The procedure, though, ensured treatments were timely in that they were triggered within 24hrs, with most tweets being prepared overnight but not published until the following morning.

The general hypothesis did not specify which particular digital channel would be utilised to publish information about crime. Instead it used the more inclusive term of social media. This reflected the importance placed on a digital eco-system seen in the earlier research. It was envisaged that multiple channels would be utilised including Twitter and Facebook. As a result of the pilot it was apparent this was not feasible. The level of resource required to create and curate content 24/7 for a prolonged period exceeded that which was available in the force. In addition, other than Twitter, the force did not have a mature presence at the time of the research on other social media channels. The main experiment was therefore conducted using Twitter. Of course, the benefit of this approach was that it isolated the examination of the experimental effect to that of the single digital channel.

The selection of both a single digital channel, and a single crime type that was not routinely investigated, provided the opportunity to compare and contrast the randomisation of a social media treatment with reactive information-gathering methods. Randomising investigative methods for investigations that are routinely actively investigated by the police would have been problematic as the decision to not pursue a potentially productive line of

enquiry raises significant legal, ethical and methodological challenges. Criminal damage investigations in this force raised no such hurdles though, as the treatments were in addition to that which the force would ordinarily have undertaken. The design question was therefore simply what other information-gathering treatments should be selected. Given that social media was proactive activity, reflecting Sherman (1997), reactive methods for information gathering in the force were examined for suitability as treatments. In order to generate sufficient cases within the time frame available for the research, it had already been determined that alternative treatment options must be capable of deployment anywhere in the force area. This effectively ruled out generating new reactive tactics; it would not be feasible to deploy an untested investigative method across the force simply to test against an untested proactive method. The three main reactive activities already utilised by the force, and therefore available for consideration in this experiment, were press releases, email newsletters and door-knocking. The use of a press release was disregarded, because whilst a press release could easily be generated for each crime and a mechanism existed to disseminate the press release to the media, the force had no control over what material would be published by the media. Communications professionals in the force advised that whilst the media might publish every criminal damage crime as part of a short campaign, they would not do so for the duration of this experiment. The remaining two reactive methods – the utilisation of an email newsletters and local door-knocking by an officer – were therefore selected as treatments for randomisation in addition to the use of social media.

The final experimental design was therefore less complex than that envisaged before the pilot study, as a result of the constraints placed by the force on which investigations, and which parts of an investigation, could be experimented with. The explanation provided by the force was that the constraints were necessary because these were real investigations with real victims. The effect, though, was to weaken the strength of the proactive method being tested.

The earlier studies indicated that information would flow between the police and the public more effectively through an information eco-system rather than a single channel such as Twitter. As a result of these changes the hypothesis to be tested was necessarily adjusted. The specific hypothesis to be tested were alternative hypotheses:

H_1 - Information about criminal damage proactively published by the police on Twitter would generate more information flowing from citizens to the police than reactive policing methods.

H_2 - Information about criminal damage proactively published by the police on Twitter would result in more crimes being detected than reactive policing methods.

Unit of analysis/Eligibility Criteria (criminal damage RCT)

This experiment concerns the flow of information from the public to the police following the report of a criminal damage crime to the police. The experiment will use incidents of criminal damage reported to the police by the public and will use random assignment to deliver one of four treatment conditions: the use of Twitter to publish the incident, a visit to the crime scene by a PCSO to search for information, the use of an email newsletter to publish the incident, and a control group. Cases will therefore come from real reports by the public to the police of criminal damage.

Reports of crime to the police can be made through a variety of ways. They may be made in person at a police station or to an officer on patrol, in writing by post or online through the force website. They may also be made on the victim's behalf by a third party or discovered by the police. The bulk of offences, though, are reported by the public to the police by phone (HMIC, 2005). The eligibility criteria for this experiment will be new reports of criminal damage reported by phone to the police contact centre. Incidents must have

occurred in an identified geographic location sufficient for an officer deployment to a place in the force area to take place.

In the ideal world, it would be clear at the time of the report that it relates to a criminal damage crime, it would be reported to the relevant police force at the time of the crime and – for the ease of randomisation – would be a single offence with a single victim. Of course, real-world reports of crime do not always occur in this way. The following reports of crime were therefore *not* considered eligible for the experiment:

In event of multiple crimes at the same location within 24 hours being reported, the subsequent crimes will be excluded from further treatment, but will be considered as part of the same case.

Incidents that at the point the incident log is closed might include damage but are recorded as a crime other than criminal damage (e.g. vehicle crime and burglary).

Incidents subsequently classified as 'crime related incident' (as defined by the crime counting rules Home Office, 2012a).

Incidents that are recorded as a crime and subsequently classified as 'no crime' (as defined by the crime counting rules Home Office, 2012a).

Incidents of criminal damage reported to the police that have occurred outside the police force area.

Incidents of criminal damage that are reported to, or investigated by, another police force.

Incidents of historic damage that are reported to the police more than 7 days after the offence has been discovered.

This still left, though, the majority of criminal damage crimes reported to the police as eligible for the experiment.

Materials (criminal damage RCT)

As with the pilot, the experiment was undertaken in the existing real-world environment, so those staff involved in the implementation of it used the equipment and resources that they would ordinarily have used as part of their job.

Whilst staff retained the access to Twitter from their workstation to enable them to create tweets following the new reports of criminal damage, for the RCT an additional workstation was provided as a contingency in the event their own workstation failed.

The pilot guidance note setting out instructions about the content of tweets used in the pilot was adjusted for the RCT. In order to generate interest, the hashtag of #surreyspoilt was available for tweet content. Instructions were also developed for staff allocating PCSOs for scene visits and staff generating email messages. The researcher was available to provide guidance on eligibility in the event of doubt.

Treatments (criminal damage RCT)

This experiment concerned the randomisation of four treatments. The process for randomisation and the criteria for consideration whether the treatment had been successfully delivery are outlined in the next section. The four treatment groups were as follows:

Twitter: The first treatment group was the use of Twitter. This activity related to quadrant three of information framework; information generated by the police for consumption by citizens. This treatment involved the creation of a tweet concerning the criminal damage crime using the standard Twitter desktop software application.

PCSO Visit: The second treatment group was a visit by police community support officers (PCSOs). PCSOs are uniformed but non-warranted police officers. They are an

important feature of neighbourhood policing, a pluralistic policing model, and have been widely used to provide a visible presence in neighbourhoods (see Johnston, 2005). In this force, it was custom and practice for PCSOs to be used to provide reassurance visits following the report of potential signal crimes. PCSOs were therefore used to conducting visits to crime scenes following the report of a crime and trained to gather information from their engagement activity. Each geographic area of the force also had a PCSO allocated to it who was expected to spend the majority of their time working in their area. Given that more highly-trained investigators, such as detectives, were at the time of the research a more limited resource, the use of a PCSO to conduct the enquiries provided a way of increasing the likelihood that the treatment would be successfully delivered. The deployment of PCSOs was undertaken either by the force control room or a local neighbourhood co-ordinator. Neighbourhood co-ordinators are members of police staff with various duties including the scheduling of planned incident attendance (as opposed to emergency response), monitoring and dealing with public enquiries through neighbourhood email and office administration for neighbourhood police officers and PCSOs. The visit by a PCSO reflected quadrant two activity on the information framework: information from the public for use by the police.

ACS email: The third treatment group was the publication of an email message using the Active Citizen System (ACS). The ACS system is a database developed by the force to generate regular emails from neighbourhood officers to the public. The database covers all neighbourhoods in the force area, and contains email addresses for citizens who have previously expressed an interest in being kept informed about crime. The ACS system is managed by the neighbourhood co-ordinator mentioned above. The ACS email is thus similar to Twitter in that it produces information from the police for consumption by the public, but delivered through older technology. The ACS email therefore reflects quadrant three activity.

Control group: The fourth treatment group was the control group. The fourth group was business as usual. It could take the form of activity from quadrants one to three of the framework.

Randomisation (criminal damage RCT)

This experiment differed from the pilot in that it concerned the random assignment of treatments. A particular challenge for the experiment was to find a mechanism to achieve random assignment within a real-time real-world environment. This constrained the options available for assignment. The number of staff simultaneously taking reports of crimes meant that each person needed access to a randomiser at the time or shortly after the call from their workstation, which meant it must be delivered electronically to their workstation. The tool had to be easy to operate because a call centre is a highly-pressurised environment where unnecessary delay has the potential to adversely impact call handling times. The local information security team would also not give consent to use external randomisers such as the Cambridge randomiser (Ariel, Vila, & Sherman, 2012). A local 'in-house' software solution was therefore developed using a random number generator program in a secure computer to enable call-handlers to allocate cases for assignment.

Other than a press release, so that there was a consistent public message about the experiment, no other materials were developed in advance of the experiment. During the experiment it was apparent that there was some negative reaction to it. An audio message accessed from a link in a tweet was therefore produced to explain the experiment objectives. The police force was reluctant to proactively produce a further press release about the experiment because it was concerned this would reach a wider audience than Twitter and attract additional negative comment about the force. The use of a message linked to a tweet provided the opportunity to respond to negative comments but to target the audience that might have seen them. The use of an audio message enabled the force to produce a more

informal update than it thought would be conveyed through a webpage, and of course is less permanent than a webpage. In the event the link was not followed.

Procedure (criminal damage RCT)

The police call centre receives 70,000 calls a month, consisting of emergency calls from the national 999 system or non-emergency calls from the national 101 number. All calls to and from the contact centre are tape-recorded. In this police force at the time of the research, approximately 5,400 crimes were recorded each month of which approximately 1,000 related to criminal damage crimes. Call-handlers are required to create a record of each call on the Computer Aided Dispatch (CAD) system. The CAD record is then used subsequently by a police staff controller to allocate an appropriate resource to resolve the incident. Whether a resource is allocated to attend the incident or not, a crime record is also created on the force crime record management system (RMS). This record sets out what investigative activity has occurred during the crime investigation and the results of these enquiries. This research seeks to influence the resource allocation via CAD through randomisation of treatments and to ensure the results of the treatment are subsequently recorded and therefore available for analysis on the RMS. Delivery of treatments and data collection was therefore conducted in-house by the operating agency.

Case registration, randomisation, and random assignment were recorded using a computer program locally developed for this purpose. Control room staff were briefed regarding its use during a shift briefing by the shift supervisor. Cases were identified from a trickle-flow process using the opening code recorded on the CAD system. Each new incident matching the potential eligibility criteria was registered on the randomiser. In periods of high demand this function could be undertaken by other staff in the control room, such as the supervisor or call audit team. A short series of structured closed questions, reflecting the exclusion criteria, assists the call-handler to identify which crimes should be subject to

random assignment. The program provides a free-text field to enable the call-handler to explain their decision if appropriate, and a field for recording the relevant CAD reference number. This information also enables subsequent review by the researcher to ensure the criteria are being correctly and consistently applied. The program then provides the call-handler with the assigned treatment which is entered on the CAD and RMS system. Treatments for delivery by Twitter were completed by the call-handler. The PCSO visit and ACS treatments were passed to a neighbourhood controller to complete treatment delivery using the standard operating process for this activity which includes the scheduling of the activity and record keeping on the RMS. A dry run of the randomiser was completed in advance of the experiment to ensure that all the components had been tested prior to the commencement of the experiment. A comparison of the cases recorded on the randomiser with the incident log and the crime recording system did not reveal any cases that had been assigned the wrong treatment. However, this did not necessarily mean that it would not have occurred, as whilst activity conducted during the course of an investigation should be recorded that does not mean it is always recorded. It is also conceivable, although unlikely for this type of crime, that staff could self-task, and undertake information-gathering activity without reference to the organisation.

Treatment delivery (criminal damage RCT)

The experiment concerned the randomisation of four treatment conditions: the use of Twitter to publish the crime, a visit to the crime scene by a PCSO to search for information, the use of an email newsletter to publish the incident, and a control group.

The Twitter treatment was considered delivered if, following the report of an eligible crime, randomisation and the details of the crime were posted on Twitter within 24hrs of the report. Exclusion following randomisation occurred if the crime resulted in either any other resource deployment or publication by ACS.

The PCSO visit treatment was considered delivered if, following the report of an eligible crime, randomisation and the deployment of the PCSO to the scene occurred within 24hrs of the report, and PCSOs conducted local enquiries such as door-knocking. Exclusion following randomisation into this group occurred if details of the crime were tweeted or disseminated by ACS.

The ACS treatment was considered delivered if, following the report of an eligible crime, details of the crime were disseminated by ACS email within 24hrs of the report. Exclusion following randomisation into this group occurred if details of the crime were tweeted or there were PCSO enquiries at the scene. It was beyond the scope of the experiment to control for visits of other police resources that might be in the area such as traffic officers, armed response vehicles or CID officers on other investigations.

Eligible crimes allocated the fourth treatment were not subject to experimental direction. The fourth group was 'treatment as usual'. This means they were either immediately filed without further police investigation or allocated for investigation in accordance with force policy. Allocation for investigation might occur as a result of a forensic lead, as a result of intelligence from a police informant (because the crime is linked by modus operandi to another investigation), or as a result of a witness coming forward with information. In practice, criminal damage crimes in this force were not routinely allocated for investigation. For consistency with the decisions about the other treatments, the assignment must occur within 24hrs of the report. The researcher was available to provide guidance on eligibility in the event of a dispute.

Ensuring compliance with experimental protocol (criminal damage RCT)
It was clear from the pilot that there was a risk that compliance with procedure might tail off over time and might vary with different shifts. In order to reduce the risk of this happening, a supervisor on each shift was allocated responsibility for reviewing each new

report of vehicle crime. The control room manager also examined the randomisation program to ensure supervisors were supervising and their decisions were reasonable. The research team met weekly to review the progress of the experiment. The team included the researcher, the business owner for the contact centre and a representative from the corporate development department. Stakeholders from neighbourhood policing and corporate communications departments joined the conversation at key times. They owned and were accountable to the force for the continued use of the force Twitter account, the ACS system and the deployment of PCSOs. In particular, they joined the meeting when there was discussion about negative public comment, towards the end of the project when chief officer support for the experiment was waning, and were part of the discussion of the handling of the closure of the experiment.

Outcome measures (criminal damage RCT)

The unit of analysis for this experiment is incidents of criminal damage reported to the police. The outcome measures were pieces of new information and the number of crimes cleared up following the four treatment variations. The literature on proactive and reactive tactics has tended to focus on outcomes such as crime reduction or detection, but rarely both (Sherman, 1997). It does not track volume or flow of information, and does not link that information to the investigative outcome. The literature also has not considered the effect of interventions on other factors, such as the efficiency or legitimacy of the intervention. In advance of the pilot, a number of subgroups of measures were identified for analysis to enrich the results. These included examining the effect of treatments on solvability factors such as: finding new witnesses or new suspects, finding new forensic opportunities, finding identifiable property, finding new linked crimes, or information that might be used during an investigative interview with a suspect. Other investigative measures included arrest rates, conviction and disposal rates, or clear up rates for linked crimes. Subgroups to measure the efficiency of the investigation included the cost or length of investigation, and for legitimacy

the satisfaction of the victim with the use of Twitter for their crime. The pilot, though, indicated that the volume of additional information generated from the use of social media would increase but be low, and that it would not be in a form to differentiate solvability factors or be easily extractable from the force systems. Such an experiment would be more complex to construct, and would not address the hypothesis. So before examining what type of information social media might produce, this experiment limited itself to the question of whether any new information is produced. The outcome measures for analysis therefore remained the volume of new information and whether the crime was cleared up.

Power analyses (criminal damage RCT)

The analysis plan anticipated that F tests would be conducted to determine significance. In order to use Fisher's .05 score, the accepted level for psychological research (Field & Hole, 2006), to have an 80% chance of detection power curve calculations (Cohen, 1992) were conducted to establish the sample and effect size for a fixed effect, one-way, omnibus ANOVA. The results are set out in Table 11.

Table 11. Power curve calculations

Total Sample	Group Size	Effect Size (f)
400	100	0.160
500	125	0.140
600	150	0.130
700	175	0.125
900	225	0.110
1100	275	0.100

The total sample size to deliver a 0.1 effect is N=1,096 or *n*=274 cases per treatment group. In order to deliver sufficient cases for analysis, it was intended that experiment would run until at least 275 cases in each group had been delivered. The length of time needed for this would depend on the exclusion rate applied by call-handlers. Intention to treat and treatment as delivered analyses were anticipated.

The data to be collected was recorded on the randomisation program and the RMS. A period of three months elapsed following the completion of the experiment before data extraction occurred to ensure that the RMS records for detections was accurate. The data extraction did not vary between treatment type. The data was exported to a spreadsheet and compared to ensure that there were no missing records. The data from this experiment was analysed using SPSS. The results of the criminal damage RCT (St3) were available for use together with the results of the RCT Twitter analysis (St3) for use in the RCT focus group study (St3).

Legal and ethical issues

This chapter is concerned with research on real-world investigations of crime. Subsequent to this section of the study, a secondary analysis of data relevant to that experiment and a focus group of those involved in the management of the experiment was conducted. In comparison, it is the experiment rather than the data analysis or focus group that presents the more substantive legal and ethical issues for consideration because this element was conducted in a real-world environment with real victims of crime. The issues can be summarised as whether it was legal or ethical to manipulate treatments for real investigations and whether the randomisation of investigations should have the consent of the victim.

Legal issues

In any investigation there are a number of different lines of enquiry the police may take to pursue that investigation. This research looked at a subset of the crimes reported to the police: those categorised as criminal damage. This type of crime includes many different actions and occurs in many different contexts that alter the seriousness of the investigation. For example, damage to a car parked at the roadside might be the result of vandalism, or it may have been targeted by a current or former partner in a domestic dispute, by a stalker, or

perhaps by a criminal associate seeking to recover drug debts owed. The police do not have absolute discretion about whether and when to investigate a crime and must have regard to their legal duty to investigate crimes. The design set out that the experiment would include those crimes that this police force would ordinarily not investigate, nevertheless a consideration must be whether it was lawful for the police not to do so.

Much legislation concerning the police constrains how the police investigate for example the Police and Criminal Evidence Act 1984 which instituted a legislative framework for the powers of police officers in England and Wales to combat crime, and provided codes of practice for the exercise of those powers. The legislation which concerns whether the police must investigate arises from the European Convention on Human Rights (ECHR) and the Human Rights Act 1988 which introduced ECHR into domestic law. Police forces benefitted from the Hill principle of 'core immunity', from Hill v Chief Constable of West Yorkshire [1988] 1 QB 60, meaning the police generally owe no duty of care at common law (negligence), and thus no duty to investigate, to members of the public who suffer harm at the hands of criminals (Berry & White, 2013). The case of Osman v United Kingdom [2000] 29 EHRR 245 and more recently Sarjantson v Chief Constable of Humberside Police [2013] EWCA Civ 1252 establish that under Article 2 (the right to life) and Article 3 (the prohibition against torture and inhuman or degrading treatment) of ECHR the police have an 'operational duty' to protect life. That duty is breached if the authorities knew or ought to have known at the time of the existence of a real and immediate risk to life and, if so, they failed to take measures within the scope of their powers which, judged reasonably, might have been expected to avoid or minimise that risk (Berry & White, 2013; Straw, 2016).

The extent of that investigative duty was considered in Commissioner of the Police for the Metropolis v DSD [2015] EWCA Civ 646. The Court of Appeal confirmed that the nature, scope and rigour of the investigative exercise required by articles 2 and 3 is essentially

the same, that the police owe a duty under Article 3 of ECHR to investigate acts of alleged ill-treatment by private individuals, and where there has been a serious assault by a member of the public the police 'must investigate in an efficient and reasonable manner which is capable of leading to the identification and punishment of the perpetrator(s)… within a reasonable time' (Straw, 2016). However, the Court of Appeal also said that there is a 'sliding scale' of the extent of the investigation that is required, depending on the nature and seriousness of the allegation (Straw, 2016). It is likely, then, that the police have the discretion about whether to investigate crime where the operational duty under articles 2 and 3 of ECHR is not triggered, and therefore the decision to randomise investigative treatments would be lawful. Nevertheless, to minimise the risk that the experimental decision not to investigate might be considered unlawful call-handlers were given the discretion to exclude cases of criminal damage prior to randomisation where the circumstances suggested investigation was required.

The research also entails access to personal data. This will be handled in accordance with the information security policy and either kept in locked cabinets or retained on secure services within the police environment. Consent from the researchers' employer was obtained to store the data gathered during this research.

The unit of analysis for the criminal damage RCT (St3) experiment was the information gathered during an investigation and the subsequent outcome of that investigation. The conduct of the police officers and staff involved in the experiment was therefore not the focus of the research. Where staff needed to follow instructions that fell outside of their normal procedures (e.g. operation of the randomiser), they were briefed about the aims of the experiment. The greater level of scrutiny applied to the investigations subject to the research, though, may result in the researcher finding poor performance or misconduct by staff that would not ordinarily have been discovered. In such an event, the matter would be referred to the organisation's professional standards department, and in the event that any

material is discovered which could undermine a prosecution this will be reported to the officer in charge of the investigation.

Issue of consent

Bryant (2015) asserts that whilst RCTs have been used within medical research since at least the 1950s (and in agriculture from the 1920s and 30s) it is however only more recently that Evidence-Based Policing (EBP) has employed RCTs. The advantage of an RCT for this research is set out by Farrington and Welsh (2005): randomised experiments better attribute observed variation in outcome to the effect of the intervention. Moving beyond the question of the legality of the experiment, it is important to consider whether just because an RCT could produce robust findings it does not follow that an RCT should be used to test a hypothesis. For Bryant (2015), the first question that a police researcher needs to ask before undertaking an RCT is whether or not there can be any genuine uncertainty about the effect of the intervention, arguing that it is unethical to allocate subjects to a control group if there is already good reason to judge that the intervention group will receive better treatment. Prior to this research, the literature in relation to the police use of social media did not report an experiment about how the use of social media might affect an investigation in comparison to other policing methods. The effect of the intervention in advance of the experiment was therefore uncertain, and therefore the hypothesis was considered suitable for testing by RCT.

However, before implementing the experiment, the question of whether the consent of the victim of the crime investigation subject to the experiment should be obtained needed to be considered. The British Society of Criminology statement of ethics is clear that participants should 'Take part in research voluntarily, free from any concern and be able to give freely informed consent in all but exceptional circumstances' (BSC, 2015). Whilst it is the crime investigation and not the crime victim that is the subject of this experiment, and therefore it could be argued that this provision of the code is not directly applicable to this research, the

outcome of the investigation may impact the victim and future victims. The principle of informed consent is a mandatory requirement in clinical research (see Declaration of Helsinki (WMA, 2013)). Spicker (2007), though, sets out three main objections to obtaining consent. The first is practicality; there are contexts in which it is neither feasible nor desirable to obtain voluntary consent from the people being studied. The second is methodological; the method used should not alter the behaviour of the research subjects. The third is ethical; that when undertaking research into criminal activity or the role of government the reliance on the consent of research participants may be morally wrong. The code of practice governing how the police should interact with victims only places an obligation on the police to keep victims informed (MoJ, 2015). Routine decisions about what investigative activity the police determine is appropriate for crimes reported to them is not negotiated with victims; the police, within the legal parameters outlined, have operational independence. Outside of the experiment, then, the police do not gain consent for investigative activity such as local enquiries at a crime scene, the release information to schemes such as neighbourhood watch or indeed the fact of or content of press releases. To introduce research bias through a process where the consent of the crime victim is obtained for the components of a police investigation would introduce a new way of undertaking investigations by the police which victims would not only not agree to, but would also undermine the results obtained because they could not be generalised to investigations where consent is not routinely obtained. The explicit consent of each crime victim was not obtained in this research. In the event the police were asked questions about the research, a set of 'if asked' responses were prepared to be provided to crime victims.

In conclusion, the researcher has taken full responsibility for ensuring the research was conducted in accordance with the British Society of Criminology's statement of ethics.

Results – Randomised controlled trial concerning the investigation of criminal damage

The dataset for this section consisted of criminal damage crimes reported to the police. In this police force, all new reports of crime – whether reported by a member of the public by the phone, online, or in person at a police station, or whether discovered by the police – are recorded in the police contact centre by police call-handlers. This study concerned new reports of criminal damage recorded by the police (*n*= 2,168) arising from contacts with police call-handlers (*n*= 123,450) during the twelve weeks commencing Monday 10th September 2012 and ending Sunday 2nd December 2012. On average there were 181 criminal damage crimes recorded each week (SD = 16). The methods section described the criteria that call-handlers should use to exclude crimes prior to the random assignment. These results are shown in Figure 13.
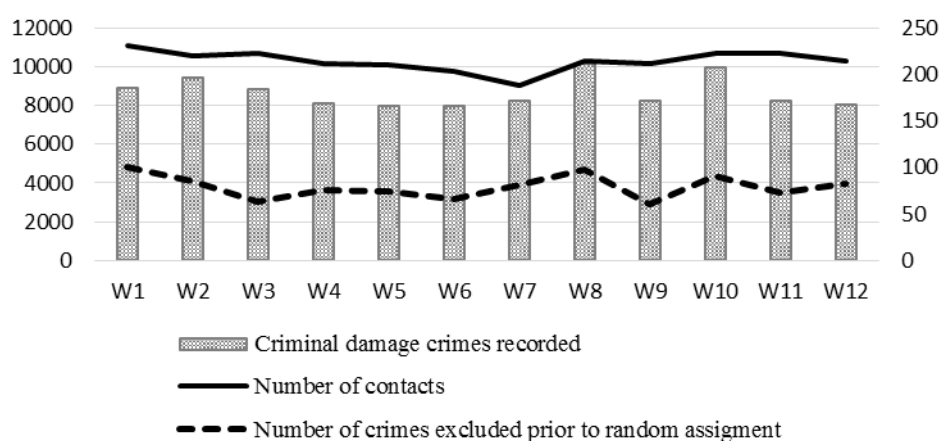
Figure 13. Crimes excluded prior to random assignment in relation to contacts and crimes

On average 79 crimes were excluded (SD = 12) each week. The smallest percentage of crimes excluded prior to random assignment was 34% (*n*= 63, N= 184). This occurred in week 3. The highest number of crimes excluded by call-handlers was in the first week when 54% of crimes (*n*= 100, N= 186) were not assigned for treatment. The higher exclusion rates in the first week might be the result of call-handlers getting used to experiment and needing to become more confident with operation of the randomiser, however the average rate of

exclusion prior to randomisation is higher than that anticipated during the design of the experiment. There are a number of factors which might explain these results, which are expanded on in the discussion, however it is probable that some staff did not follow the methodology for the reasons already set out in the reporting of the pilot. This is not uncommon in randomised controlled trials in real-world research (Robson, 2002). The residual number of crimes available for random assignment consisted of 1,217 criminal damage crimes.

Treatment as delivered analysis

The methodology anticipated that there are circumstances where exclusion following random assignment would be appropriate (n= 151, N= 1,217), and it is the case that in real-world research treatments are not always delivered (n= 133, N= 1,066). These exclusions will be considered later in this section. The remaining sample (n= 933) for treatment as delivered analysis is shown in Table 12.

Table 12. Number of treatments delivered during the experiment by week

Treatment	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	Total
Control	14	23	32	18	23	22	23	31	22	23	22	11	264
PCSO Visit	20	24	24	20	9	24	8	18	12	22	19	11	211
Publicity via ACS	18	24	19	21	21	18	20	19	22	22	18	22	244
Social Media	8	17	26	11	21	14	16	26	26	24	11	14	214
Treatments delivered	**60**	**88**	**101**	**70**	**74**	**78**	**67**	**94**	**82**	**91**	**70**	**58**	**933**

The number of treatments delivered is smaller than that sought at the outset of the experiment. As can be seen from Figure 14, and reported previously in Table 11 on page 152, a sample size of 1,100 would have been necessary to deliver an effect at the 0.10 level. The experiment would have needed to run for at least one further week to deliver the sample size sought. This was not possible because support for the experiment amongst senior stakeholders within the force evaporated following a negative reply from a member of the public to one of

the tweets; this is discussed after the results are reported. The sample collected, though, is sufficient to deliver an effect at the 0.11 level and so statistical analysis of the results was conducted.
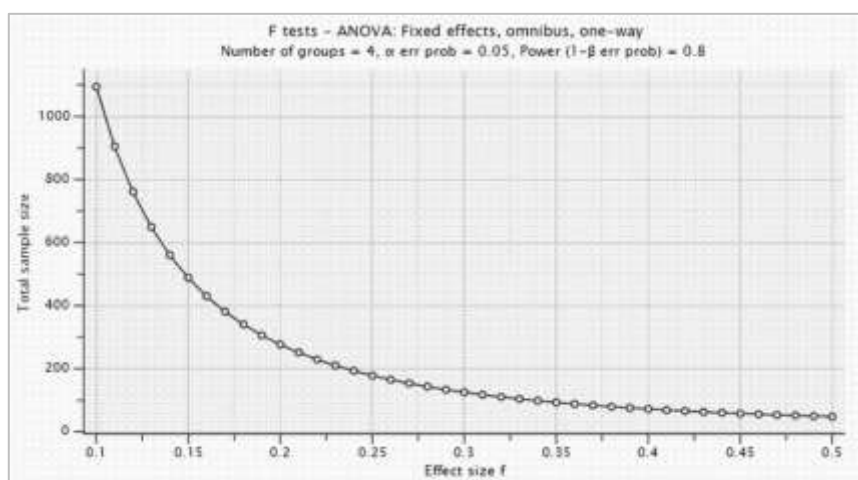
Figure 14. Effect size vs sample size

The number of crimes for which information was elicited in each of the treatment conditions is shown in Table 13.

Table 13. Number of crimes with new information during the experiment by week ($n= 933$)

Treatment	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	Total
Control Group	3	8	5	1	0	2	4	2	2	0	0	5	32
PCSO Visit	9	15	7	3	0	1	2	1	1	0	2	7	48
Publicity via ACS	6	0	1	0	0	5	4	0	1	0	1	5	23
Social Media	2	3	2	0	1	2	2	1	2	1	0	1	17
Total information obtained	**20**	**26**	**15**	**4**	**1**	**10**	**12**	**4**	**6**	**1**	**3**	**18**	**120**

An ANOVA was conducted to examine if the number of pieces of information differed across the treatment conditions. The treatment as delivered was found to be significant overall, $F(3, 929) = 8.78$, $p < .001$. Post-hoc tests showed that the PCSO visit elicited more information than any other group (PCSO Visit vs Control Group, $p = .016$, PCSO Visit vs Publicity via ACS, $p = .001$, and PCSO vs Social Media, $p < .001$).

Given that the outcome variable is binary (information obtained yes/no) a logistic regression was also calculated with information as the outcome, and treatment condition as the categorical independent variable. Overall, the model was significant (χ^2 (3, $n = 933$) = 23.66, $p < .001$), but the Nagelkerke R was small ($R^2 = .047$). This means that the model overall did not explain the variation in the data very well (however, this was not the goal of the analysis).

As can be seen in Table 14, the treatment variable was also significant. In particular, only the PCSO treatment group had a significant effect on the number of pieces of information obtained ($p = .002$), Exp (B) 2.135. This means that compared to the control group, the PCSO visits elicited slightly more than twice as much information.

Table 14. Logistic regression analysis of information obtained by treatment

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Treatment			24.237	3	.000	
	PCSO Visit	.758	.250	9.200	1	.002	2.135
	Publicity via ACS	-.282	.289	0.949	1	.330	.755
	Social Media	-.469	.315	2.211	1	.137	.626
	Constant	-.981	.189	110.358	1	.000	.138

a. reference category was the control group

The same analyses were conducted with Detection Status as the outcome variable (detected/undetected). However, as Table 15 shows, the total number of vehicle crimes detected was very low.

Table 15. Number of crimes in the experiment detected

Treatment	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	Total
Control Group	1	0	1	0	0	0	1	1	0	0	0	0	4
PCSO Visit	1	1	1	0	0	0	0	0	0	0	0	0	3
Publicity via ACS	1	0	0	0	0	0	0	0	1	0	0	0	2
Social Media	2	0	1	0	0	0	0	0	0	1	0	1	5
Total crimes detected	5	1	3	0	0	0	1	1	1	1	0	1	14

The resulting statistical analyses were not able to show any significant effect of the treatment group on the number of detections in an ANOVA, $F(3, 932) = .594$, $p = .619$, possibly because of a floor effect. The logistic regression analysis showed the same finding with treatment overall being non-significant (χ^2 (3, $n = 933$) = 1.79, $p = .639$). The PCSO treatment group ($p = .933$), Exp (B) .938, the Publicity via ACS treatment group ($p = .475$), Exp (B) .537, and the Social Media treatment group ($p = .514$), Exp (B) 1.555 did not have a significant effect on the number of crimes detected.

In summary, the treatment as delivered analysis showed no significant effect on the volume of information produced from the use of Twitter or publicity by ACS but did show an effect from the PCSO visit. Reactive enquiries undertaken locally by PCSOs produce more information for an investigation into criminal damage than proactive enquires such as email requests for information or alerts posted on social media.

Treatment as intended analysis

Earlier in this section it was reported that recorded criminal damage crimes were excluded from the sample following random assignment, either because they were excluded in accordance with the methodology ($n= 151$), or were not delivered ($n= 133$). Analysis of the crimes excluded is appropriate to understand whether a treatment is under or over-represented in the sample, and is also useful when considering potential differences in the results of treatment as delivered and treatment as intended analyses. The number of crimes excluded after random assignment for each of the treatments is shown in Table 16.

Table 16. Number of crimes excluded after random assignment

Treatment	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	Total
Control Group	2	2	1	3	3	1	0	2	1	1	4	0	20
PCSO Visit	3	3	3	2	2	4	1	2	3	4	4	1	32
Publicity via ACS	4	2	2	2	4	2	5	2	4	1	2	3	33
Social Media	9	10	7	10	4	4	6	3	5	5	2	1	66
Total subsequently excluded	**18**	**17**	**13**	**17**	**13**	**11**	**12**	**9**	**13**	**11**	**12**	**5**	**151**

The number of crimes excluded for treatment by social media is higher (n= 66) than that of the other treatment groups. As can be seen in Table 17 logistic regression analysis with exclusion (Y/N) as the outcome variable showed that the Social Media group had more exclusions than the control group ($p < .001$), Exp (B) 3.850.

Table 17. Regression analysis of exclusions by treatment

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Treatment			33.727	3	.000	
	PCSO Visit	.463	.298	2.418	1	.120	1.588
	Publicity via ACS	.461	.296	2.432	1	.119	1.586
	Social Media	1.348	.270	24.865	1	.000	3.850
	Constant	-2.614	.232	127.306	1	.000	.073

a. variable(s) entered on step 1: Treatment

An ANOVA was conducted to examine if the rate of exclusions differed across the treatment conditions. Exclusion after randomised assignment was found to be significant overall, $F(3, 1,216) = 12.35$, $p < .001$, and showed that the Social Media group had the highest rate of exclusion of all treatment groups (Social Media vs Control, $p < .001$, Social Media vs PCSO Visit, $p = .001$, Social Media vs Publicity via ACS, $p = .001$). This finding might be a reflection of the three different teams responsible for the delivery of the treatments. Responsibility for operation of the randomising tool and delivery of the social media treatment remained within the call-handling environment, whereas responsibility for delivering the active citizen publication and neighbourhood visit rested with the neighbourhood policing team. It is possible, then, that for the social media treatment, attrition from exclusion after randomisation and attrition from no delivery of the treatment may be conflated to some degree. The combined rates of exclusion (Table 18), including those where the treatment was subsequently not delivered (n= 284), was therefore examined.

Table 18. Numbers of crimes either excluded or not delivered

Treatment	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	Total
Control	2	2	1	3	5	1	2	5	1	1	4	2	29
PCSO Visit	5	6	7	5	4	9	8	7	14	10	11	10	96
Publicity via ACS	9	4	4	5	4	5	7	3	8	7	9	8	73
Social Media	10	10	8	10	4	7	6	5	6	7	5	8	86
Total excluded/not delivered	**26**	**22**	**20**	**23**	**17**	**22**	**23**	**20**	**29**	**25**	**29**	**28**	**284**

The ANOVA shows that when the exclusions after randomisation are combined with the treatments subsequently not delivered, all treatment groups are significantly different from the control group, $F(3, 1,216) = 15.58$, $p < .001$. Post hoc tests showed that the treatment groups no longer differ significantly from each other (Control vs PCSO Visit, $p < .001$, Control vs Publicity via ACS, $p < .001$, Control vs Social Media, $p < .001$).

Intention to treat analysis

In this study a statistically significant dropout rate between treatment groups after the exclusions were considered was not found. However, it is argued that one effect of dropout may be to break the random assignment which weakens the results of the trial. Intention to treat analysis considers all treatments, whether they took place or not. Table 19 shows the crimes available for intention to treat analysis. The dataset of criminal damage crimes available for random assignment ($n= 1,217$) has been reduced by the crimes that were removed following random assignment ($n= 151$) as set out in the methodology. In addition, a small number of cases ($n= 9$) was also removed where the value for 'information obtained' was missing from the dataset. The final dataset was therefore 1,057 crimes for intention to treat analysis.

Table 19. Number of crimes for intention to treat analysis

Treatment	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	Total
Control Group	14	23	30	18	25	22	24	34	22	23	22	13	270
PCSO Visit	22	27	28	22	11	29	15	23	22	28	25	20	272
Publicity via ACS	23	24	21	24	21	21	22	20	26	28	25	27	282
Social Media	8	17	27	11	21	17	16	28	27	26	14	21	233
Total intention to treat	**67**	**91**	**106**	**75**	**78**	**89**	**77**	**105**	**97**	**105**	**86**	**81**	**1057**

An ANOVA was conducted to examine if the number of pieces of information differed across the treatment conditions for the intention to treat dataset. The intention to treat dataset was found to be significant overall, $F(3, 1,056) = 4.74$, p = .003. Post-hoc tests showed that the PCSO visit elicited more information than the other forms of treatment (PCSO Visit vs Publicity via ACS, $p = .082$, PCSO Visit vs Social Media, $p = .002$).

As can be seen from the results of the logistic regression analysis in Table 20, the treatment variable was also significant compared to the control group, although only the PCSO treatment group had a significant effect on the number of pieces of information obtained ($p = .048$), Exp (B) 1.618.

Table 20. Logistic Regression analysis of information by treatment intended

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1a	Treatment			13.590	3	.004	
	PCSO Visit	.481	.243	3.918	1	.048	1.618
	Publicity via ACS	-.120	.266	.203	1	.652	.887
	Social Media	-.509	.308	2.732	1	.098	.601
	Constant	-1.972	.186	112.594	1	.000	.139

a. reference category was the control group.

b. n=1066

As can be seen from Table 21, logistic regression analysis to explore the relationship between the treatment groups found that PCSO visits produce a better effect than social media on the number of pieces of information obtained ($p = .001$), Exp (B) 2.690.

Table 21. Logistic Regression analysis of information between treatments intended

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1a	Treatment			13.590	3	.004	
	Control group	.509	.308	2.732	1	.098	1.663

PCSO Visit	.990	.291	11.561	1	.001	2.690
Publicity via ACS	.389	.311	1.567	1	.211	1.475
Constant	-2.480	.245	102.177	1	.000	.084

a. Reference category was the social media group

The results of the randomised controlled trial then, whether through an intention to treat analysis or treatment as delivered analysis, produce a consistent and original finding that following a report of criminal damage a reactive visit by a PCSO produces more information for the investigation than the proactive use of social media.

Method – RCT Twitter analysis

Design (RCT Twitter analysis)

The RCT Twitter analysis (St3) is intended to identify and describe any changes in the pattern of tweeting by the police force in this study after the conclusion of the randomised controlled trial. The appropriate methodology for this analysis is to use the real-world data generated by the force rather than seek to generate a new dataset in parallel or in retrospect. The real-world data also provides insight that would not be obtainable from qualitative methods such as survey or interview. The results, though, of the secondary data analysis were subsequently used to facilitate a focus group discussion to explain the findings and explore the implications of them.

Participants (RCT Twitter analysis)

The tweets posted by the force in the first study, during the four weeks before and after the criminal damage RCT (St3), were selected. Consideration was given to collecting data from a longer period to provide more insight, however this would have resulted in the dataset including tweets generated for the London Olympics. The force in this study contained several Olympic venues, and whilst these tweets could have been identified and excluded

from the data, the non-Olympic tweeting activity was so unusual for the force that the comparison would not have been useful. The dataset therefore consisted of tweets from the police force's corporate account from Monday 13th August 2012 to Sunday 9th September 2012 and from Monday 3rd December 2012 to Sunday 30th December 2012.

Materials (RCT Twitter analysis)

The data subject to analysis was collected directly using the website Twittercounter.com and using the backup utility SocialSafe.net. The content analysis classifications used in the riots survey (St2) were utilised in this study. In addition, as a result of the criminal damage RCT (St3) sub-classifications were used to differentiate 'engagement' tweets that were part of a campaign or contained organisational news. Tweets that contained a direction to call 101 were also tracked. No additional materials were created.

Procedure (RCT Twitter analysis)

This study consisted of analysis of all tweets generated by the force within two defined periods. As the analysis concerned the complete dataset, the procedure was simply to export the data into a spreadsheet for analysis so that no data was discarded. The data in the spreadsheet was coded by the researcher using a content analysis framework. Categories were derived inductively to combine the literature (Crump, 2011) with the operational experience of the researcher. The classification procedure consisted of objective rather than subjective judgements so a content analysis dictionary was not developed. During scoring, the content of each tweet was compared to the classification framework to determine if it was scoreable and the results entered on the spreadsheet.

Analysis (RCT Twitter analysis)

Scoring categories included whether the tweet posted by the force was a new tweet it had generated or a whether it was a re-tweet of content created by a Twitter account operated by another force/agency or from an account created by the public. In addition to scoring the

source of the tweet, they were also scored by type of tweet – witness appeal, incident update, provide advice/reassurance, call 101, or organisational news (e.g. new appointments or job adverts) – and whether the tweet was part of a press campaign. Tweets that were part of a campaign were identified using the relevant Twitter hashtag (e.g. #IceIceSurrey). Tweets relating to reports of crime were additionally classified by crime type using the crime classifications from the national recording standard (Home Office, 2012a). The use of an independent rater, naïve to the research objectives, to enable statistical validation of the reliability of classification was considered but not utilised with this data. This was because the classification framework did not contain subjective judgement and the analysis of the results would not include advanced statistical techniques. The classifications were checked by one of the team supporting the researcher with the delivery of the research. Analysis of the data included descriptive statistics. The results of the RCT secondary data analysis were available for use together with the results of the criminal damage RCT for use in the RCT focus group.

Results – RCT Twitter analysis

The RCT Twitter analysis (St3) is intended to provide insight into any changes that may have occurred in the pattern of tweeting by the police force in the period leading up to and following the criminal damage RCT (St3). The results were subsequently used to facilitate the RCT focus group (St3) to explain the findings and explore the implications of them.

The dataset consisted of tweets from the police force corporate account from Monday 13 August 2012 to Sunday 9th September 2012 and from Monday 3rd December 2012 to Sunday 30th December 2012. The number of tweets in the four weeks after the study (n=335) was considerably higher than the number of tweets in the four weeks prior to the criminal damage study (n=87). Increases were found in all tweeting sources (χ^2 (3, N = 422) = 33.05, p < .001). As the number of public retweets was low both retweet categories were also

aggregated into one group for analysis. The differences remained (χ^2 (3, N = 422) = 31.17, p < .001).

The nature of the tweets though, before and after the study, also changed. As can be seen from Table 22, most tweets by the police force prior to the criminal damage RCT (St3) were reactive (n=68, 78.16%): *'Did you see a purse being stolen in Central car park, Farnham? If so call 101 and quote WK/12/5226'*, and related to a recent event.

Table 22. Number of tweets before and after study

Source	Number before	Percent	Number after	Percent
New police generated tweet - reactive	68	78.16%	154	45.97%
New police generated tweet - proactive	12	13.79%	151	45.07%
Retweet of a police/other agency tweet	7	8.05%	23	6.87%
Retweet of a public tweet	0	0.00%	7	2.09%
Total	87		335	

a. χ^2 (3, n = 422) = 33.05, p < .001

This contrasts significantly with the period after criminal damage RCT (St3) where proactive tweeting grew from 13.79% (n=12, N=87) to 45.07% (n=151, N=335). Proactive tweets were not simply seeking information about a recent incident but were anticipating the need for information from the public in the future: *'This man is banned from Elmbridge as part of his ASBO. If you see him please call 101 immediately'*, or seeking to influence their behaviour: *'End your xmas night out with a fight & you might wake up with more than a hangover - six charged with assault at the weekend #DeckTheCells'*.

A small proportion of tweets before (n=8, 9.2%) and after (n=15, 4.48%) criminal damage RCT (St3) (Table 23) directed other Twitter users to contact the non-urgent contact number for the police (101): *'@The_O_Man Thanks for your message. Please ring Surrey Police on 101 with details so officers can investigate it'*, to report their crime. This occurred

even when this channel of communication was busy and not likely to meet the Twitter users'

needs: *'@dombat Sorry you were unable to get through, I am afraid we are dealing with a lot

of calls at the moment'*. The police force operates several channels of communication which

include online reporting. In cases where the public have selected to use a digital channel to

initiate communication with the police it is perhaps surprising that the police did not offer

their digital channel to continue that communication. This suggests that online reporting in

this police force has yet to be established as a routine method for reporting crime, which has

implications for the government digital strategy.

Some tweets posted by the force were retweets of other messages. The proportion

remained similar in the four week periods before (n=7, 8.05%) and after (n=23, 6.87%) the

criminal damage RCT (St3). However, before the RCT all retweeted messages were messages

posted by other police officers or agencies that worked in partnership with the police. In the

period after the RCT, the force also retweeted messages posted by citizens (n=7, 2.09%).

These retweets included positive feedback about the quality of their service: *'RT

@KushRawal1: @SurreyPolice fantastic service and professionalism from your officers

responding to a burglary at my house. Gt empath ...'*, or other tweets that reflected well on

the force: *'RT @ResNetSH: Congratulations to @SurreyPolice Stacey Brown, 53, from

Woking for being recognised in the New Years Honers* (sic) *list with a British Empire Medal'*.

Table 23. Number of tweets before and after by type

In addition to the shift from reactive to proactive tweets there were also changes in the type of tweet made by the police force. Prior to the criminal damage RCT (St3) 78.16% (*n*=68, N=87) of tweets were either to make appeals for information (*n*=31, 35.6%), to give updates (*n*=22, 25.3%) about crimes and incidents, or to provide advice (*n*=15, 17.2%). After the RCT, appeals for information (*n*=49, 14.63%) and providing updates (*n*=61, 18.21%), whilst increasing in number, had reduced as a proportion of the number of tweets. The number of tweets providing advice increased (*n*=113, 33.73%). These three categories, though, now only accounted for 66.57% of tweets (*n*=223, N=335). The explanation for this is the addition of a type of tweet not seen in the period leading up to the RCT: digital engagement linked to a campaign (*n*=87, 25.9%). These tweets used humour to increase the immediate reach of the tweet through re-tweeting and the subsequent reach of the corporate account by increasing followers: *'Police have arrested a man stuffed with hay, and a man stuffed with straw. They have been bailed. #ChristmasCracker'*. This is an example of the more expressive style of tweeting noted by Denef et al. (2013).

The digital engagement tweets prompted a mixed response from the public. Some users appeared to welcome the style: '@SurreyPolice I heard you nicked 2 guys, 1 for stealing fireworks and 1 for batteries. They said you charged one and let the other one off', whilst in others it resulted in a negative response: '@SurreyPolice obviously still sitting around doing nothing? Surrey crime free is it?', and '@SurreyPolice not even funny go and stop some crime'. As a consequence the force responded to the negative feedback to justify their approach: '@geouk We are sorry you feel that way, but Twitter is a social media tool. Sit reps are important but so too is engaging the public'.

As can be seen in Figure 15, the number of new followers increased by 537 in the four-week period before the criminal damage RCT (St3) and 3,930 in the period after the RCT.

Figure 15. Number of new followers and new tweets by day Aug – Dec 2012

The proportion of tweets that were retweeted fell from 80.46% (*n*=70, N=87) to 71.64% (*n*= 240, N=335) after the RCT, however the number of times the tweets were retweeted increased from 426 to 13,050 with the average number of retweets increasing from 4.9 (STD = 6.49) to 54.38 (STD = 233.25). In the period before the RCT the highest tweet by the force retweeted was actually a tweet from another police force: *'RT @metpoliceuk: Getting involved in gang crime can ruin your life. With a criminal record, it can be harder to get a job #stopgangcrime'*. It was retweeted by 45 other Twitter users. After the RCT the highest number of retweets for a tweet was 2,782: *'#IceIceSurrey#IceIceSurrey Alright stop, collaborate and listen, ice is back and these roads are glistening'*. This tweet related to a campaign called #IceIceSurrey to raise road safety awareness of cold weather. These results suggest that exploration of the relationship between instrumental or expressive tweeting styles and their impact on citizen behaviour, through metrics such as follower numbers, retweets, comments or links shared, is an area for further research to enable a good practice model for policing to be developed.

The proportion of tweets relating to appeals for information and providing information updates has also changed before and after the criminal damage RCT (St3). The proportion of tweets providing updates is now higher (*n*=61 18.21%) than that appealing for information (*n*=49, 14.63%). The findings of the SOC study (St1) reported in chapter three indicate that the public not only want information about crime, but that they wanted information to assess their current risk of victimisation. The increase in tweets providing updates is therefore likely to be a positive change.

In addition to the style of tweets changing, and the type of tweet changing before and after the RCT, there was also a change in what the police were tweeting about. Prior to the criminal damage RCT (St3), 50.57% (*n*=44, N=87) of the tweets concerned a crime as opposed to other subjects such as traffic matters. After the RCT, tweets about crime were still important (*n*=102, 30.45%), however the number of tweets about safety (*n*=111, 33.13%) had risen (*n*=4, 4.6%): *'Surrey has lots of great bars - but you don't want to end up behind ours in custody! Going out tonight? Stay safe and don't be a #Liability'*.

As can be seen from Table 24, the types of crimes tweeted about before and after the criminal damage RCT (St3) remained relatively consistent. Tweets relating to the crime of burglary were the highest before (*n*=10, 22.73%) and after (*n*=22, 28.21%) the study. Theft before (*n*=6, 13.64%) and after (*n*=12, 15.38%), and also robbery before (*n*=3, 6.82%) and after (*n*=14, 17.95%) were in the top three crimes tweeted about.

Table 24. Number of tweets before and after by classification

In addition to the relatively routine types of crime there were also examples of more serious crimes being tweeted, such as arson (before; $n=3$, 6.82%, after; $n=1$, 1.28%), and indecent assault (before; $n=1$, 2.27%, after; $n=3$, 3.85%). Of interest to this research is that tweets about criminal damage remained low before ($n=1$, 2.27%) and after ($n=1$, 1.28%) the criminal damage RCT (St3). One of the tweets after the RCT suggests that those working in the force did not consider criminal damage appropriate for social media: *'Long term followers will know we've been guilty of overusing #SurreySpoilt. Now hear why: #NoMoreSurreySpoilt'.*

In summary then, whilst the criminal damage RCT (St3) found that the use of Twitter did not result in more information from citizens being consumed by the police, the RCT Twitter analysis (St3) found that the police force in this study had changed its use of Twitter after the RCT. The number of tweets after the study had increased by 385.1%. The nature of tweets produced by the force had changed as well, from what could be characterised as a reactive style of tweeting prior to the study to a proactive style after the study; one that is more likely to result in an expressive rather than instrumental style of engagement that is likely to increase the exchange of information between the police and citizens. Finally, this study highlighted that the types of crime tweeted about before and after the study remained

consistent, and minimal use was made of criminal damage as a subject to tweet about. This consolidates the perspective that criminal damage may not be a useful crime to tweet about from the police force corporate account. These results, together with the results of the criminal damage RCT (St3) will be discussed in the following section: the RCT focus group (St3).

Method – RCT focus group

Design (RCT focus group)

This section of the study was intended to gain understanding and help to explain the findings and operation of the criminal damage RCT (St3), and the changes in tweeting pattern seen before and after the experiment in the RCT Twitter analysis (St3). A focus group was selected as the method for this study, after consideration of other qualitative methods such as survey and interviewing. Whilst surveys are a cost-effective and convenient way to generate representative information for large population groups they do not readily provide a mechanism to explore or explain the emerging findings from the research (Robson, 2002). Interviews, in contrast, provide the opportunity to discover what participants think about statistical findings, but they are time consuming to set up and conduct (Ritchie & Lewis, 2003). Focus groups provide the benefits of an interview, in that they provide the opportunity to investigate the findings in depth, but they are less time consuming. In addition, focus groups provide the opportunity for clarification and broader development of themes between participants. One disadvantage of a focus group is that some people can feel uncomfortable talking in a group. In this research, this was considered to not be a significant disadvantage because the participants had worked together to deliver the criminal damage RCT (St3) and held supervisory roles within the organisation (King & Wincup, 2007).

Participants (RCT focus group)

The participants for the focus group were recruited from the individuals within the force who had undertaken an active role in either the design, the operation, or the leadership of the experiment. This included staff who worked in the communications (*n*=3), contact management (*n*=2), neighbourhood policing (*n*=1), and corporate development (*n*=2) departments. The mix of police officers and police staff in the focus group reflected that of the departments represented, in that the participants from the communications, contact management and corporate development departments were police staff. The neighbourhood policing participant was a police officer. The research was not concerned with identify differing attitudes between officers and staff about the findings of the experiment; it was intended to understand the results from the perspectives of the professionals who have responsibility for the respective policing functions. The balance of officers and staff was not considered problematic, although it remains an area of further research. The group did not include those staff who had actually generated the tweets during the experiment. These staff would have provided useful insight into individuals' decisions about whether and what to tweet following a report of a crime. However, this would have meant asking staff to explain their decisions in front of their supervisor, and supervisors having to consider the organisational impact of their contribution in the focus group more fully than would be the case in a more restricted forum. The option of a second focus group of frontline staff or a survey of them was considered, but this was not achievable within the constraints of the research.

Materials (RCT focus group)

The focus group was held within the research environment in a conference room that was familiar to participants, other than a schedule of open-ended questions based on the findings of the first two sections of the study. The questions explored in particular the central finding from the criminal damage RCT (St3) that more information was obtained through

PCSO visits than through the use of Twitter, and why criminal damage might be an unsuitable crime for tweeting. Participants discussed the operation of the experiment and were asked to explain why more social media treatments were excluded than the other treatment groups. They were also asked what makes a good tweet and whether any crimes were unsuitable for tweeting. Questions about the RCT Twitter analysis (St3) concerned the increase in tweeting activity after the RCT, the change in the style of tweeting and the change in the crimes tweeted about after the RCT. No other materials were produced for this study.

Procedure (RCT focus group)

The independence and objectivity of the interviewer is also important. As Gomm (2004) highlights, interviewees may be influenced by demand characteristics: responses based on what the interviewee considers is sought by the interviewer. An additional consideration then, for this focus group, was that the researcher was a senior police officer in the police force and had line management responsibility for some of the participants in the focus group. This introduced a real risk that the researcher would introduce bias into the focus group. The validity of the results then may have been compromised had the researcher conducted the interviews. To avoid the risk of researcher bias the focus group was run by another facilitator briefed by the researcher. A semi-structured focus group, where the facilitator followed a schedule (a list of questions with probes or prompts) of open questions, was considered more likely to achieve the research objective.

The aim of this focus group was to get answers that represented participants' real views but within a time constraint, and so whilst unstructured interviews emphasise reliability (Langley, 1987) within a group setting, this approach risked failing to remain focused on the research findings. The effectiveness of semi-structured interviews depends on a number of components: the interpersonal skills of the interviewer to put the interviewees at ease and establish a rapport (Maxfield & Babbie, 2001), and the communication skills of the

interviewer to clearly structure questions, and listen and prompt appropriately (Ritchie & Lewis, 2003). A trained facilitator was therefore used, experienced in running focus groups. The facilitator was briefed by the researcher about the findings of the research and provided with the schedule which contained key questions which were grouped thematically. A typist in the meeting also produced a record of the study capturing the main ideas expressed and recording relevant observations. The focus group was tape-recorded with the consent of participants.

The demand characteristics risk (Gomm, 2004) was also of significance within a focus group, where participants might not only be influenced by their own expectations of what the facilitator expects them to say, but also by what they think the group expects them to say. The facilitator was briefed to make clear at the beginning of the interview what the purpose and topics of the focus group were and to seek to put the interviewee at ease. The participants were aware of the criminal damage RCT (St3) and its finding in general terms, but were not aware of the specific finding or the findings of the RCT Twitter analysis (St3). The facilitator introduced the relevant finding and then posed the relevant open question for group discussion.

Analysis (RCT focus group)

The objective of this section of the study was to help explain the findings of the criminal damage RCT and the RCT Twitter analysis. This section of the study consisted of a single short focus group with a small (*n*=8) group of organisational professionals rather than a series of long focus groups with diverse participants, the product of which would subsequently require categorising and synthesising. The analysis plan did not therefore anticipate the need for sophisticated content analysis or qualitative software to support analysis. Analysis of the results of the study through presentation as a simple descriptive narrative was considered sufficient to meet the research objective.

Results – RCT focus group

The final results section in this research will report on the findings from a focus group conducted with police officers and police staff involved in implementing the randomised controlled trial (*n*=8). The focus group considered the findings and operation of the criminal damage RCT (St3) trial as well as the changes in the way the police force in this study changed its tweeting pattern before and after the experiment (St3).

The police force in this study had operated a corporate Twitter account for just over three years and was among the early adopters of police forces in the UK to develop a social media footprint. Participants described the police force as one that was still developing its understanding of how best to utilise social media: *'there is still a lack of understanding around social media'* (P/1). The use of Twitter had not become a routine and systemised part of the way the force operated: *'It* [social media] *is still not an embedded part of the business'* (P/8).

Some teams within the force had started to utilise social media, however this was driven by enthusiastic early adopters (Rogers, 1962): *'it's often based on individuals' interest and competency with the technology'* (P/1), because the force had yet to develop and implement a coherent strategy to fully exploit the potential of social media for policing. This was a source of frustration for participants: *'we now have fifty official twitter accounts, but there are still other rogue accounts out there'* (P/7), who had a sense of the direction the force could take, but did not feel they were provided with the resources to do so: *'we* [corporate communications] *can't monitor 24/7, and there is just too much work for one team'* (P/8).

Interestingly, enthusiasm for communication using digital channels did not spread beyond social media for some participants. When asked about the results of the RCT Twitter analysis (St3), where it was noted that the force response to a person tweeting about a crime

was to ask the person to contact the police by phone on 101 rather than provide the option to continue to report the crime online, participants felt staff were putting their own needs: *'typing 101 is easier; there are less characters'* (P/4), ahead of the victims, or were not confident in the effectiveness of digital communication for crime reporting: *'it is more reliable to speak to someone directly'*; *'the public don't know what type of crime it is'* (P/3). The differing perspectives on the value of diverse digital channels is more interesting because regardless of contact point, whether by phone, online or via social media the same staff in this force would end up creating the initial crime record on the force information technology system.

Those with a responsibility for the effective utilisation of social media had differing views about the role of social media. Reflecting the findings of the riots survey (St2), for some participants Twitter was simply another channel for the public to use to make contact with the police: *'it is important to treat tweets just like a telephone call'* (P/4), whilst for other participants a wider potential of Twitter was anticipated: *'it is an investigative policing tool'* (P/3).

Participants, though, did not frame the investigative utility of Twitter beyond that of being another channel through which to make appeals for information: *'tweets are often part of an investigation appeal'* (P/5). This influenced participants' views about which types of investigations would benefit from being tweeted, with those crimes that were newsworthy being more tweetable: *'it's about the amount of media coverage, generating local media interest'* (P/7).

In the RCT Twitter analysis (St3), it was noted that before and after the RCT that burglary followed by robbery and theft were the crimes tweeted about most frequently, even though these were not the most frequent crimes. Participants explained this was because they felt these were the crimes that were safest to tweet about; safest to release to the public to

capture their interest: *'people can usually identify with these types of crimes'* (P/7), but without increasing their feelings of insecurity: *'need to raise interest without installing fear'* (P/1).

Participants expressed mixed views about whether, in order to avoid raising the fear of crime, there were some crimes, such as rape, that would never be suitable for tweeting. Some participants felt this was straightforward: *'that's why we excluded them from the trial'* (P/1), whilst others considered any crime might be appropriate for tweeting: *'there are no limits on this'* (P/7), and could anticipate circumstances where tweeting might be appropriate: *'it would be different from a local account, it could be seen as proactive, investigating serious local crime'* (P/7).

Participants did not support the routine tweeting of all crimes or all crime types: *'there needs to be some investigative value, crimes where we would appeal for the public's help'* (P/7), and instead felt the police should ration the number of tweets they make, selecting those with a clear policing purpose: *'opportunity to get the police message out; an appeal tool and warning to others'* (P/1), or that are likely to generate interest: *'we need to attach an emotional factor'* (P/1).

The explanations given by participants, about why tweeting about criminal damage crimes was low before and after the criminal damage RCT (St3), were consistent with the reasons that they had provided about when to tweet a crime. Criminal damage is not seen as a crime that is easy to detect: *'there are low investigative opportunities* […], *not a public priority for the police* […], *and of low interest'* (P/7). Participants also felt this crime was at the margins of criminality and therefore were not clear that it was an area the police should engage in: *'there is a difference of opinion as to what people* [as opposed to the state] *define as crime'* (P/2). In keeping with their views about when it might be appropriate to tweet about more serious crime, the views expressed by participants about criminal damage concerned the

use of the force corporate account. They were clear that instead of the corporate account, tweets about criminal damage should be made from accounts that are focused on neighbourhoods: *'it's not appropriate from a corporate account, it should be tweeted from a local account'* (P/5). This comment, whilst providing an explanation of a reason why the level of criminal damage tweets did not change before and after the RCT, also reflected participants' aspirations for the future use of social media within the force, because at the time of the study there was not yet a network of local accounts available in the force to use.

During the randomised controlled trial more crimes that were assigned to the Social Media group were excluded after allocation to treatment group than excluded for the PCSO Visit or messaging via the Active Citizen System. It was possible that participants' views about whether criminal damage should be tweeted from a corporate account influenced the higher exclusion rate for social media treatments. Participants, though, provided a number of other explanations for the exclusions. In addition to citing the various factors that were provided for in the experiment design: *'crimes were excluded as it may have been a no crime, a linked crime or involved children. There were neighbourhood disputes as well'* (P/4), participants also described behaviours of contact centre staff involved in the experiment that were not anticipated: *'they sometimes asked victims if they wanted their crime to appear on Twitter - this shouldn't have happened'* (P/4). It also took staff some time to become confident in the use of the Twitter application: *'there was initial nervousness'* and *'a technical issue at the beginning'* (P/3), where some of the computers in the control room running an older internet browser could not post tweets. In theory there were plenty of other computers available to send the tweet, but in practice it provided a legitimate opportunity for those staff who were reluctant or nervous tweeters to not engage with the trial.

The negative comments made by the public in response to tweets made as part of the experiment may also have influenced staff behaviour. The tweets in this experiment attracted

more negative than positive comments from other Twitter users. Participants considered that this was a consequence of their volume and frequency, and their lack of relevance and interest for those Twitter users who followed the corporate account: *'people didn't like repetitive tweets about low level crime'* (P/5). The context and purpose was also not clear: *'it was not explained and people did not know what it was about'* (P/6). In one case a user posted a negative tweet: *'Put more effort into a car scratch than into investigating violent rapist stalkers. Life destroyed bcoz of that'*, and then unfollowed the force account stating what they had done. Participants explained that unfollowing was not unusual, but the publication of unfollowing was: *'it is unusual for someone to tell us if they are unfollowing'* (P/1). Participants' preference was not for the routine publication of crime through social media as seen in this research but for the use of social media as a channel situated within a publicity campaign: *'ideally we would advertise the tweet as part of a wider campaign* […] *supported online and offline'* (P/6).

Participants were therefore not surprised about the results of the criminal damage RCT (St3), which found that more information was obtained from the PCSO scene visit than from a social media appeal. Participants highlighted several weaknesses of Twitter as a social media platform for investigation, they were concerned about limitations such as reach: *'not everyone is a Twitter follower'* (P/2), resonance: *'there is no guarantee that a follower would have seen or noticed the tweet'* (P/2), relevance: *'or know the area, Surrey is a big force'* (P/1), and reliability: *'not all tweets appear on the feed'* (P/1).

Participants, then, were not positive about the effectiveness of the use of Twitter as an investigative tool for routine criminal damage investigations. They were, however, positive about the overall effect of the RCT on the use of social media by the force. Firstly, participants recognised that the experiment enabled awareness of and the ability to monitor and post messages on social media to move beyond corporate communications to a new area

of the force, the public contact centre: *'the operation gave exposure to Twitter, it enabled the training of the Contact Centre'* (P/1). The effect also spread wider than those staff who participated in the experiment: *'there is now a much bigger drive for people to use Twitter within the force'* (P/1). As a result of the experiment, the force learnt a new skill which it maintained after the experiment, resulting in an ongoing capability for monitoring social media: *'Twitter is now monitored and responded to 24/7'* (P/4). The additional capability enabled the force to increase the number of staff tweeting in the force, to deliver the increase in tweets seen in the previous study, but it also enabled the force to change the nature of the tweets it made. Force tweets after the RCT were more expressive in style. Participants reported that the research gave staff the confidence to experiment with the content of their tweets and move from the relative safety of a factual tweet about the occurrence of a crime to one that Twitter users might engage with: *'it was a catalyst for the change'* (P/7).

It was evident that participants considered there were ingredients that were more likely to make a tweet a good one. To produce a good tweet it was necessary to *'avoid acronyms and jargon'*, *'make it personal and use pictures'*, and *'use the correct tone of voice'* (P/7). For some participants the correct tone included the use of humour. Participants discussed the use of jokes as part of the winter road safety campaign in the four-week period following the experiment, and recognised these tweets were more likely to be re-tweeted. They explained it was important to combine the various ingredients together to ensure the tweet was successful: *'to create a joke in the right context, we want to be seen as human'* (P/1). The immediate response when asked what makes a successful tweet was that it was a tweet that resulted in an increase in the followers of the Twitter account: *'the motivation is to increase the number of followers'* (P/1), as opposed to increasing the reach of their safety message or changing driver behaviour. To this end, there was a sense that in chasing follower numbers, those involved in developing the force approach to social media risked losing sight of the policing purpose.

In summary, the participants in this study were not surprised by the results of the criminal damage RCT (St3) and the RCT Twitter analysis (St3); they did not consider criminal damage to be a good crime to routinely tweet about through the force Twitter account. Participants did not support the routine tweeting of any crime type; instead their views of Twitter were similar to those reported in the literature, that policing information is for the ultimate use of the police. Participants nevertheless viewed the pilot test and experiment as positive in that they acted as a catalyst for organisational change and provided useful insight into the limitations of Twitter as a channel for the dissemination of police information. The results of all three methods used in the Twitter study (St3) are discussed in the next section.

Discussion

The research in this chapter consisted of three sections designed to examine how information flows between the police and citizens as part of a crime investigation. The first section, through the vehicle of a randomised controlled trial, tested whether the use of a social media tool, in this case Twitter, would generate information and result in more crimes being cleared up by investigators. The second section used secondary data analysis to understand whether the use of social media by the force in this study changed after the experiment. The third section provided the opportunity to discuss in a focus group the results of the research to both help explain the results but also to identify learning about the use of social media that might inform future research or practice. From a methodological perspective the research achieved what it set out to do in that it tested a hypothesis. The experiment also produced findings from which statistical significance was inferred. However, the experiment was not without challenges in that the research question was not that envisaged at the outset, and the experiment ended earlier than the researcher intended. This discussion of the results firstly considers the implementation of the experiment and the implications for future research. It

then explores the implications for police practice of the results of this research, before concluding with steps this research suggests forces might take to improve the use of information by the police and citizens.

The decision to utilise a randomised controlled trial to test the primary hypothesis in this research was influenced by Sherman (2013, p. 417), who asserts that evidence from real-world research is necessary to provide strong evidence to improve policing. The results of the RCT focus group (St3) indicate that the force shared a common aim with the researcher, in that it too was looking for ways to improve the police use of social media. The force also had experience of working within the constraints of academic research (Home Office, 2006; Leeney & Mueller-Johnson, 2010; Leeney & Mueller-Johnson, 2011; Tuffin et al., 2006)) and therefore might not be considered naïve research participants. Nevertheless, the number of treatments delivered in the randomised controlled trial, whilst sufficient for statistical analysis, was smaller than that sought at the outset of the experiment. The experiment would have needed to run for at least one further week to deliver the sample size originally sought, but was curtailed when support for the experiment amongst senior stakeholders within the force evaporated following a negative reply from a member of the public to one of the tweets. At the time of this research in 2011, however, the use of randomised controlled trials in the development of public policy was not common practice (Shepherd, 2007). The Cabinet Office set out a methodology to enable the public sector to set up RCTs: the 'test, learn, adapt' methodology, consisting of nine separate steps which, it is asserted, are required to set up and run any RCT (Haynes, Service, Goldacre, & Torgerson, 2012). The criminal damage RCT (St3), though, found that in real-world settings the challenge of running an RCT was not one of the sterile application of a series of methodological steps within the research environment. The challenge was how to successfully navigate the fog of organisational uncertainty that

arose as a result of the hierarchical culture and attendant bureaucracy that typified the police service at that time (Chan, 1996).

The literature recognises that the operating context of policing differs within and between police forces in the same country and between police forces in different countries or jurisdictions (HMIC, 2014; JCC, 1990). It is less clear that the research environment itself is not static and may change over time as well. The authorisation process or criteria for conducting research in this force did not change throughout the research. The research proposal was sanctioned and monitored through an internal working group chaired by a chief officer of the force. However, there were changes in the chief officer team of the force from the point of research proposal to the point of research delivery, which changed the appetite of the force for reputational risk. A single tweet that made negative comment about the tweeting activity resulted in a discussion by the chief officer team of the force, the withdrawal of senior stakeholder support and therefore the termination of the research. This suggests that in addition to many other factors there is a research window to be considered in the design of future real-world experiments in the police, and that the length of time required to build a dataset of sufficient size for statistical analysis is an important consideration.

One factor that influenced the lack of appetite of the force to highlight aspects of the approach it habitually took to criminal damage investigations was that it did not have a crime scene attendance policy that had been negotiated with the public. Whilst the rhetoric of policing is that it does everything it can to relentlessly pursue criminals (BBC, 2013), in a world of finite resources, where demand outstrips the investigative capacity of the force to follow all lines of enquiry, pursuing all criminals is not possible, relentless or otherwise. Choices are made about which victims to give more service to and which victims to give less service to. Policies vary within and between forces which means members of the public will receive different responses from the police for the same types of crime depending upon where

they live (HMIC, 2014, p. 26). The literature indicates that it is also not uncommon for police forces to determine whether a crime will be investigated or not on the basis of the type of crime rather than on its likelihood of detection (Sherman, 2013), however it does not follow that a police force would wish to engage in public conversation about such a policy particularly where the approach had not previously been made public, or negotiated with the public as part of the development of the local policing plan. In anticipation of such a conversation in this research, the force and the researcher prepared a number of 'if asked' questions that would be used in the event of an enquiry from the public about the criminal damage RCT (St3). However, in contrast to earlier research (Home Office, 2006; Tuffin et al., 2006) which had diffused accountability with the Home Office, the force was unprepared for a challenging public conversation about its own crime scene attendance policy and the consequences of randomly withholding investigative lines of enquiry in some investigations. Future research should consider the genesis of force policies related to the research that might be given public scrutiny as a consequence of the research. It should develop and robustly test with the force a media strategy for the research. Support and consent for the research should go beyond formal channels for the authorisation of research and seek to build a broad consensus with senior internal and external stakeholders. The research should also anticipate that circumstances beyond the control of the researcher may result in early termination of the research, and as part of the design of the experiment consideration should be given to an early termination plan to minimise the negative impact of the change.

Termination of the experiment occurred rapidly once support for it amongst senior stakeholders evaporated, but it did not follow that at the outset, when the experiment was authorised by the force, that activity to enable the research to be conducted occurred as effectively or rapidly. This experiment crossed a number of internal organisational silos between operational commands such as neighbourhood policing teams and contact

management as well organisational commands such as communications, corporate development and information technology (IT). In order for staff within the commands to undertake work for the experiment it was not enough that the experiment was approved by the academic research governance process, each business unit needed to sanction it as well through its own governance mechanism. In order to make the randomisation tool available to staff who had agreed to use it, the researcher needed to meet with a representative from the IT department to outline the requirement, and then translate it into a business case which then was considered by the IT change board. Following outline approval at that board, a detailed technical specification was produced which then needed approval by information security staff. The full proposal then was reconsidered by the IT change board who then allocated the work a priority in the context of other IT change occurring within the organisation. Armed with the priority technical change, staff then scheduled the work and allocated staff timeslots to complete it. The researcher, though, still needed to ensure the work happened as staff were constantly redeployed onto more urgent IT change work. As outlined in the research design of the criminal damage RCT (St3), the formal part of the organisation responsible for IT change was unable to deliver and the researcher, using informal means, was able to deploy the randomisation capability. Police forces operate differently, and the difficulty of successfully navigating the myriad of bespoke pathways constructed by forces should not be underestimated. In this research the people that were best able to navigate the organisation were those within it. To do so, the research built a network of research agents in each of the core functions. The research agents were familiar members of teams and readily available to colleagues when issues arose within their team that needed clarification or guidance. They also took ownership and responsibility ensuring that experimental instructions were complied with, and through weekly checkpoint meetings were able to identify potential issues in other teams. On one occasion, when it looked as if one police shift was not engaging with the project, they were able to quickly audit the decisions that had been made to enable the

researcher to determine whether further intervention was appropriate. In this case it was not inappropriate; the decisions to exclude had been reasonable. There is of course a risk that by increasing the number of people used to facilitate the experiment, wider knowledge of the experiment's aims and objectives itself will influence the results and undermine the argument for a randomised trial. In this experiment, though, it was the use of research agents that enabled the experiment to be implemented in the research environment. Future research should consider balancing the validity of research findings with the utilisation research agents, which may increase the likelihood that the research will be implemented successfully.

Despite the challenges faced during the criminal damage RCT (St3), the experiment was nevertheless successful. The general hypothesis was developed firstly from Granovetter (1973), who theorised that new information rests with weak ties, secondly from Shirky (2009), who argued that collaborative technologies lower the transaction cost of participation and so enable new or latent information to flow, and thirdly from Centola (2015), who asserted that social institutions have a role to support the formation of broad bridges between weak ties to facilitate the exchange and use of information, in this case between police and citizens. Previous research had not explored whether such technology would result in the flow of new information in policing and if indeed it did for whom, for what types of information, and in what contexts. The inference from previous research (Sherman, 1997) about the movement of information from citizen to police indicated that proactive (police initiated) information-gathering tactics would result in more information flowing than reactive (citizen initiated) information-gathering tactics. The difference between whether activity was citizen or police initiated in the literature was subjective. This research therefore used the terms police or citizen produced and examined three different ways to facilitate the flow of information: two produced by the police (the use of social media and the use of a citizen messaging system), and the third being information from citizens recorded by PCSOs

following citizens' reports of criminal damage. The tactics were situated on an information market quadrant developed for the research. In this experiment the results did not support the hypothesis that social media would obtain more new pieces of information than traditional approaches. Rather it was found that PCSO visits (quadrant two participation) received more information than email requests for information or alerts posted on social media. The analysis of Twitter data before and after the experiment, and the focus group, complement previous research and help to explain the results.

Firstly, whilst at the time of the research Twitter was the most utilised social media tool (riots survey (St2)) by the police, the RCT focus group (St3) found it was essentially used as another channel through which to make appeals for information, and not a channel where the exchange of information was routine. Crump (2011) outlines three different ways in which Twitter can be used by the police, which include information gathering; but the riots survey (St2) indicates that the police recognise there are other channels that are better suited for the two-way flow of information. In trying to use Twitter to both alert citizens to new crime risks and facilitate the exchange of new information between the police and citizen, whether on Twitter or otherwise, the RCT expected both citizens and police for the duration of the experiment to adopt new behaviours. Consistent with other forces, the RCT pilot indicated that this was feasible for a week of activity as part of a time-limited campaign (see Denef et al., 2012 for other examples) but the RCT focus group (St3) participants were clear there was no appetite for routine tweeting of all crimes, regardless of crime type. The RCT focus group (St3) participants highlighted a number of intuitive weaknesses of Twitter to explain their view which are common to other information-gathering tactics: reach (not everyone is a follower), resonance (not all tweets are noticed), and relevance (may not have information). The RCT focus group (St3), though, highlights a new challenge for forces; that of reliability (not all tweets appear on the feed). It is not the case that Twitter would actually place the

tweet on the timeline of all followers of the police account. Whether items appear is controlled by an algorithm the details of which are not made publicly available by Twitter. The effect of this is probably that tweeting all crimes increases the likelihood that tweets will be unread and thus reduces the chance that the police tweets will appear on the followers' timeline. Forces should therefore be selective about the content they create for it to remain an effective channel of communication; they must select content they believe will be read.

Secondly, in this research, for the reasons outlined in the methods section, criminal damage was selected as the crime type for the experiment. Following the experiment, those who had been involved in setting it up and running it stated that criminal damage was not a good crime to tweet about from the corporate account (RCT focus group (St3)). There were changes in the way the force used Twitter after the experiment, but the choice of crime was not one of them. Burglary, robbery and theft remained the top three crime types tweeted before and after the experiment (RCT Twitter analysis (St3)). This type of crime is typical of the content forces create for traditional media and reflects priorities from public attitude surveys. This suggests forces are already selective about the content they create and influenced by what is of interest to the public, but it is unclear whether content that is of interest to the general public is of equal interest to Twitter users. An unpublished exploratory study conducted by the researcher for HMIC in 2016 indicates that there may be differences (Leeney, 2016), but this remains an area for future research. Outside of the criminal damage RCT (St3), criminal damage crimes were not routinely selected for tweeting on the corporate account. The research did not examine whether different results may have been obtained had the tweets been published through more local accounts. The occasional comment by Twitter users in this study suggested the criminal damage tweets would be more appropriate on a local account, but it does not follow that the results would be any different. In a world of information overload perhaps the challenge, in quadrant three at least, is not just whether we

can reach weak ties but whether we can get the attention of weak ties given the limitations of the human attentional system (Levitin, 2015, p. 45). This would resonate with the argument already advanced by Ericson and Haggerty (1997) concerning the role of the police as communicators of risk and the findings of both the riots survey (St2) and SOC study (St1), which highlighted different appetites and expectations for general information compared to information about their immediate locality. This difference in role is not reflected in national guidance provided by the police (NPIA, 2010) and was not articulated by participants in the RCT focus group (St3). A good tweet in this study was framed as one, reflecting van de Velde, Meijer, and Homburg (2014), that avoided jargon, was personal, and used the correct tone. Evidence of a good tweet was one that helped the communications department achieve an increase in followers, such as the joke tweets published as part of a Christmas campaign, as opposed to changed behaviour that leads to a more secure community. Research is starting to examine how the police might use social media in crisis situations (Manso & Manso, 2012), but research to understand the limits of and how to tweet to win the battle for attention of day-to-day crimes and events is an area for further study.

Limitations

This study shares some of the limitations of the previous studies. Firstly, it remains a study conducted within one police force and, whilst, as set out in previous studies, that force reflects the national average, the results may not be representative of the other 42 police forces in England and Wales. Secondly, the RCT Twitter analysis (St3) relies on data made available through the public Twitter API, which is a random subset of Twitter data and the researcher is thus unable to verify how accurate the data provided through the API is.

This study was further limited in that it concerns crimes concerning criminal damage and not other types of crime. The literature review, the SOC study (St1) and the riots studies (St2) suggest that events related to personal risk of victimisation are most likely to get the

attention of citizens, and such risk are unlikely to be found in most criminal damage crimes. An additional limitation was that this study utilised a single social media channel. This provided the benefit that it enabled inference to be drawn about the effect of Twitter, rather than have such inferences diffused through the use of multiple channels. However, the original hypothesis was developed on the basis that it was the combination of social media channels that would facilitate the flow of information from weak ties.

This study used the force corporate account to deliver the Twitter treatment because a network of local accounts was not established in the force at the time of the research. Many forces, five years after the research, still do not operate a network of local accounts so the results still remain relevant; however further research on local accounts would be worthwhile.

The study was conducted over a 12-week period in 2011. Whilst the literature does not suggest there would be seasonal variation in the results, this was not tested in the research so it is possible that information might flow more easily at other times of the year, for example when the evenings are lighter.

The qualitative study conducted to explain and explore the findings of the RCT was conducted with key individuals within the police who were involved in the RCT. Whilst the focus group therefore represented their views, it would have been interesting to ascertain both the views of those staff who delivered the treatments and the views of Twitter users. This might have provided alternative perspectives from which to discuss the results, however this was beyond the time constraints of the researcher.

The representativeness of the research, in terms of the demography of both the participants in the SOC study focus group and the followers of police Twitter accounts in the secondary analysis of Twitter data, may also limit this research. Of course, the methods by which researchers are able to achieve greater representation in focus groups are a matter of

record and with time and resources, largely surmountable. In contrast, however, the constraints inherent as a consequence of digital technology are more problematic. The Twitter follower demographic is not representative of society, with some sections being over-represented on Twitter (Miller et al., 2015). It is not always apparent whether a Twitter follower is resident in a force area, a visitor to that area, an individual rather than a representative of an institution, tweeting from the UK or indeed with the rise of robotic technology even a human. Demographic clues to enable researchers to assess representativeness exist within the metadata of Tweets, but the information is not freely or easily available to researchers through third party applications. In the near future, research into new or departing followers is therefore likely to involve the more innovative algorithmic analysis and natural language processing of data being conducted by Burnap et al. (2014) and Miller et al. (2015), complemented with more conventional offline research methods.

The final limitation relates to the design of the three studies. The SOC study (St1) was conducted in advance of the design of the subsequent two studies. The riots study (St2) utilised an unforeseen opportunity following the 2011 riots, and the design of the Twitter study (St3) was constrained by the research environment. The three studies each contributed new understanding, however had the operational constraints encountered in the third study been known at the outset, the design could have accommodated this to provide tighter findings, for example by using criminal damage as the theme for the public consultation in the first study.

Despite these limitations it is clear that, even by their own police-centric definition of intelligence, the police do not have an effective social media strategy for the production and consumption of information by the police or the public. It is clear that in order to move ' beyond broadcast' it is insufficient to utilise a single corporate channel for that communication; this study shows evidence, though, of those first tentative steps to do so.

Conclusion

The Twitter study reported in this chapter (St3) indicates that the police force is changing and that the randomised controlled trial acted as a catalyst for some of that change. The volume and style of tweets changed from instrumental to expressive, to become more conversational, as advocated by Denef et al. (2013). The force also provided more proactive requests for information to become more collaborative, as advocated by Brainard and Edlins (2015). There were more tweets that provided updates about incidents, and a shift from tweeting about crime to tweeting about safety. These changes reflect the activity that was valued by participants in the SOC study (St2) and reported in chapter three. Overall, though, it is difficult to argue with the position set out by participants in the RCT focus group (St3) that the force had good intentions but lacked an effective social media strategy to move beyond broadcast. In the five years since the data for this research was collected there have been a succession of reports concerning the potential for the use of social media by the police (Accenture, 2012; Deloitte, 2013; Police Foundation, 2014), yet the service largely remains stuck in instrumental styles of communication (Keane, 2016), that frame information as a resource for the police rather than for citizens to consume (quadrant one and two activity); the police seek to keep control of information rather the cede information (and therefore power) to the citizen. Within this paradigm information does not flow through the whole information eco-system, and in the absence of information exchange parts of the eco-system remain unhealthy, which undermines the legitimacy of the police (Tyler & Huo, 2002). Organisms and organisations that do not adapt do not survive. This research suggests that instead of trying to control the information eco-system the police should instead seek to become a part of it, to move beyond quadrant one and two activity, to produce (quadrant three) or facilitate the movement of (quadrant four) information for use by citizens.

This research suggests several steps that the police might consider to improve their use of social media. Firstly, forces should think about who owns or leads social media in the force. The need for leadership in this area is established (Bartlett et al., 2013), however this research highlights that social media was typically owned by departments concerned with reputational risk, so it is not surprising therefore that the content of tweets was informational. Leadership or ownership of social media from an operational function is likely to increase the use of social media to communicate operational risk. Secondly, this research highlights that using tools designed to broadcast information means staff will broadcast information. In order to exchange information with citizens, forces should design interventions around tools that are designed for the exchange of information such as Facebook, and then use tools such as Twitter as a signpost to those tools. Thirdly, in order to exchange information about local risk forces must establish and sustain a network of place-based sites. Corporate sites are important but risk messages must be in context to ensure they remain relevant to the audience. It takes time to build a network of followers, and this investment is too often lost where it has been built by forces around individuals that move on, rather than around places that do not. Lastly, the research highlights that both police and citizens through their use of social media leave behind considerable information about their use of social media. This research used that *information exhaust* to conduct secondary data analysis but the data is available for ongoing monitoring of the health of the information eco-system. The researcher has started to do this with the service to understand how aligned the concerns of the public are with the communications of the police (Leeney, 2016). The amplification of signal through the reduction of noise remains an area for future research.

CHAPTER SEVEN: OVERALL DISCUSSION AND CONCLUSION

The literature on policing has framed information as a commodity to be used by the police; to be extracted from the public to interpret the neighbourhood policing environment and prioritise problems (Tilley, 2008), to be processed by the police and converted into intelligence (ACPO, 1975; HMIC, 1997), and to be manipulated to understand the demand placed by the public on the police (HMIC, 2014). Information is considered to be a valuable commodity, to be fought over by criminals and the police (Willmer, 1970, p. 36). Notions of co-production between the police and the public in that contest simply entails passing information to the police 'to enable their local police to be more effective in producing policing services' (Ostrom, 1978, p. 107). Information is a commodity that can be used without being used up (Innes & Sheptycki, 2004), but once acquired information is reshaped and returned to the public when its value to the police has depreciated (see Quinton, 2011). This view of information reflects the production process of the industrial age (Ramirez, 1999) where it is for the producer to add the value to things during the production process, and one where the product of that process remains a commodity under the control of the producer rather than one disseminated to the information commons (Kranich, 2004; Ostrom, 1990). However, whilst legislation sets out some functions that can only be performed by the police, most policing is not undertaken by the police (Morgan, 2011); the police are but one part of the policing system that co-produces social order. The extent to which they continue to play a part is dependent on both the trust the public have for the police (Tyler, 1990) and the ongoing actions of citizens that express that trust (Beetham, 1991); their legitimacy. Legitimacy is the foundation of the authority of the police and in the long run necessary for the very survival of the police (Jackson & Bradford, 2011). The landscape of policing and therefore the landscape for its legitimacy is changing (Winsor, 2013). It cannot be assumed that legitimacy in one context automatically translates to another (Suchman, 1995). The

information age presents new opportunities for both citizens and police to produce and consume information in a virtual landscape, and new opportunities for real and virtual collaborative action by citizens with less dependence on the state (Shirky, 2009), but it also demands such new behaviours from the police as well. As a form of participation (Arnstein, 1969), the extent to which valuable information is exchanged between police and citizen in both the traditional and virtual landscape reflects the legitimacy of the police. There are concerns from the police inspectorate about the progress of the police in establishing such digital legitimacy (HMIC, 2015). This research therefore situated information as the currency of legitimacy and set out a four quadrant framework to reflect the respective roles of citizens and police as producers and consumers of information within the information market (see Figure 1). This framework extends the theory of police information put forward by Willmer (1970) and complements the conceptual model put forward by Innes and Roberts (2011) for 'prevent' policing. The market of information, though, reflects the concept of an information economy set out by the economist and is intended to recognise both 'high' and 'low' forms of policing (Brodeur (1983, p. 512), although for this thesis the focus was the model of policing at its height in the UK at the time of the research in 2010; neighbourhood policing.

The focus of this research has been quadrants two and three of the information market: information that is produced by one for consumption by another, as opposed to information that is produced and consumed in isolation whether by citizen or police. The research has been conducted either to prepare to examine or to examine how the police may use new media to increase participation in neighbourhood policing, specifically through the increased flow of information between citizens and the police. The general hypothesis was developed firstly from Granovetter (1973), who theorised that new information rests with weak ties, secondly from Shirky (2009), who argued that collaborative technologies lower the transaction cost of participation and so enable latent information to flow, and thirdly from Centola (2015), who

asserted that social institutions have a role to support the formation of broad bridges between weak ties to facilitate the exchange and use of information, in this case between police and citizens. The inference from previous research (Sherman, 1997) about the traditional movement of information between citizens and police indicated that proactive (police initiated) information-gathering tactics would result in more information flowing than reactive (citizen initiated) information-gathering tactics. This research consisted of three studies that examined firstly how the public want to consume information about crime, secondly how the police use social media to provide information, and thirdly an experiment to test whether the use of social media increases the volume of information exchanged between the public and the police. Importantly, the research took place at a unique point in the history of neighbourhood policing and social media, when neighbourhood policing was at its height and the use of social media was still in its infancy. The research produced new empirical findings about the use of social media in policing and new understanding of the difficulties of research in the real-world environment, which have implications for the evidence-based policing movement.

Prior to this research, the literature had centred on quadrant two of the information market and previously examined through qualitative interviews with neighbourhood staff the traditional consumption of information by the police within neighbourhood policing (Bullock & Leeney, 2013). The first study therefore moved to quadrant three and presented through focus groups the traditional perspective of citizens on one specific aspect of neighbourhood policing: that of the consumption of information about serious and organised crime. The second study (a questionnaire) and secondary data analysis examined how the police used social media during a crisis. This provided the understanding of how the police had started to use social media which enabled the design of a randomised controlled trial in study three to test whether in a crime investigation the use of social media in quadrant three would generate

more information than other information-gathering techniques in quadrants two and three. Study three then used a secondary data analysis to understand whether the use of social media by the force changed after the experiment, and a focus group with the RCT participants to discuss the results of the research, to both help explain the results and identify learning about the use of social media that might inform future research or practice. Through these three studies firstly an account of how traditional information gathering is operationalised in practice was generated, which updates previous research concerning neighbourhood policing, secondly the findings of previous research into social media (Crump, 2011) were challenged, and thirdly through new findings the following narrative concerning the way in which information is produced and consumed by police and citizens within quadrants two and three of the information market was developed, which has implications for the legitimacy of the police.

The neighbourhood study by Bullock and Leeney (2013) found that information generated through the current neighbourhood policing apparatus is not perceived to be of value by the police. Instead, officers valued quadrant one activity: information generated through their own observations of and actions within communities. It was clear from the SOC study (St1) that officers' attempts to increase the flow of latent information through conventional mechanisms in quadrant two, such as public meetings, were not successful, and the public remained largely unaware of them. The SOC study (St1) and the RCT focus group (St3) found the production of valuable information, which is valued by the citizen or the police, remains problematic. The bulk of information, at the height of neighbourhood policing, was generated through activity in quadrant one and two; industrial age information-gathering for consumption by the police.

Participation in quadrant three for most citizens in the SOC study (St1), despite the fact that research (Quinton, 2011) reports that citizens have an appetite for information,

remains passive. Whilst citizens stated that they wanted information to stop themselves or their family becoming victims, and they wanted information to ensure they could spot crime so that they could provide information to stop crime, it was for the police to do more in the provision of this information. The norm for participants in the SOC study (St1) was for there to be information asymmetry where most information collected by the police was not shared beyond the police, it stayed in quadrant one and did not routinely move into quadrant two. At the height of neighbourhood policing, then, the range of this information asymmetry varied from an information gap for volume crime increasing to an information vacuum for serious and organised crime.

The research demonstrated, though, that there are circumstances where the rhetoric of citizens wanting information about crime translated into a reality, and citizens moved from passive to active consumers of information. The riots Twitter analysis (St2) of follower behaviour during the London riots suggested that it was citizens rather than the police who were driving activity to provide information in quadrant three. That this study suggested there is a causal relationship between the demand for and supply of information is significant. In traditional engagement the SOC study (St1) suggested that consumption of information would not necessarily follow from the production of information by the police. Ciampaglia et al. (2015) had indicated that the demand from citizens influences the supply of digital information, but this was a single study and had not considered policing or the wider security sector. Indeed, in the period since the riots the police assert the opposite, and maintain that the quality of their response was responsible for the growth in followers (NPIA, 2011). The implications for police engagement and communication strategies suggest that information production beyond that sought by citizens is unlikely to be consumed by citizens; it is therefore likely to be of value to the police to develop their understanding of citizens' information requirement.

The SOC study (St1) examined how the public wanted to consume information about crime, and found that citizens were discerning consumers of information who, whilst they did turn to traditional media for information about crime, recognised that media coverage can be disproportionate, distorted, and filtered. Citizens' appetite for information and subsequent activity to satiate it was driven by considerations of the potential threat to their personal safety, and they were not interested in consuming information in quadrant two unless they were directly affected. Citizens made a clear distinction between the consumption of information about crime in general which they were happy to consume from the media with its attendant weakness, and crime in their locality where accuracy was more valued because it mattered for their safety. This research provides qualitative and quantitative support to Ericson and Haggerty (1997), who advocate a role for the police as communicators of risk.

In the SOC study (St1) the police were expected to both provide and promote timely and trusted information. The police must first filter signal from noise and then, importantly, to actively amplify the signal and promote information sharing. In keeping with Centola (2015), the police are expected to act as a bridge for the community, to facilitate information flow with and between citizens. Perhaps surprisingly, given that the research was conducted at the height of neighbourhood policing, this research highlights that the police were not fulfilling their part of the information contract. In return for information passed to the state by the citizen, several participants in the SOC study (St1) felt the state had a duty to explain to the citizen, and the wider public, what action they have taken, or are taking, as a result of information that has been provided.

Importantly, this expectation is heightened at times of insecurity where citizens need to create and update their own assessment of threat, harm or risk. At such times, in the absence of sufficient information, the SOC study (St1) and the riots Twitter analysis (St2) found citizens temporarily move from passive to active consumers of information. Events,

then, provide a window of opportunity to use information to engage citizens in policing, which might explain why Bullock and Sindall (2014) found that the point of initial contact following a crime is also a good time to recruit police volunteers. The SOC study (St1) and the Twitter study (St3) reinforced that for citizens it is the local and the immediate events that matter; the questions that remain though, for academics and the police, are which events and what information cause citizens to become active rather than passive, and for how long this window of activity lasts before there is a return to normality and the perception of risk has passed. There is also a question of whether the threshold of becoming an active consumer of information in quadrant three is similar to the threshold of becoming an active producer of information in quadrant two, and whether quadrant two behaviour is motivated by risk in a similar manner to quadrant three or whether other factors influence citizens' propensity to produce information; but these remain questions for future research.

The police use of social media is still relatively young, and at the time of this research was in its infancy; the volume of research into how the police or citizens used social media to provide information for policing at this critical time is small. It was clear from the riots study (St2) and the Twitter study (St3) that forces have an immature approach to social media, very immature in some cases, with no effective social media strategy. Forces recognise that when considering policing activities such as giving reassurance messages, countering rumour, or providing updates, different social media channels have different purposes, and forces were consistent in their application of the channels. However, the numbers of social media channels within forces varied, and when presented with an event such as the 2011 riots the tweeting pattern of forces varied, which was not explained by whether or not rioting occurred in the force area. It was clear from the new empirical data that at the time of this research channels were not being utilised to their full potential, with little integration between channels to exploit the information eco-system.

The police have started to use follower numbers as an indication of the performance of their social media presence. The literature suggested that the police were beginning to actively influence the numbers of citizens following their Twitter accounts through their tweeting activity (Crump, 2011). This research, however, through new empirical analysis, found that the numbers of citizens following police social media accounts increased during riots, but at other times the increase was linked to population size, not volume of tweets or age of the account. There is a long history in policing of the impact of the easy-to-measure on police activity and how this can lead to unintended consequences. The use by participants in the RCT focus group (St3) of a humorous tweet as an example of a good tweet, simply on the basis of the number of retweets it received, suggests that more clarity on social media strategy is needed. Instead of counting the number of people the police might converse with, efforts might be better spent, as neighbourhood policing expects, on identifying the concerns of their conversations so that the police might join them.

This research found that at the advent of the use of social media in neighbourhood policing, in most forces responsibility for social media was owned by the department responsible for communication with the media and therefore concerned with reputational risk. At the time of the research, and subsequent to it, the service largely remains stuck in instrumental styles of communication (Keane, 2016) where the police seek to keep control of information rather than cede information (and therefore power) to the citizen. There is a tension then, that in order to increase citizen participation in policing, and to move citizens from passive to active producers and consumers of information, the police department that is responsible for reducing reputational risk must facilitate the production of content about operational risk, which could be seen by it as increasing reputational risk by sending the message that the police have failed to prevent crime. The results of the Twitter study (St3) illustrate that the police and the public, in quadrant three at least, are not concerned with the

routine publication of digital information that does not communicate risk, and that the perpetuation of the activity undertaken by the service in this research, where forces simply broadcast organisational messages or recycle material that would appear in the traditional media, is unlikely to enable the police to move from industrial age to information age policing.

The original aim of the Twitter study (St3) was to establish if the use of social media increases the volume of information exchanged between the public and the police. The hypothesis suggested by the theory for testing was that if valuable information is produced by the police, specifically information that is sought for consumption by the public (local and timely information that communicates risk), and that production utilises the information eco-system to capture citizens' attention, then this will result in the activation of a network of weak ties to enable information to flow. The pilot test for this study had suggested it would. The real-world environment encountered in this research, however, was not receptive to the targeting, testing and tracking methodology advocated in the evidence-based policing literature (Sherman, 2013). The realities of this real-world research meant that in contrast with the riots study (St2), where it was simply necessary to recognise and seize the opportunity to collect evidence, in order to conduct the research in the Twitter study (St3) it was necessary to recognise that evidence must sometimes be collected though a sub-optimal design: the best evidence may need to be traded for the best available evidence.

The constraints placed on the research by the researched organisation, though, compromised two critical components: the research was limited to Twitter, and limited to the investigation of criminal damage. Whilst this enabled new empirical data to be produced through the randomisation of treatments within quadrant two and three, it reduced the utility of the social media treatment. As a result, the treatment from quadrant two, the traditional visit by PCSOs, obtained more information than both the treatments from quadrant three, the

use of social media and the use of a citizen messaging system. Aside from the obvious implications this has for investigations as a consequence of dramatic reduction in PCSO numbers (HMIC, 2016), the Twitter study (St3) did illustrate a number of inherent weaknesses in strategies that seek to utilise Twitter to generate information: reach (not every citizen with information is a follower or connected to a follower), resonance (not all tweets are noticed by or of interest to citizens), relevance (citizens may not have any information) and reliability (not all tweets appear on the feed). The information age, then, demands that policing develop information strategies that are bespoke to the information quadrant in which police or citizens are operating in, and tailored to exploit the differing characteristics of the social media applications available within the information eco-system.

It was beyond the scope of this research to evaluate plans that police forces, the College of Policing or the National Police Chiefs' Council might have for the development of the police social media strategy (NPIA, 2010) to move beyond broadcast; history suggests that in accordance with the Shirky Principle that 'institutions will try to preserve the problem to which they are the solution' (Kelly, 2010). Maintaining industrial age practices, though, such as information asymmetry, where information collected by the police is not routinely and systematically shared beyond the police, may become increasingly challenging. The riots study (St2) and the Twitter study (St3) have demonstrated that both police and citizens, through their use of social media, leave behind an unprecedented amount of information about the way in which police and citizens produce and consume information. This publicly-available information exhaust is a rich seam of data that is readily available for researchers and inspectorates to algorithmically mine without having to navigate through the organisational interests that beset the utilisation of randomised treatments in this research. The information exhaust will not provide the robust causal inference that is provided by RCTs, and sought by the evidence-based policing movement (Sherman, 2013), but it

nevertheless provides a low-cost mechanism for policing to rapidly develop insight about behaviour in the real-world from which to generate hypothesis to test through experiments in the real-world. Mining the information exhaust enables simultaneous experimentation and follow-up on 43 force datasets, which in addition to building the evidence base of what works in policing, will also build the evidence base of what's working in policing. Whilst the ethics surrounding the use of such data by the police is debated (Brey, 2005; Eynon, Fry, & Schroeder, 2017) the mining of this data to this end is already gathering pace. This research has enabled the police inspectorate to develop new methodology for the PEEL effectiveness inspection of the police in England and Wales to enable the inspectorate to reflect back to the police and citizens whether, as neighbourhood policing requires, the police are actively engaged on the issues of most concern to the public. The inspectorate found that digital conversation of concerns about crime varied around the country, and that there are variations in the police voice as a party to those conversations (Leeney, 2016). This research will be expanded by the inspectorate this year to include further algorithmic content analysis of crime concerns to establish if citizens' concerns vary over time, algorithmic content analysis to identify the prevailing style and nature of each of the 43 police forces' digital social media content, and also algorithmic sentiment analysis to identify what the public think about the effectiveness of their local force. The synthesisation of these results will provide insight into the most effective use of social media in quadrants two and three of the framework. This activity provides an opportunity for the academic community, the police, the College of Policing, the inspectorate, and of course the public, through their information exhaust, to work together to develop, test and monitor a police social media model.

This research took place at a particular junction in time that has now passed. We are no longer at the start of the use of social media, and neighbourhood policing is not the force in policing it was, nevertheless notwithstanding the difficulties of working in the policing

environment this research has provided substantive empirical data that suggests several steps that the police might consider to improve their use of social media. The police cannot control the information eco-system, but they can choose to be part of it. That part will vary depending on whether they are consuming or producing information. In quadrant three at least, as producers of information for consumption by citizens, the police must focus on the communication of threat, risk and harm, securely root integration of the eco-system with place, and grow their participation using the right selection of digital tools. In order to use social media, then, to increase public participation through the flow of information, the challenge is less about how to use collaborative tools to build broad bridges to reach weak ties than how to use such to tools to cross those bridges to get the attention of weak ties. To that end the police might usefully focus on finding the events on social media that will cause citizens to move from passive to active users of information. Whilst so doing the police must determine how, once they have found those digital conversations, they can join them. In the interim, for investigations into criminal damage, until a digital door knock is developed, reactive local enquiries should continue to be conducted in the real rather than the virtual world. The police must recognise, though, that this position is untenable; the continued legitimacy of the consensual policing model is dependent on its continual renewal, through the continued participation of citizens in policing. Participation in policing centres on the trading of information within the information market by citizens and the police. To do so there must be a shift in that centre from one based on the production of information for consumption by the police to one that views both citizens and the police as producers and consumers of information; for their continued legitimacy the police must embrace their role as curators of the information commons. The research has shown that the police remain rooted to their traditional view of the market, yet to fulfil their information contract within that traditional market, and yet to firmly establish their legitimacy in the digital world. If

information then, as asserted by Winsor (2013), is indeed the oxygen of legitimacy then the police must adapt, to survive in the information age, before that oxygen runs out.

BIBLIOGRAPHY

Accenture. (2012). Are Police Forces Maximizing Technology to Fight Crime and Engage Citizens? In. London: Accenture.

ACPO. (1975). *Report of sub-comittee on criminal intelligence*. Association of Chief Police Officers. London.

ACPO. (2005). Guidance on the National Intelligence Model. In. Wyboston: National Centre for Policing Excellence.

ACPO. (2006). Practice Advice on Professionalising the Business of Neighbourhood Policing. In. London: Centrex.

Adams, P. (2012). *Grouped: How small groups of friends are the key to influence on the social web*. Berkeley, CA: New Riders Press.

Ariel, B., Vila, J., & Sherman, L. (2012). Random assignment without tears: how to stop worrying and love the Cambridge randomizer. *Journal of Experimental Criminology, 8*(2), 193-208. doi:10.1007/s11292-012-9141-4

Ariely, D., Bracha, A., & Meier, S. (2009). Doing Good or Doing Well? Image Motivation and Monetary Incentives in Behaving Prosocially. *American Economic Review, 99*(1), 544-555.

Arnstein, S. (1969). A Ladder of Citizen Participation. *Journal of the American Institute of Planners, 35*(4), 216-224.

Ashby, M. P. J. (2017). Comparing methods for measuring crime harm/severity. *Policing: A Journal of Policy and Practice*. doi:https://doi.org/10.1093/police/pax049

Audit Commission. (1993). Helping with Enquiries: Tackling Crime Effectively. In. London: H.M.S.O.

Audit Commission. (1996). Detecting a Change - Progress in Tackling Crime. In. London: H.M.S.O.

Baker, S. A. (2011). The Mediated Crowd: New Social Media and New Forms of Rioting. *Sociological Research Online, 16*(4), 21.

Barabasi, A.-L. (2002). *Linked: the new science of networks*. Cambridge, MA: Perseus.

Bartlett, J., Miller, C., Crump, J., & Middleton, L. (2013). Policing in an Information Age. In. London: Demos.

BBC. (2009). Police clash with G20 protesters. Retrieved from
http://news.bbc.co.uk/1/hi/7977489.stm

BBC. (2010). Twitter feed for all Greater Manchester Police work. Retrieved from
http://www.bbc.co.uk/news/uk-england-manchester-11537806

BBC. (2011). Street-level crime maps launched online. Retrieved from
http://www.bbc.co.uk/news/uk-12330078

BBC. (2013). National Crime Agency to 'relentlessly pursue' organised crime. Retrieved from
http://www.bbc.co.uk/news/uk-24418847

Beer, D. (2008). Social network(ing) sites…revisiting the story so far: A response to danah
boyd & Nicole Ellison. *Journal of Computer-Mediated Communication, 13*(2), 516-
529. doi:10.1111/j.1083-6101.2008.00408.x

Beetham, D. (1991). *The legitimation of power*. London: Macmillan.

Bénabou, R., & Tirole, J. (2006). Incentives and Prosocial Behavior. *American Economic
Review, 96*(7), 1652-1678. doi:10.1257/aer.96.5.1652.

Bennett, T., Holloway, K., & Farrington, D. P. (2008). The Effectiveness of Neighborhood
Watch. . In *Campbell Systematic Reviews 2008:18*: The Campbell Collaboration.

Berry, J., & White, C. (2013). Article 2 claims: damages for operational failures via the back
door? Retrieved from http://www.ukpolicelawblog.com/index.php/15-in-depth/64-
article-2-claims-damages-for-operational-failures-via-the-back-door

Boisot, M. (1998). Knowledge assets: securing competitive advantage in the information
economy. In. Oxford: Oxford University Press.

Box, R. C. (1998). *Citizen governance: Leading American communities into the 21st century*.
Thousand Oaks, CA: Sage Publications.

Boyd, D. (2006). Friendster lost steam. Is MySpace just a fad? *Apophenia Blog*. Retrieved
from http://www.danah.org/papers/FriendsterMySpaceEssay.html

Boyd, D., & Ellison, N. B. (2008). Social Network Sites: Definition, History, and
Scholarship. *Journal of Computer-Mediated Communication, 13*(1), 210-230.
doi:10.1111/j.1083-6101.2007.00393.x

Boyd, D., Golder, S., & Lotan, G. (2010). *Tweet, tweet, retweet: Conversational aspects of
retweeting on twitter*, Honolulu, HI.

Boyd, J. R. (1986). *Patterns of conflict*. unpublished briefing, Defence and the National Interest, available at: www. dni. net/second_level/boyd_military. htm (accessed 10 January 2007).

Bradford, B., Jackson, J., Hough, M., Farrall, S., Street, H., & Portland, O. R. (2008). *Trust and Confidence in Criminal Justice: A Review of the British Research Literature*. Available at SSRN: http://ssrn.com/abstract=1303567.

Bradford, B., Jackson, J., & Stanko, E. A. (2009). Contact and confidence: revisiting the impact of public encounters with the police. *Policing and Society: An International Journal of Research and Policy, 19*(1), 20 - 46.

Brainard, L. A., & Edlins, M. (2015). Top 10 U.S. Municipal Police Departments and Their Social Media Usage. *The American Review of Public Administration, 45*(6). doi:10.1177/0275074014524478

Brainard, L. A., & McNutt, J. G. (2010). Virtual Government–Citizen Relations: Informational, Transactional, or Collaborative? *Administration & Society, 42*(7), 836-858.

Bratton, W. J. (1998). *Turnaround: How America's Top Cop Reversed the Crime Epidemc* New York: Random House.

Brey, P. (2005). Freedom and Privacy in Ambient Intelligence. *Ethics and Information Technology, 7*(3), 157-166. doi:10.1007/s10676-006-0005-3

Brin, S., & Page, L. (1998). The anatomy of a large-scale hypertextual Web search engine* 1. *Computer networks and ISDN systems, 30*(1-7), 107-117.

Brodeur, J.-P. (1983). High Policing and Low Policing: Remarks about the Policing of Political Activities. *Social Problems, 30*(5), 507-520.

Bryant, R. (2015). Some interesting thoughts on the use of RCTs in policing by Professor Robin Bryant. Retrieved from https://cccupolicingandcj.wordpress.com/2015/03/23/some-interesting-thoughts-on-the-use-of-rcts-in-policing-by-professor-robin-bryant/

BSC. (2015). Statement of Ethics 2015. Retrieved from http://www.britsoccrim.org/ethics/

Bullock, K. (2010). Improving accessibility and accountability—neighbourhood policing and the policing pledge. *Safer Communities, 9*(1), 10-19.

Bullock, K., Chowdhury, R., & Hollings, P. (2009). Public Concerns about Organised Crime. In *Home Office Research Report 16*. London: Home Office.

Bullock, K., Erol, R., & Tilley, N. (2006). *Problem-oriented Policing Partnerships*. Cullompton: Willan.

Bullock, K., & Leeney, D. (2013). Participation, 'responsivity' and accountability in neighbourhood policing. *Criminology and Criminal Justice, 13*(2), 199-214. doi:10.1177/1748895812466392

Bullock, K., & Sindall, K. (2014). Examining the nature and extent of public participation in neighbourhood policing. *Policing and Society, 24*(4), 385-404. doi:10.1080/10439463.2013.844130

Burke, M., Marlow, C., & Lento, T. (2010). *Social network activity and social well-being*.

Burnap, P., Rana, O., Williams, M., Housley, W., Edwards, A., Morgan, J., . . . Conejero, J. (2014). COSMOS: Towards an integrated and scalable service for analysing social media on demand. doi:10.1080/17445760.2013.902057

Byrne, J., & Marx, G. (2011). Technological Innovations in Crime Prevention and Policing. A Review of the Research on Implementation and Impact. *Journal of Police Studies, 3*(20), 17-40.

Cabinet Office. (2011). http://www.cabinetoffice.gov.uk/content/big-society-overview.

Cabinet Office. (2012). *Government Digital Strategy*. London.

Callahan, K. (2007). Citizen Participation: Models and Methods. *International Journal of Public Administration, 30*(11), 1179-1196. doi:10.1080/01900690701225366

Casey, L. (2008). Crime and Communities Review: Engaging Communities in Fighting Crime. In. London: Cabinet Office.

Centola, D. (2015). The Social Origins of Networks and Diffusion. *American Journal of Sociology, 120*(5), 1295-1338.

Chan, J. (1996). Changing police culture. *British Journal of Criminology, 36*(1), 109.

Chan, J. (2001). The Technological Game: How Information Technology is Transforming Police Practice. *Criminal Justice, 1*(2), 139-159. doi:10.1177/1466802501001002001

Chapman, B., Mirrlees-Black, A., & Brawn, C. (2002). Improving public attitudes to the Criminal Justice System: The impact of information. In *Home Office Research Study 245*. London: Home Office.

Christakis, N. A., & Fowler, J. H. (2009). *Connected: The surprising power of our social networks and how they shape our lives*: Little, Brown and Company.

Ciampaglia, G. L., Flammini, A., & Menczer, F. (2015). The production of information in the attention economy. *Scientific Reports, 5*, 9452. doi:10.1038/srep09452

Clark, R. (2004). *Intelligence Analysis: A Target-Centric Approach*. Washington DC: CQ Press.

Cohen, J. (1992). A Power Primer. *Psychological Bulletin, 112*(1).

Collier, P. M. (2001). Valuing intellectual capacity in the police. *Accounting, Auditing & Accountability Journal, 14*(4), 437-455.

CoP. (2013). *Authorised Professional Practice: Critical incident management*: College of Policing.

Cope, N. (2004). 'Intelligence Led Policing or Policing Led Intelligence?': Integrating Volume Crime Analysis into Policing. *British Journal of Criminology, 44*(2), 188.

Coupe, T., & Griffiths, M. (1996). Solving residential burglary (Crime Detection and Prevention Series No. 77). In. London: Home Office.

Crump, J. (2011). What are the police doing on Twitter? Social media, the police and the public. *Policy & Internet, 3*(4), 1-27. doi:10.2202/1944-2866.1130

Deloitte. (2013). In the spirit of 1829: Harnessing digital, social and mobile technologies to fulfil 'Peelian Principles'. In *Actionable Insight Series for Police and Crime Commissioners*.

Denef, S., Bayerl, P. S., & Kaptein, N. (2013). *Social Media and the Police — Tweeting Practices of British Police Forces during the August 2011 Riots.* Paper presented at the SIGCHI Conference on Human Factors in Computing Systems, Paris, France, April 27–May 2, 2013.

Denef, S., Kaptein, N., Bayerl, P. S., & Ramirez, L. (2012). *Best Practice in Police Social Media Adaptation*. Retrieved from Sankt Augustin, Germany:

Duffy, B., Wake, R., Burrows, T., & Bremner, P. (2008). Closing the gaps–crime and public perceptions. *International Review of Law, Computers & Technology, 22*(1), 17-44.

Dunbar, R. I. M. (2010). *How Many Friends Does One Person Need?: Dunbar's Number and Other Evolutionary Quirks*: Harvard Univ Pr.

Edwards, A., Housley, W., Williams, M., Sloan, L., & Williams, M. (2013). Digital social research, social media and the sociological imagination: surrogacy, augmentation and re-orientation. *International Journal of Social Research Methodology, 16*(3), 245-260. doi:10.1080/13645579.2013.774185

Ekman, J., & Amnå, E. (2012). Political participation and civic engagement: Towards a new typology. *Human Affairs, 22*(3), 283-300. doi:10.2478/s13374-012-0024-1

Ericson, R., & Haggerty, K. (1997). *Policing the Risk Society*: University of Toronto Press.

Eynon, R., Fry, J., & Schroeder, R. (2017). The Ethics of Online Research. In N. Fielding, R. M. Lee, & G. Blank (Eds.), The SAGE Handbook of Online Research Methods (pp. 19-37). London: SAGE Publications Ltd. Retrieved from http://sk.sagepub.com/reference/the-sage-handbook-of-online-research-methods-2e. doi:10.4135/9781473957992

Farrall, S., Gray, E., & Jackson, J. (2007). Theorising the Fear of Crime: The Cultural and Social Significance of Insecurities about Crime. *Experience & Expression in the Fear of Crime Working Paper No. 5.* Retrieved from doi:https://ssrn.com/abstract=1012393 or http://dx.doi.org/10.2139/ssrn.1012393

Farrington, D. P., & Welsh, B. C. (2005). Randomized experiments in criminology: What have we learned in the last two decades? *Journal of Experimental Criminology, 1*, 9-38.

Feder, J. (2010). Catching A Car Thief Using Social Media. Retrieved from http://www.thecarconnection.com/news/1050562_catching-a-car-thief-using-social-media

Field, A., & Hole, G. (2006). *How to Design and Report Experiments*. London: Sage.

Fielding, N. (1995). *Community Policing*. Oxford: Clarendon Press.

Fielding, N. (2005). Concepts and theory in community policing. *The Howard Journal of Criminal Justice, 44*(5), 460-472.

Foster, J., & Jones, C. (2010). 'Nice to do'and Essential: Improving Neighbourhood Policing in an English Police Force. *Policing, 4*(4), 395-402.

Frank, J., Brandl, S. G., Worden, R. E., & Bynum, T. S. (1996). Citizen involvement in the coproduction of police outputs. *Journal of Crime and Justice, 19*(2), 1-30. doi:10.1080/0735648X.1996.9721544

Frohlich, N., & Oppenheimer, J. (1970). I get by with a little help from my friends. *World Politics, 23*, 104-120.

Fulla, S., & Welch, E. (2002, 7-10 Jan. 2002). *Framing virtual interactivity between government and citizens: a study of feedback systems in the Chicago Police Department.* Paper presented at the System Sciences, 2002. HICSS. Proceedings of the 35th Annual Hawaii International Conference on.

Giddens, A. (1986). *The constitution of society*. Berkeley: University of California Press.

Gill, P. (1998). Making sense of police intelligence? The use of a cybernetic model in analysing information and power in police intelligence processes. *Policing and Society, 8*(3), 289-314. doi:10.1080/10439463.1998.9964793

Girling, E., Loader, I., & Sparks, R. (2000). *Crime and social change in Middle England: Questions of order in an English town*. London: Routledge.

Gittell, R. J., & Vidal, A. (1998). *Community organizing: Building social capital as a development strategy*. Thousand Oaks: Sage Publications.

Golder, S. A., Wilkinson, D. M., & Huberman, B. A. (2007). Rhythms of social interaction: messaging within a massive online network. *Communities and Technologies 2007*, 41-66.

Goldstein, H. (1963). Police discretion: the ideal versus the real. *Public Administration Review*, 140-148.

Goldstein, H. (1979). Improving policing: A problem-oriented approach. *Crime & Delinquency, 25*(2), 236.

Goldstein, H. (1990). *Problem-Oriented Policing*. New York: McGraw-Hill.

Gomm, R. (2004). *Social Research Methodology. A critical introduction*. Hampshire, England: Palgrave Macmillan.

Granovetter, M. S. (1973). The strength of weak ties. *The American journal of sociology, 78*(6), 1360-1380.

Granovetter, M. S. (1983). The strength of weak ties: A network theory revisited. *Sociological theory, 1*(1), 201-233.

Groff, E. R., Kearley, B., Fogg, H., Beatty, P., Couture, H., & Wartell, J. (2005). A randomized experimental study of sharing crime data with citizens: Do maps produce more fear? *Journal of Experimental Criminology, 1*(1), 87-115.

Hagan, F. (2006). "Organized crime" and "organized crime": Indeterminate problems of definition. *Trends in organized crime, 9*(4), 127-137.

Haggerty, K. D., & Ericson, R. V. (2000). The surveillant assemblage. *The British Journal of Sociology, 51*(4), 605-622. doi:10.1080/00071310020015280

Haggerty, K. D., Wilson, D., & Smith, G. (2011). *Theorizing surveillance in crime control* (Vol. 15).

Haynes, L., Service, O., Goldacre, B., & Torgerson, D. (2012). *Test, Learn, Adapt: Developing Public Policy with Randomised Controlled Trials*. London: Cabinet Office Behavioural Insights Team.

Haythornthwaite, C. (2005). Social networks and Internet connectivity effects. *Information, Communication & Society, 8*(2), 125-147.

Hendler, J., & Golbeck, J. (2008). Metcalfe's law, Web 2.0, and the Semantic Web. *Web Semantics: Science, Services and Agents on the World Wide Web, 6*(1), 14-20.

Herbert, S. (2006). *Citizens, Cops and Power: Recognising the Limits of Community Policing*. Chicago: University of Chicago Press.

Herrington, V., & Millie, A. (2006). Applying Reassurance Policing: Is it "Business as Usual"? *Policing and Society: An International Journal of Research and Policy, 16*(2), 146 - 163.

Heverin, T., & Zach, L. (2010). Twitter for city police department information sharing. *Proceedings of the American Society for Information Science and Technology, 47*(1), 1-7.

HMIC. (1997). Policing with Intelligence. In. London: Her Majesty's Inspectorate of Constabulary.

HMIC. (2001). Open All Hours: A Thematic Inspection Report on the Role of Police Visibility and Accessibility in Public Reassurance. In H. M. s. I. o. Constabulary (Ed.). London: Her Majesty's Inspectorate of Constabulary.

HMIC. (2005). First Contact: A Thematic Inspection of Police Contact Management. In. London: Her Majesty's Inspectorate of Constabulary.

HMIC. (2008). *Serving Neighbourhoods and Individuals*. Retrieved from London: http://www.hmic.gov.uk/SiteCollectionDocuments/Thematics/THM_20081101.pdf

HMIC. (2011). *The rules of engagement: A review of the August 2011 disorders*. Retrieved from London:

HMIC. (2014). Core business: An inspection into crime prevention, police attendance and the use of police time. In. London: Her Majesty's Inspectorate of Constabulary.

HMIC. (2015). Real lives, real crimes: A study of digital crime and policing. In. London: Her Majesty's Inspectorate of Constabulary.

HMIC. (2016). Value for money profile. In. London: Her Majesty's Inspectorate of Constabulary.

Hogan, B., & Quan-Haase, A. (2010). Persistence and Change in Social Media. *Bulletin of Science, Technology & Society, 30*(5), 309-315.

Home Office. (2004). *One Step Ahead: A 21st Century Strategy to Defeat Organised Crime*. (Cm 6167). London: H.M.S.O.

Home Office. (2006). Police Workforce Modernisation: Impact assessment of changes to workforce mix In. London: H.M.S.O.

Home Office. (2008a). Code of Good Practice for Public Access to Local Crime Information. In. London: H.M.S.O.

Home Office. (2008b). *From the neighbourhood to the national: policing our communities together*. London: H.M.S.O.

Home Office. (2010). *Policing in the 21st Century: Reconnecting police and the people*. London: H.M.S.O.

Home Office. (2011). Local to Global: Reducing the Risk from Organised Crime. In. London: H.M.S.O.

Home Office. (2012a). Counting rules for recorded crime. Retrieved from https://www.gov.uk/government/publications/counting-rules-for-recorded-crime

Home Office. (2012b). Justice Outcomes: Briefing for CJS Partners. In. London: HMSO.

Home Office. (2013). Serious and Organised Crime Strategy. In. London: The Stationary Office.

Hope, T. (1995). Community Crime Prevention. *Crime and Justice*, 21-89.

Housley, W., Webb, H., Edwards, A., Procter, R., & Jirotka, M. (2017). Digitizing Sacks? Approaching social media as data. *Qualitative Research, 17*(6), 627-644. doi:10.1177/1468794117715063

Huberman, B. A., Romero, D. M., & Wu, F. (2009). Social networks that matter: Twitter under the microscope. *First Monday, 14*(1), 8.

Hughes, G., & Rowe, M. (2007). Neighbourhood policing and community safety: Researching the instabilities of the local governance of crime, disorder and security in contemporary UK *Criminology and Criminal Justice, 7*(4), 317.

Innes, M. (2004). Signal crimes and signal disorders: notes on deviance as communicative action. *The British Journal of Sociology, 55*(3), 335-355. doi:10.1111/j.1468-4446.2004.00023.x

Innes, M. (2005). Why 'soft'policing is hard: on the curious development of reassurance policing, how it became neighbourhood policing and what this signifies about the politics of police reform. *Journal of community & applied social psychology, 15*(3), 156-169.

Innes, M. (2006a). Policing uncertainty: Countering terror through community intelligence and democratic policing. *The Annals of the American Academy of Political and Social Science, 605*(1), 222.

Innes, M. (2006b). Reassurance and the "New" Community Policing. *Policing and Society, 16*(2), 95-98.

Innes, M. (2007). The Reassurance Function. *Policing, 1*(2), 132-141. doi:10.1093/police/pam029

Innes, M., & Fielding, N. (2002). From Community To Communicative Policing: 'Signal Crimes' And The Problem Of Public Reassurance. *Sociological Research Online, 7*(2).

Innes, M., Fielding, N., & Cope, N. (2005). 'The Appliance of Science?': The Theory and Practice of Crime Intelligence Analysis. *British Journal of Criminology, 45*(1), 39-57.

Innes, M., & Roberts, C. (2008). Reassurance Policing, Community Intelligence and the Co-Production of Neighbourhood Order. In T. Williamson (Ed.), *The Handbook of Knowledge Based Policing: Current Conceptions and Future Directions*. Chicester: John Wiley & Sons.

Innes, M., & Roberts, C. (2011). *Field Studies On The Co-Production of Social Control: A Backing Paper for the UPSI ESRC Expert Seminar*. Retrieved from Cardiff:

Innes, M., Roberts, C., & Maltby, S. (2005). *Community Intelligence: A Report to the National Community Tensions Team*. Unpublished.

Innes, M., Roberts, C., Preece, A., & Rogers, D. (2017). Of Instruments and Data: Social Media Uses, Abuses and Analysis. In N. Fielding, R. M. Lee, & G. Blank (Eds.), The SAGE Handbook of Online Research Methods (pp. 108-124). London: SAGE Publications Ltd. Retrieved from http://sk.sagepub.com/reference/the-sage-handbook-of-online-research-methods-2e. doi:10.4135/9781473957992

Innes, M., & Sheptycki, J. (2004). From Detecion to Disruption: Intelligence and the changing logic of police crime control in the United Kingdom. *International Criminal Justice Review, 14*, 1-24.

Ipsos MORI. (2013). Public perceptions of organised crime in Scotland. In S. G. S. Research (Ed.): Ipsos MORI Scotland.

Jack, S. (2005). The Role, Use and Activation of Strong and Weak Network Ties: A Qualitative Analysis. *Journal of Management Studies, 42*(6).

Jackson, J. (2011). Revisiting Risk Sensitivity in the Fear of Crime. *Journal of Research in Crime and Delinquency, 48*(4), 513-537.

Jackson, J., & Bradford, B. (2010). What is Trust and Confidence in the Police? *Policing, 4*(3), 241-248. doi:10.1093/police/paq020

Jackson, J., & Bradford, B. (2011). Police Legitimacy. In. Wyboston: National Police Improvement Agency.

Jackson, J., Farrall, S., Hough, M., & Bradford, B. (2008). *Public Insecurities about Crime: A Review of the British Research Literature*.

Jackson, J., & Sunshine, J. (2007). Public confidence in policing - A neo-Durkheimian perspective. *British Journal of Criminology, 47*(2), 214-233. doi:10.1093/bjc/azl031

Jacoby, J. E., & Cullen, F. T. (1998). The Structure of Punishment Norms: Applying the Rossi-Berk Model. *J. Crim. L. & Criminology, 89*(1), 245-312.

JCC. (1990). Operational Policing Review. In. Surbiton, Surrey: Joint Consultative Committee.

Johnston, L. (2005). From 'community'to 'neighbourhood'policing: Police Community Support Officers and the 'police extended family'in London. *Journal of community & applied social psychology, 15*(3), 241-254.

Keane, N. (2016). [Update on police use of social media].

Kelling, G. L. (1999). *'Broken Windows' and Police Discretion*. (NCJ 178259). Washington, US: Department of Justice Retrieved from https://www.ncjrs.gov/pdffiles1/nij/178259.pdf.

Kelling, G. L., & Coles, C. M. (1996). *Fixing Broken Windows: Restoring Order and Reducing Crime in Our Communities* New York: Simon and Schuster.

Kelly, K. (2010). The Shirky Principle. Retrieved from http://kk.org/thetechnium/the-shirky-prin/

Kerr, N. L. (1983). Motivation losses in small groups: A social dilema analysis. *Journal of Personality and Social Psychology, 45*, 819-828.

Kietzmann, J. H., Hermkens, K., McCarthy, I. P., & Silvestre, B. S. (2011). Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons, 54*(3), 241-251. doi:10.1016/j.bushor.2011.01.005

King, R., & Wincup, E. (2007). *Doing Research on Crime and Justice* (Second ed.). New York: Oxford University Press.

Kranich, N. (2004). *The Information Commons: a public policy report*. New York: Brennan Center for Justice.

Langley, P. (1987). *Doing Social Research*. London: Causeway Press.

Latane, B., & Darley, J. M. (1970). *The unresponsive bystander: Why doesn't he help?* New York: Appleton-Century-Cofts.

Leeney, D. (2007). *Telephone investigations conducted in Police Call Centres: Starting to link Service Quality to Forensic Quality.* (Master's Degree in Applied Criminology and Police Management), University of Cambridge, Cambridge.

Leeney, D. (2016, 16/12/2016). [Briefing on pilot study to evaluate whether local crime concerns can be assessed through Twitter].

Leeney, D., & Mueller-Johnson, K. (2010). Examining the link between the forensic quality and customer service quality of police call centre interviews. *International Journal of Police Science & Management, 12*(1), 69-80. doi:10.1350/ijps.2010.12.1.159

Leeney, D., & Mueller-Johnson, K. (2011). Examining the Forensic Quality of Police Call-Centre Interviews. *Psychology, Crime and Law, 18*(7), 669-688. doi:10.1080/1068316X.2010.534478

Lentz, S., & Chaires, R. (2007). The invention of Peel's principles: A study of policing 'textbook' history. *Journal of Criminal Justice, 35*(1), 69-79. doi:10.1016/j.jcrimjus.2006.11.016

Levitin, D. (2015). *The Organized Mind*. London: Penguin Books.

Loader, I. (2006). Policing, recognition, and belonging. *The Annals of the American Academy of Political and Social Science, 605*(1), 201-221.

Loftus, B. (2010). Police occupational culture: classic themes, altered times. *Policing and Society, 99999*(1), 1-20.

Lowe, T., & Innes, M. (2012). Can we speak in confidence? Community intelligence and neighbourhood policing v2.0. *Policing and Society, 22*(3), 295-316. doi:10.1080/10439463.2012.671823

Lub, V. (2017). Neighbourhood Watch: Mechanisms and Moral Implications. *The British Journal of Criminology*, azx058-azx058. doi:10.1093/bjc/azx058

Luhmann, N. (1988). Familiarity, Confidence, Trust: Problems and Alternatives. In D. Gambetta (Ed.), *Trust: Making and Breaking of*

Cooperative Relations (pp. 94-107). Oxford: Blackwell.

Lum, C., Koper, C. S., & Willis, J. (2016). Understanding the Limits of Technology's Impact on Police Effectiveness. *Police Quarterly, 20*(2), 135-163. doi:10.1177/1098611116667279

Lyon, D. (2003). Surveillance as social sorting. Computer codes and mobile bodies. In D. Lyon (Ed.), *Surveillance as Social Sorting. Privacy, risk, and digital discrimination*. London: Routledge.

Lyon, D. (2010). Surveillance, power and everyday life. In P. Kalantzis-Cope & K. Gherab-Martin (Eds.), *Emerging Digital Spaces in Contemporary Society* (pp. 107-120). Houndmills, UK: Palgrave Macmillan.

Madison, L., Miller, C. M., & Worden, C. (2010). *A Survey of Official and Unofficial Law Enforcement Twitter Accounts in Canada, the United Kingdom, and the United States*. Retrieved from

Mamalian, C. A., & La Vigne, N. G. (1999). *The use of computerized crime mapping by law enforcement: Survey results* (Vol. 7): US Dept. of Justice, Office of Justice Programs, National Institute of Justice.

Manning, P. K. (1991). Community Policing as a Drama of Control. In J. Green & S. D. Mastrofski (Eds.), *Community Policing: Rhetoric or Reality?* London: Praeger.

Manning, P. K. (1992). Information technologies and the police. *Crime & Just., 15*, 349.

Manning, P. K. (2008). *The Technology of Policing: Crime Mapping, Information Technology, and the Rationality of Crime Control (New Perspectives in Crime, Deviance, and Law)*. New York: New York University Press.

Manning, P. K., & Hawkins, K. (1989). Police decision-making. In M. Weatheritt (Ed.), *Police Research: Some Future Prospects* (pp. 139-156). Aldershot: Avebury.

Manso, M., & Manso, B. (2012). *The Role of Social Media in Crisis*. Paper presented at the 17th ICCRTS: "Operationalizing C2 Agility".

Martin, S. E., & Sherman, L. W. (1986). *Catching Career Criminals*. Retrieved from Washington, DC:

Marx, G. (2002). What's New About the "New Surveillance"? Classifying for Change and Continuity. *Surveillance & Society, 1*, 9-21.

Mason, M. (2009). *Findings from the second year of the national Neighbourhood Policing Programme evaluation*. London: Home Office.

Maxfield, M. G., & Babbie, E. R. (2001). *Research Methods for Criminal Justice and Criminology* (Third ed.). Belmont: Wadsworth.

May, T. (2017). The shared society: Prime Minister's speech at the Charity Commission annual meeting. Retrieved from https://www.gov.uk/government/speeches/the-shared-society-prime-ministers-speech-at-the-charity-commission-annual-meeting

Mayo, E., & Steinberg, T. (2007). The Power of Information Review. In. London: Prime Minister's Strategy Unit.

Meijer, A. J. (2014). New Media and the Coproduction of Safety. *The American Review of Public Administration, 44*(1), 17-34. doi:doi:10.1177/0275074012455843

Miller, C., Ginnis, S., Stobart, R., Krasodomski-Jones, A., & Clemence, M. (2015). the road to representivity. In.

MoJ. (2015). Code of Practice for Victims of Crime. In. London: Ministry of Justice.

Moore, M. H. (1995). *Creating public value: Strategic management in government*. Cambridge, MA: Harvard Univ Pr.

Morgan, R. (1987). Police accountability: developing the local infrastructure. *Brit. J. Criminology, 27*, 87.

Morgan, R. (2011). *Policing the Big Society: Co-Production and Social Control*. Retrieved from Cardiff:

NCIS. (2000). National Intelligence Model. In. London: National Criminal Intelligence Service.

Newton, P. (2011). *Operation Devine: Corporate Communications Evaluation*. Staffordshire Police.

Nicklin, H. (2011). *ACPO Google Event*, London.

NPIA. (2010). *Engage: Digital and Social Media Engagement for the Police Service*. Retrieved from London:

NPIA. (2011). *Lessons learned event*. National Police Improvement Agency. London.

O'Reilly, T. (2005). What Is Web 2.0? Design Patterns and Business Models for the Next Generation of Software. Retrieved from http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html

Ostrom, E. (1978). Citizen Participation and Policing: What Do We Know? *Journal of Voluntary Action Research, 7*(1-2), 102-108. doi:10.1177/089976407800700110

Ostrom, E. (1990). *Governing the commons*. Cambridge: Cambridge University Press.

Parfrement-Hopkins, J., & Green, B. (2010). Public Perceptions. In J. Flatley, C. Kershaw, S. K., R. Chaplin, & D. Moon (Eds.), Crime in England and Wales 2009/10

Home Office Statistical Bulletin 10/12. London: Home Office. Retrieved from http://rds.homeoffice.gov.uk/rds/pdfs10/hosb1210.pdf.

Pate, A., Wycoff, M. A., Skogan, W. G., & Sherman, L. W. (1987). *Reducing Fear of Crime in Houston and Newark*. Retrieved from Washington, DC:

Pearce, L. F. (1978). Steering Committee on Criminal Information Systems 3rd Report.

Police Foundation. (2014). *Police use of Social Media*. Retrieved from London:

Pretty, J. (1995). Participatory learning for sustainable agriculture. *World Development, 23*(8), 1247-1263.

Procter, R. (2011). A tale of four police twitter accounts. Retrieved from http://www.benproctor.co.uk/blog/2011/08/22/a-tale-of-four-police-twitter-accounts/

Procter, R., Crump, J., Karstedt, S., Voss, A., & Cantijoch, M. (2013). Reading the riots: what were the police doing on Twitter? *Policing and Society, 23*(4), 413-436. doi:10.1080/10439463.2013.780223

Putnam, R. D. (2000). *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.

Quinton, P. (2011). *The impact of information about crime and policing on public perceptions: The results of a randomised controlled trial*. Retrieved from London:

Quinton, P., & Morris, J. (2008). *Neighbourhood policing: the impact of piloting and early national implementation*. London: Home Office.

Ramirez, R. (1999). Value Co-Production: Intellectual Origins and Implications for Practice and Research. *Strategic Management Journal, 20*, 49-65.

Ratcliffe, A. (1986a). 2nd ACPO report on operational intelligence.

Ratcliffe, A. (1986b). ACPO on Operational intelligence.

Rea, L. M., & Parker, R. A. (2005). *Designing and Conducting Survey Research* (Third ed.). San Francisco: Jossey-Bass.

Reiner, R. (2000). The Politics of the Police. In: Oxford: Oxford University Press.

Reisig, M. D. (2007). Procedural justice and community policing – What shapes residents' willingness to participate in crime prevention programs? *Policing, 1*(3), 356-369.

Reiss Jr, A. J. (1971). *The Police and the Public*. New Haven: Yale University Press.

Ritchie, J., & Lewis, J. (2003). *Qualitative research practice: A guide for social science students and researchers*. London: Sage.

Robson, C. (2002). *Real World Research* (Second ed.). Oxford: Blackwell.

Rogers, E. M. (1962). *Diffusion of Innovations*. London: Collier Mcmillan.

Sampson, R. J. (2004). Neighborhood and community: Collective efficacy and community safety. *New Economy, 11*(2), 106-113.

Sampson, R. J., & Raudenbush, S. W. (1999). Systematic Social Observation of Public Spaces: A New Look at Disorder in Urban Neighborhoods 1. *American Journal of Sociology, 105*(3), 603-651.

Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science, 277*(5328), 918.

Shepherd, J. (2007). The production and management of evidence for public service reform. *Evidence & Policy: A Journal of Research, Debate and Practice, 3*(2), 231-251.

Sheptycki, J. (2004). Organizational Pathologies in Police Intelligence Systems : Some Contributions to the Lexicon of Intelligence-Led Policing. *European Journal of Criminology, 1*(3), 307-332. doi:10.1177/1477370804044005

Sherman, L. W. (1997). Policing for Crime Prevention. In L. W. Sherman, D. Gottfredson, D. MacKenzie, J. Eck, P. Reuter, & S. Bushway (Eds.), *Preventing crime: What works, what doesn't, what's promising: A report to the United States Congress*. Maryland, USA: University of Maryland.

Sherman, L. W. (2013). The Rise of Evidence-Based Policing: Targeting, Testing, and Tracking. *Crime and Justice, 42*.

Sherman, L. W., Gartin, P. R., & Buerger, M. E. (1989). Hot spots of predatory crime: Routine activities and the criminology of place. *Criminology, 27*, 27.

Sherman, L. W., Shaw, J. W., & Rogan, D. P. (1995). *The Kansas City Gun Experiment: Research in Brief*. Retrieved from Washington, D.C.:

Shirky, C. (2009). *Here comes everybody*. London: Penguin.

Simmonds, D. (2015). *Why is the Clutch Slipping? Developing clarity, capacity and culture for Citizen and Community Engagement*. Retrieved from London:

Skogan, W. G. (1989). Communities, crime and neighbourhood organisation. *Crime and delinquency, 35*(3), 437-457.

Skogan, W. G., & Hartnett, S. (1997). *Community policing: Chicago style*. Oxford: Open University Press.

Skogan, W. G., & Steiner, L. (2004). *CAPS at ten. Community policing in Chicago: an evaluation of Chicago's alternative policing strategy*. Retrieved from Chicago: http://www.skogan.org/files/Community_Policing_in_Chicago_Year_Ten.pdf

Slee, D. (2016). Surrey Police to use Twitter to report every car crime. *The Digital Engagement Guide.* Retrieved from http://www.digitalengagement.info/2012/03/18/surrey-police-to-use-twitter-to-report-every-car-crime/

Smith, A. (2006). *Crime Statistics: An Independent View*. Retrieved from London:

Spencer, L., & Pahl, R. E. (2006). *Rethinking friendship: Hidden solidarities today*: Princeton Univ Pr.

Spicker, P. (2007). Research without consent. *Social Research Update.* Retrieved from http://sru.soc.surrey.ac.uk/SRU51.pdf

Squires, P., & Measor, L. (2001). Rounding up the 'usual suspects': police approaches to multiagency policing. In S. Balloch & M. Taylor (Eds.), *Partnership working: policy and practice*. Bristol: The Policy Press.

Stein, L. (2013). Policy and Participation on Social Media: The Cases of YouTube, Facebook, and Wikipedia. *Communication, Culture & Critique, 6*(3), 353-371. doi:10.1111/cccr.12026

Stewart, D. W., & Shamdasani, P. N. (1990). *Focus groups: Theory and practice*. London: Sage Publications.

Straw, A. (2016). The legal basis of the duty to investigate (2): The duties to investigate within the European Convention on Human Rights. Retrieved from http://www.publiclawproject.org.uk/data/resources/227/The-legal-basis-for-the-duty-to-investigate-2_AS.pdf

Stylianou, S. (2003). Measuring crime seriousness perceptions: What have we learned and what else do we want to know? *Journal of Criminal Justice, 31*, 37-56.

Suchman, M. (1995). Managing Legitimacy: Strategic and Institutional Approaches. *The Academy of Management Review, 20*(3), 571-610.

Sunshine, J., & Tyler, T. R. (2003). The role of procedural justice and legitimacy in shaping public support for policing. *Law & Society Review, 37*(3), 513-548.

Telep, C. W., Mitchell, R. J., & Weisburd, D. (2014). How Much Time Should the Police Spend at Crime Hot Spots? Answers from a Police Agency Directed Randomized Field Trial in Sacramento, California. *Justice Quarterly, 31*(5), 905-933. doi:10.1080/07418825.2012.710645

Thomas, G. (2016). A case for local neighbourhood policing and community intelligence in counter terrorism. *The Police Journal, 89*(1), 31-54. doi:10.1177/0032258x16630489

Tilley, N. (2008). The Development of Community Policing in England: Networks, Knowledge and Neighbourhoods. In T. Williamson (Ed.), *The Handbook of Knowledge-based Policing: Current Conceptions and Future Directions*. Chichester: John Wiley and Sons.

Timney, M. M. (1998). Overcoming administrative barriers to citizen participation: Citizens as partners, not adversaries. In C. S. King & C. Stivers (Eds.), *Government is Us: Public Administration in an Anti-Government Era*. Thousand Oaks, CA: Sage Publications.

Tritter, J. Q., & McCallum, A. (2006). The snakes and ladders of user involvement: Moving beyond Arnstein. *Health Policy, 76*(156-168).

Tuffin, R., Morris, J., & Poole, A. (2006). *An evaluation of the impact of the National Reassurance Policing Programme*. (1844737985). London: Home Office Research, Development and Statistics Directorate Retrieved from http://rds.homeoffice.gov.uk/rds/pdfs06/hors296.pdf.

Tyler, T. R. (1990). *Why People Obey the Law*. Yale: Yale University Press.

Tyler, T. R., & Huo, Y. J. (2002). *Trust in the law: Encouraging public cooperation with the police and courts*: Russell Sage Foundation Publications.

Uchida, C. D., Forst, B., & Annan, S. O. (1992). *Modern Policing and the Control of Illegal Drugs: Testing New Strategies in Two American Cities*. Retrieved from Washington, D.C.:

van de Velde, B., Meijer, A., & Homburg, V. (2014). Police message diffusion on Twitter: analysing the reach of social media communications. *Behaviour & Information Technology*, 1-13. doi:10.1080/0144929x.2014.942754

Vigoda, E. (2002). From responsiveness to collaboration: Governance, citizens, and the next generation of public administration. *Public Administration Review, 62*(5), 527-540.

Warr, M., & Stafford, M. (1983). Fear of Victimization: A Look at the Proximate Causes. *Social Forces, 61*(June), 1033-1043.

Weisburd, D. (2008). Place-Based Policing. *Ideas in American Policing Series. Washington, DC: Police Foundation. Available online at* http://www. *police foundation. org/pdf/placebasedpolicing. pdf*.

Weisburd, D., Bushway, S., Lum, C., & Yang, S. M. (2004). Trajectories of crime at places: A longitudinal study of street segments in the city of Seattle. *Criminology, 42*(2), 283-322.

Weisburd, D., Mastrofski, S., McNally, A. M., & Greenspan, R. (2001). *Compstat and organizational change: Findings from a national survey*. Washington DC: The Police Foundation.

Williams, M. L., Burnap, P., & Sloan, L. (2016). Crime Sensing with Big Data: The affordances and limitations of using open-source communications to estimate crime patterns. *Brit. J. Criminology*.

Williams, M. L., Edwards, A., Housley, W., Burnap, P., Rana, O., Avis, N., . . . Sloan, L. (2013). Policing cyber-neighbourhoods: tension monitoring and social media networks. *Policing and Society, 23*(4), 461-481. doi:10.1080/10439463.2013.780225

Williams, R., & Johnson, P. (2004). Circuits of Surveillance. *Surveillance & Society, 2*(1), 1-14.

Willmer, M. A. P. (1970). *Crime and Information Theory*. Edinburgh: Edinburgh University Press.

Wilson, C., Boe, B., Sala, A., Puttaswamy, K. P. N., & Zhao, B. Y. (2009). *User interactions in social networks and their implications*. Paper presented at the Proceedings of the 4th ACM European conference on Computer systems, Nuremberg, Germany.

Winsor, T. (2013). Policing in the New Dynamic Environment. In.

WMA. (2013). World Medical Association Declaration of Helsinki Ethical Principles for Medical Research Involving Human Subjects. *JAMA, 310*(20), 2191-2194. doi:doi:10.1001/jama.2013.281053

Wünsch, D., & Hohl, K. (2009). Evidencing a 'Good Practice Model' of Police Communication: The Impact of Local Policing Newsletters on Public Confidence1. *Policing, 3*(4), 331-339. doi:10.1093/police/pap045

Yang, D., Heaney, T., Tonon, A., Wang, L., & Cudré-Mauroux, P. (2017). CrimeTelescope: crime hotspot prediction based on urban and social media data fusion. *World Wide Web*. doi:10.1007/s11280-017-0515-4

Yin, J., Lampert, A., Cameron, M., Robinson, B., & Power, R. (2012). Using social media to enhance emergency situation awareness. *IEEE Intelligent Systems, 27*(6), 52-59.